

**Report on Technical Support for the
Validation, Finalization and Adoption of the
East Asia-Pacific Early Child Development Scales (EAP-ECDS)**



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Thank you so much!



Participants at the February 2013 workshop



Country Teams
Row 1: Cambodia, China, Mongolia
Row2: Timor-Leste, Papua New Guinea and Vanuatu

EXECUTIVE SUMMARY

BACKGROUND AND OBJECTIVES

The Asia-Pacific Regional Network for Early Childhood (ARNEC) initiated the development of the East Asia-Pacific Early Child Development Scales (EAP-ECDS) to equip stakeholders across East Asia and the Pacific with a common measurement tool to assess the holistic development of children ranging in age from three to five years. The process of development of the Scales has been undertaken in three phases. The EAP-ECDS were developed in Phase I (2010) based on a comprehensive desk review of the Early Learning and Development Standards (ELDS) from seven countries in the region. It should be noted that the construction of the Scales was underpinned by these standards. In Phase II (2010 - 2012), the Scales were piloted in China, Fiji, and Mongolia and subsequently modified based on the results of this pilot study. In Phase III (2012 - 2014), the Scales were administered to children in six countries in the region in order to assess their reliability and validity. This report presents the findings from Phase III.

METHOD

An 85-item test which covered the following seven domains: Cognitive Development; Socio-emotional Development; Motor Development; Language and Emergent Literacy; Health, Hygiene, and Safety; Cultural Knowledge and Participation; and Approaches to Learning was administered to somewhat representative samples of children, ranging in age from three to five years, in six countries. The Scales were administered in the local language. Particular attention was given to: (i) ensuring that the specific items were culturally sensitive yet cross-culturally equivalent; (ii) training assessors to use standardised assessment processes; (iii) evaluating inter-assessor reliability; and (iv) minimising bias and errors in the assessment process. The sample in each country was stratified by age, gender and location and included children from Cambodia (n = 1500), China (n = 1803), Mongolia (n = 1248), Papua New Guinea (n = 1800), Timor-Leste (n = 1188) and Vanuatu (n = 900). Hence, the Scales were administered to a total of 8439 children in the region. Since children from ethnic minorities were not included in the validation process in all countries, the sample for scale validation excluded the children from ethnic minorities in Cambodia (n=296). Further, data from all countries were excluded from the analyses if children were below three years or above five years (n= 73) and if information on urbanicity (urban/rural residence) (n=341), ethnicity (n = 35) or age (n =60) was absent. As a result, the validation sample included **7634 children** (1922 rural girls, 1927 rural boys, 1914 urban girls, and 1871 urban boys) from the region. We also obtained information about: (i) participation in early childhood programmes; (ii) the child's home learning environment; and (iii) the child's nutrition status, health and habits.

MAIN FINDINGS

The findings reported below are based on the data garnered from 7634 children.

1. The EAP-ECDS are valid and reliable measures of developmental functioning/school readiness for children in these six countries. In all countries, older children did significantly better than younger children in all seven domains and in the Scales as a whole. The various domains of the Scales are reliable (high internal consistency) and item analyses indicate that they distinguish between children with different levels of competence.
 - A 6-country, multi-level analysis indicated that there were significant differences on the total EAP-ECDS score as a function of age, gender, maternal education and family wealth. Specifically,
 - Older children did better than younger children across all seven domains
 - Girls did better than boys
 - Children whose mothers had higher levels of education did better than other children
 - Children who attended early childhood programmes did better than those who did not

These findings are consistent with findings from household surveys and from other research conducted in the region.

2. However, while these aggregated findings provide important information for the region, it is important to examine factors that are predictive of better/worse developmental outcomes for each specific country. For example, children from urban families did significantly better than children from rural families on the EAP-ECDS in Cambodia, China, Mongolia and Timor-Leste, though the reverse was true for Papua New Guinea and Vanuatu.
3. Combining data from all six countries, we found that attendance in an early childhood programme had a significant impact on early child development. Children who attended such programmes scored 6.43 percentage points higher than those who did not. However, the impact of programme participation varied across countries, from 2.53 percentage points in Timor-Leste to 9.41 percentage points in Cambodia. The weak impact in Timor-Leste may be due to low participation rates and/ or short duration of attendance. Such findings also highlight the importance of taking country specific factors into account to have a nuanced interpretation of the findings.
4. In general, about 30 to 60 percent of parents reported engaging in early learning-related activities with children at home. Educated parents tended to support early learning at home more than other parents. Given the importance of the early childhood period for human development, both improving parents' educational level and providing parenting support and education to improve the home environment is strongly recommended.

5. Almost all children in the sample had been vaccinated; however the utilisation of primary health care services other than for being vaccinated was uncommon.
6. Girls, children with better educated mothers, and children from urban families generally had better health facilitation practices, such as brushing teeth, washing hands and eating vegetables than other children.
7. Urban parents reported more health issues with their children than rural parents in Cambodia, China, Mongolia, Papua New Guinea and Vanuatu. However, this may reflect higher health awareness in urban parents.
8. Sampling issues affect the representativeness of the findings and issues related to the administration of the measures may affect their validity. Hence, some caution must be exercised in interpreting these findings. That stated, the EAP-ECDS are a psychometrically robust measure of developmental functioning in the region and we offer the following recommendations.

SPECIFIC RECOMMENDATIONS

- **Priority 1.** Use these findings to impact policy decisions in terms of investment in factors that correlate with early childhood development.
- **Priority 2.** Invest in early childhood education programmes, as children who attend preschool in a country have better outcomes than those who do not in that same country.
- **Priority 3.** Invest in narrowing developmental gaps between children in rural and urban areas.
- **Priority 4.** Denote parental education as an early childhood intervention and allocate resources to promote both parent education and training and formal education. Maternal (and paternal) education predicted child outcomes in the sample as a whole, and in most countries.
- **Priority 5.** Invest in building the capacity of in-country teams to conduct evaluation research, thereby improving the quality and representativeness of the body of knowledge for evidence-based policy-making.
- **Priority 6.** Capitalise on this unprecedented data set from the East Asia and Pacific region and allocate resources for data mining to gain a better understanding of how and why certain factors (e.g., preschool attendance, maternal education, and ethnic minority status) affect early childhood development in the region and in specific countries.

PART 1. BACKGROUND TO THE DEVELOPMENT OF THE SCALES

CHAPTER 1 INTRODUCTION

The Asia-Pacific Regional Network for Early Childhood (ARNEC) initiated the development of the East Asia-Pacific Early Child Development Scales (EAP-ECDS) to equip stakeholders across East Asia and Pacific with a common measurement tool that can assess the holistic developmental progress of children ranging in age from three to five years. This multi-country project was managed by ARNEC with support from UNICEF East Asia and Pacific Regional Office (UNICEF-EAPRO) and the Open Society Foundation and implemented by The University of Hong Kong (HKU) in collaboration with several participating countries in the region.

ASSESSMENT OF CHILD DEVELOPMENT

There are no globally accepted tests of early child development currently and this is usually due to concerns that Western assessment tools may not be valid in other countries due to cultural and contextual differences not only in assessment techniques, but also in the overarching constructs to be measured. Yet, culturally and contextually appropriate tests are particularly needed in developing regions because a large percentage of children are at risk for poor developmental outcomes and government investment in early child development is limited. A recent approach has been for regions to develop contextually-appropriate assessments that are relevant to priorities for child development in the region. The development and validation of the EAP-ECDS represents one such effort in the East Asia and Pacific region.

To our knowledge there was no early childhood development tool which had been originated, normed and validated with East Asian and Pacific children. Scales that have been most commonly in use were designed using Western belief systems and contexts as the basis for tool development. Hence, this is the first tool with the constructional base having originated from the East Asia and Pacific region. The framework and items of the EAP-ECDS were developed based on the goals and values for children as defined by the countries themselves. Given pan-cultural commonalities in goals for young children and our common biology and psychological needs, it is not surprising that similar competencies are valued across countries in the region.

THE SCALES

The EAP-ECDS are considered to be appropriate for children aged 3-5 in the East Asia and Pacific Region. On the basis of the results of pilot studies conducted in China, Fiji, and Mongolia in 2011, the current version of the EAP-ECDS includes seven domains (Cognitive development; Socio-emotional Development; Motor Development; Language and Emergent Literacy; Health, Hygiene, and Safety; Cultural Knowledge and Participation; and Approaches to Learning) and a total of 85 items across all domains.

IMPORTANT CONSIDERATIONS

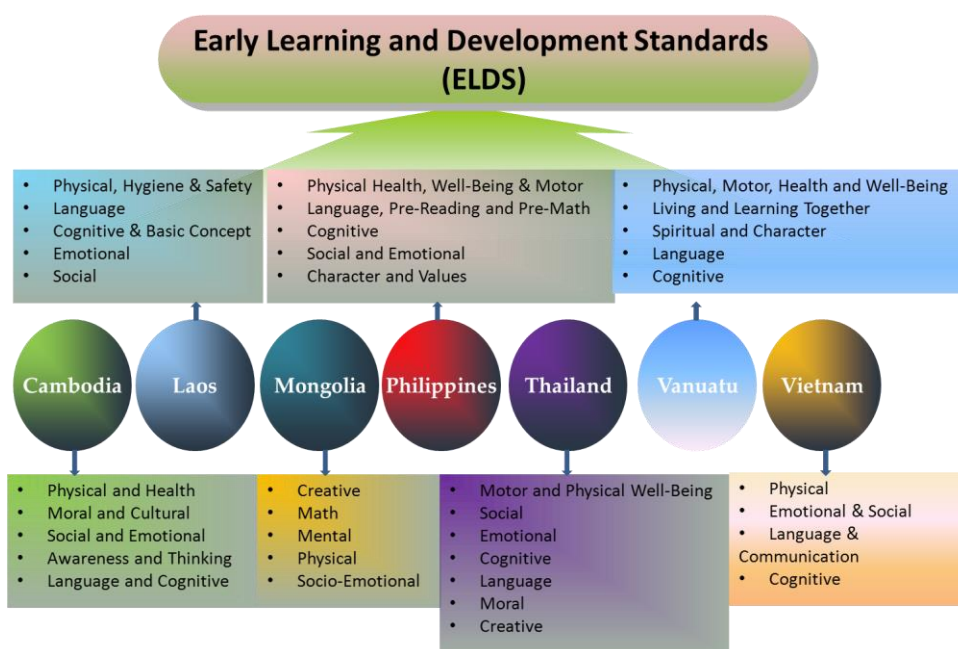
1. The EAP-ECDS were designed to be culturally appropriate in terms of both administration procedures and materials. Standardised testing procedures and materials were used but some items varied across countries to reflect country-specific characteristics.
2. The Scales can be used for multiple purposes, including (i) population level assessments; (ii) tracking progress at a national level; (ii) examining inequities within countries as a function of factors such as location or ethnicity; and (iv) making comparisons among countries, if desired.
3. The EAP-ECDS were designed to be used at a population level and no individual decisions should be made based on the results.

PHASE I

The EAP-ECDS were developed in Phase I of this project. This was done based on a comprehensive desk review of the Early Learning and Development Standards (ELDS) from seven countries, and the construction of the Scales was underpinned by these standards. Figure 1.1 shows the different domains of the ELDS of different countries in the region.

Figure 1.1

Early Learning and Developmental Standards of countries in the East Asia and Pacific regions



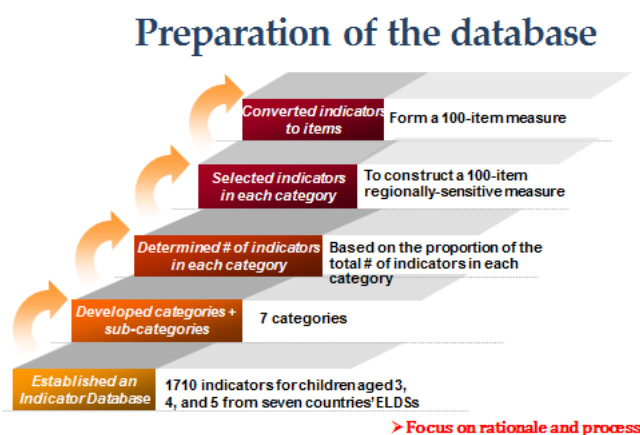
In Phase I, an attempt was made to as closely as possible reflect the importance of the area, and to identify items that would reflect indicators or benchmarks defined by the country (Rao, Engle & Sun, 2011). In this phase, 99 indicators were selected from the ELDS from

seven countries to reflect culturally relevant expectations for children ranging in age from three to six years in this region. These 99 indicators formed the seven domains in the Scales: Approaches to Learning (10 items); Cognitive Development (25 items); Cultural Knowledge and Participation (10 items); Language and Emergent Literacy (15 items); Motor Development (10 items); Health, Hygiene and safety (10 items); and Socio-emotional Development (19 items). The process of constructing the EAP-ECDS is shown in Figure 1.2

Table 1.1
Indicators used to construct the EAP-ECDS

Categories	# of sub-categories	Total # of indicators	% of total indicators in each category
Approaches to learning	12	97	5.67
Cognitive Development	14	473	27.66
Cultural Participation and Knowledge	15	215	12.57
Language and Emergent Literacy	17	284	16.61
Motor Development	16	146	8.54
Health, Hygiene and Safety	13	152	8.89
Socio-Emotional Development	15	343	20.06
Total	102	1710	100

Figure 1.2
Process of developing items for the EAP-ECDS



PHASE II

This phase involved the collection of data in three countries (China, Fiji, and Mongolia) from children aged 3-5, with approximately 120 children from each age cohort. Test items were adapted for China, Fiji, and Mongolia. Hence there were three sets of country tests with equivalent test constructs but slight differences in some items. We

conducted systematic item analyses to look at the discrimination and difficulty level of each item and appropriateness of item adaptation in three countries. On the basis of these data, and criteria for face validity and construct validity, some adaptations and changes were made. Items were omitted or amended (Rao et al., 2012). A revised protocol was developed based on the results of pilot studies.

PHASE III

The specific objectives of Phase III were to (i) further develop test materials (model of the kit, additional explanation to the manual, and additional module for assessor training); (ii) provide technical support and oversee the implementation of the test validation in six countries; and (iii) provide recommendations for next steps based on the findings.

It was necessary to further develop the test manual and administration kit based on the results of Phase II before they could be distributed to user groups. We developed a model of the kit and a module for assessor training to be used by all countries. We wanted to provide technical support for the test validation process by assisting countries at each stage of the process. To this end, we organised a regional Technical Seminar for participating countries before they conducted a pilot study. See Box 1 below. This was followed by in-country training.

Overview of Validation Workshop

EAP-ECDS Validation Workshop Overview by ARNEC Secretariat, February 2013

From February 25 to February 27, 2013, the East-Asia Pacific Early Childhood Development Scales Workshop was held at the University of Hong Kong in Hong Kong, SAR, China.

The East-Asia Pacific Early Childhood Development Scale (EAP-ECDS) is a regional, East-Asia Pacific instrument for measuring early childhood development (spanning the ages 3-5 years old) to be used for population level assessments – for tracking progress at a national level and for examining inequities within countries as a function of factors such as location or ethnicity, and if desired, for making comparisons among countries. The list of indicators that forged the EAP-ECDS scale was initially the national Early Learning and Development Standards (ELDS) for what children should know and be able to do at various ages developed in 7 countries. Since late 2010, ARNEC and a team of multi-disciplinary academics from The University of Hong Kong have been supported and funded by UNICEF and the Open Society Foundation to forge a validated assessment tool for the aforementioned purposes.

This workshop was held at The University of Hong Kong and had 40 participants, including members from 7 country teams (Cambodia, China, Mongolia, Papua New Guinea, Singapore, Timor Leste, and Vanuatu), the project research team from The University of Hong Kong, and supporting agencies such as UNICEF and Open Society Foundation, ARNEC Working Group. Other international early childhood experts also provided valuable inputs.

The agenda of the EAP-ECDS workshop was as follows. On day one, the participants gathered the importance of closely following the requirements for the administration and scoring of the EAP-ECDS as a region-specific tool, providing their feedback on country sampling plans and test administration matters. On day two, the participants were formally introduced to the EAP-ECDS test kit and received detailed orientation on the administration procedures using demonstration videos from the some participating countries, and discussed the adaptation of the test for contextual relevance. Issues pertinent to test scoring were also laid out and debated. On day three, the seven country teams implementing the EAP-ECDS stepped forward to further plan a timeline.

The three day EAP-ECDS workshop ended on a positive note, with a representative from UNICEF EAPRO reiterating the organization's commitment to the initiative as a major undertaking for research, advocacy and policy making for early childhood development both in the East-Asia Pacific region and beyond. A final, refined frame scope of the EAP-ECDS was also noted to be disseminated to participating countries in the coming days as the country teams begin or continue to work to ensure effective data collection in line with the recommended time.

PART 2. METHODOLOGY AND OVERVIEW OF DATA ANALYSES

CHAPTER 2 OVERVIEW OF METHODOLOGY

INSTRUMENTS

EAP-ECDS

The EAP-ECDS are untimed tests and the total administration time for the EAP-ECDS is normally 45 - 60 minutes. However, testing time varies depending on the age, ability, personality, temperament, mood of the child tested as well as his or her rapport with the assessor. Items are administered in a fixed order.

At least three members of each country's research team participated in a training workshop in Hong Kong in February 2013 (see page 13). In addition, two members of the research team provided in-country training on the use of the EAP-ECDS and administration of the caregiver survey. Specific guidelines were given on translation (including the use of back translation procedures), country adaptation, assessor selection and preparation. Guidance was also given on sampling and data recording and methods to prevent bias and increase the reliability of the findings.

The EAP-ECDS were administered by individuals who had experience or training in early childhood education. They did not take a strong teaching role and were able to communicate with children in a language they understood. The assessor was thoroughly familiar with the test materials and practiced administering and scoring the test under the supervision of an experienced assessor before using the test as a standardised measure.

Prior to any test administration, the assessor administered the test and rated/scored the child's performance in parallel with the supervisor. Agreement (inter-observer reliability) between assessor and the supervisor was at least 85% prior to formal testing and reliability between assessors or between the supervisor and the assessor was normally evaluated approximately every 20 test administrations.

As noted earlier, there are 85 test items in the EAP-ECDS tapping 7 important developmental domains of development of preschool children: Cognitive development; Socio-emotional Development; Motor Development; Language and Emergent Literacy; Health, Hygiene, and Safety; Cultural Knowledge and Participation; and Approaches to Learning Socio-emotional. These domains were chosen based on the Early Learning and Developmental Standards (ELDS) of countries in the region (See Figure 1.1) and the research literature on school readiness (see Table 2.1). For example, the domain of "approaches to learning" was only tangentially included in the ELDS, but it has been shown to be powerfully associated with children's learning. Table 2.2 shows the number of items in each of the domains of the EAP-ECDS. As noted in Chapter 1, the proportion and number of items in each domain were determined by the relative frequencies of similar indicators in the ELDS of the seven countries mentioned. The rationale for basing the number and frequency of items in the Scales on those in the ELDS is the assumption that the frequency of an item reflects its perceived relative importance.

Table 2.1
Dimensions of School Readiness

World Bank (2009)	National Research Council (2008)	East-Asia Pacific Early Child Development Scales (2011)
	Cognitive skills including mathematics	Cognitive Development
Executive Function	Approaches to Learning	Approaches to Learning
Language skills	Language (and emergent literacy)	Language (and emergent literacy)
Motor skills	Physical well-being and motor development	Motor development
Social/Emotional	Socio-emotional development	Socio-emotional development
		Cultural knowledge and participation
		Health, hygiene and safety

Table 2.2
Domains and Number of Items in Each Domain of the EAP-ECDS

Subtest	# of Items
Approaches to Learning	7
Cognitive Development	21
Cultural Knowledge and Participation	10
Language and Emergent Literacy	16
Motor Development	7
Health, Hygiene, and Safety	9
Socio-emotional Development	15
Total	85

PARENT INTERVIEW PROTOCOL

Items for the parent interview schedule were developed by the research team. Items were adapted from those used in earlier studies conducted by the research team and many were adapted from the MICS. The protocol had four sections. Section A included questions to collect standard demographic information and information about the target child; Section B focused on family background; Section C dealt with support for the target child's early learning and development; and the last section, Section D, included questions about the target child's health and habits.

SAMPLING

From June to December 2013, EAP-ECDS assessments were carried out in six countries. Representative samples including both boys and girls, residing in urban and rural settings were included and the number of children assessed in each country ranged from 900 to 1803. Moreover, the samples in most countries included children who attended preschool programmes and those who did not. Table 2.3 summarises the sample information from each of the six countries. Sampling strategies in some countries were determined in conjunction with the National Statistics department and the samples in all countries were stratified by child's Age, Gender and Urbanicity.

Table 2.3
Sample information in the six countries

Country	Age	Rural			Urban			Urbanicity Missing			Total
		Girls	Boys	Gender Missing	Girls	Boys	Gender Missing	Girls	Boys	Gender Missing	
Cambodia (non-ethnic minority)	3Y	88	85	0	110	104	0	0	0	0	387
	4Y	89	89	0	105	107	0	0	0	0	390
	5Y	88	92	0	106	106	0	0	0	0	392
	Age missing	0	0	0	0	0	0	0	0	0	0
	Total	265	266	0	321	317	0	0	0	0	1169
Cambodia (ethnic minority)	3Y	46	53	0	0	0	0	0	0	0	99
	4Y	49	52	0	0	0	0	0	0	0	101
	5Y	46	50	0	0	0	0	0	0	0	96
	Age missing	0	0	0	0	0	0	0	0	0	0
	Total	141	155	0	0	0	0	0	0	0	296
Cambodia (ethnicity missing)	3Y	3	7	0	2	2	0	0	0	0	14
	4Y	3	4	0	2	1	0	0	0	0	10
	5Y	5	3	0	0	3	0	0	0	0	11
	Age missing	0	0	0	0	0	0	0	0	0	0
	Total	11	14	0	4	6	0	0	0	0	35
China	2Y	1	0	0	0	3	0	0	0	0	4
	3Y	60	59	0	214	188	0	25	34	0	580
	4Y	51	58	0	214	197	0	35	34	0	589
	5Y	67	47	0	199	238	0	34	30	0	615
	6Y	1	1	0	5	5	0	0	0	0	12
	Age missing	0	0	0	1	0	0	1	1	0	3
	Total	180	165	0	633	631	0	95	99	0	1803
Mongolia	3Y	103	102	0	104	105	0	0	0	0	414
	4Y	104	105	0	104	105	0	0	0	0	418
	5Y	104	104	0	105	102	0	0	0	0	415
	6Y	0	0	0	0	1	0	0	0	0	1
	Age missing	0	0	0	0	0	0	0	0	0	0
	Total	311	311	0	313	313	0	0	0	0	1248
Papua New Guinea	3Y	173	170	0	99	95	0	8	6	0	551
	4Y	181	188	0	114	79	0	6	8	0	576
	5Y	226	213	0	98	108	0	4	19	0	668
	Age missing	3	2	0	0	0	0	0	0	0	5
	Total	583	573	0	311	282	0	18	33	0	1800
Timor-Leste	3Y	96	97	0	98	108	0	0	0	0	399
	4Y	100	100	0	101	94	0	0	0	0	395
	5Y	101	96	0	99	98	0	0	0	0	394
	Age missing	0	0	0	0	0	0	0	0	0	0
	Total	297	293	0	298	300	0	0	0	0	1188
Vanuatu	2Y	2	0	0	0	2	0	0	0	0	4
	3Y	69	93	0	6	8	0	3	13	0	192
	4Y	95	102	0	21	12	0	14	12	0	256
	5Y	127	127	0	17	17	0	26	24	0	338
	6Y	13	14	0	5	4	0	0	2	0	38
	7Y	7	5	0	0	1	0	0	1	0	14
	8Y	2	1	0	0	1	0	0	0	0	4
	Age missing	23	22	0	3	5	0	1	0	0	54
	Total	338	364	0	52	50	0	44	52	0	900
Total		2126	2141	0	1932	1899	0	157	184	0	8439

Cells highlighted refer to data included in scale validation.

A total of 8439 children were tested.

The scale validation was based on data from 7634 children (1922 rural girls, 1927 rural boys, 1914 urban girls, and 1871 urban boys).

CHAPTER 3 OVERVIEW OF DATA ANALYSES

RELIABILITY AND VALIDITY

A series of descriptive analyses was first performed to ensure that the Scales were valid and reliable. Validity generally refers to whether an instrument can measure what it is designed to measure. In this case, validity (specifically content validity) was achieved through expert review of each item. Team members from The University of Hong Kong and country delegates who participated in the 2011 workshop reviewed the draft items. Reliability refers to the consistency of measurements. Here, reliability was examined through the Cronbach's alpha, which reflects the intercorrelations among items.

ITEM ANALYSIS

In addition to validity and reliability, given that the scales have not been uniquely adapted in each country, it was critical to ensure that the items adaption and the test content were appropriate. Specifically, item analysis was conducted to verify that items included could appropriately reflect and differentiate the ability of respondents. Moreover, differential item function analysis was performed to ensure that there is no systematic bias in the design or administration of the test which affect the scores of children across the countries.

With regard to item analysis, the appropriateness of items was assessed based on item discrimination and item facility. Item discrimination refers to the capacity of an item to differentiate the ability or traits of respondents. Item facility (sometimes called item difficulty) refers to difficulty level of an item. An ideal item should have good discriminating power with slightly above moderate difficulty level. An item that is either too easy or too difficult often will not be effective for distinguishing between respondents with different levels of competency. Item analysis was performed separately on items in each of the seven domains. In particular, a generalised partial credit model was used. A generalized partial credit model can be considered as an extension of the two-parameter logistic model to the polytomous case. The probability of scoring for each category (j) of response for item (i) is estimated according to the following model

$$P_{ij}(\theta) = \frac{e^{\sum_{k=0}^j a_i(\theta - b_{ik})}}{\sum_{h=0}^{m_i-1} e^{\sum_{k=0}^h a_i(\theta - b_{ik})}}$$

Where θ refers to the latent ability score, m_i is the total number of scoring categories. Of specific interest are the parameters a_j and b_{ij} , which represent item discrimination and difficulty. Based on the results, item characteristic curves, item information curves and test information function were generated. This set of graphs offer insight into the adequacy of items in testing the broad spectrum of ability level.

COMPARISONS ACROSS DIFFERENT DOMAINS AND GROUPS

After the assessment of the validity and reliability of the test, we calculated the score for each domain. A Multivariate Analysis of Variance (MANOVA) was performed to examine whether performance differs across age, between sexes and between urban and rural settings.

EXAMINATION OF THE IMPACT OF PRE-SCHOOL ATTENDANCE ON CHILDREN DEVELOPMENT

Furthermore, systematic analysis was carried out to identify the impact of pre-school attendance. In particular, a multilevel model was applied to evaluate the association between pre-school attendance and overall performance in EAP-ECDS, controlling for possible confounding variables. The specific multi-level linear model is as follows:

$$\text{Scores} = \beta_0 + \beta_1 I_{pre-school} + \beta_2 Asset + \beta_3 Age + \beta_4 Edu_{mother} + \beta_5 Sex + \alpha_{province} + \gamma_{district}$$

where the dependent variable of interest is the total score from assessment (combined across all sections), the independent variables include a dummy variable indicating pre-school attendance ($I_{pre-school}$), household asset ($Asset$), mother's education (Edu_{mother}), child's sex (Sex) and child's age (Age).

CONSISTENCY BETWEEN CHILDREN'S PERFORMANCE AND PARENTS' ASSESSMENT

Finally, a correlational analysis was performed to assess the consistency between children's performance and parents' assessment of children's development. The purpose of this analysis is to examine the validity of parents' questionnaire as a means to measure children's development.

PART 3. COUNTRY CHAPTERS

CHAPTER 4 CAMBODIA



Figure 4.1

Map of Cambodia

Source: Central Intelligence Agency. (2014). The World Fact Book.

<https://www.cia.gov/library/publications/the-world-factbook/geos/cb.html>

GENERAL INFORMATION

Located in Southeast Asia, Cambodia borders Laos, Vietnam, Thailand, and the Gulf of Thailand. It has 20 provinces and 4 municipalities and a population of approximately 15.2 million people. The largest ethnic group, the Khmer, constitutes about 90% of the total population. More than half of the population is below 25 years, and children below five years account for 11.3% of the population (National Institute of Statistics, Directorate General for Health, and ICF Macro, 2011). Despite rapid economic growth driven by garments, construction, agriculture, and tourism in recent years, Cambodia remains one of the poorest countries in Asia. It has the lowest gross domestic product (GDP) per capita adjusted for purchasing power parity (PPP) among the six countries (US\$2,400) in this study. Approximately 4 million people live on less than US\$1.25 per day (Central Intelligence Agency, 2013). Poverty has led many Cambodian children to face a number of challenges. The infant and under-5 mortality rates are 53 and 69, respectively. About 40% of children under-5 suffer from moderate or severe stunting (UNESCO, 2014).

In Cambodia, early childhood education is not compulsory. Educational expenditures constitute about 2.6% of the country's GDP (Central Intelligence Agency, 2013), but funding of early childhood education is perceived as a responsibility of each locality, except in poorer areas where it is accepted that "public funding of high-quality, community programmes of integrated childcare will be necessary for some time to come" (Royal Government of Cambodia, 2003, p. 29). In 2010, official educational expenditures in pre-primary education were only 2.2% of total educational expenditures. However, almost all communes and districts have one to two preschools providing educational services to children between three and five years of age. In 2007/2008, there were 1,634 public preschools, of which only about 100 were independent. The remaining schools shared facilities with primary schools or pagodas (UNESCO, 2010). In addition to public preschools, there are free community preschools, home-based parenting programmes/ mother groups aimed at providing free education for young children, especially those in rural areas where opportunities for early childhood stimulation are few (UNESCO International Bureau of Education, 2011). There are significant urban/rural disparities in availability of services. Urban areas which only comprise 15% of the preschool age population account for about 25% of total preschool enrolment (UNESCO International Bureau of Education, 2011). Poverty, poorly educated mothers and ethnic minority status keep many children in rural areas out of preschools (Rao & Pearson, 2009). Teacher deployment is also limited in remote areas (UNESCO, 2010). The numbers of girls and boys in early childhood education programmes are more or less equal. In 2011, the gross enrolment ratio was 13 (UNESCO, 2014). The UNESCO figure only reflects participation in pre-primary education of children ranging in age from three to five years and may not take into account the range of early

childhood programmes offered in the country. According to the Ministry of Education of the Royal Government of Cambodia, the gross enrolment ratio in pre-primary education in 2013-14 was 33. The latter figure takes into account enrollment in public, private, and community preschools and home-based parenting programmes/mother groups.

The Royal Government of Cambodia initiated plans to expand access for children in early childhood education and community-based preschools in 2010 (Royal Government of Cambodia, 2010), especially in remote areas. The curriculum for all early childhood programmes was revised in 2007 by the Ministry of Education, Youth and Sports to align with the Cambodian Early Learning and Development Standards (ELDS), which fall into 5 domains: Physical and Health Development; Moral and Cultural Development; Social and Emotional Development; Cognition and Reasoning; and Language Development (Rao & Pearson, 2009). In 2010, an inter-ministerial Education Childhood Care and Development (ECCD) National Policy was approved after several years of preparation (UNESCO, 2010). Further, an ECCD National Committee was formed in June 2014. This is led by the Ministry of Education but involves close collaboration with other line Ministries. Subsequently an ECCD National Action Plan 2014-2018 was finalized by the ECCD National Committee and officially launched under the auspices by Prime Minister in September 2014.

EAP-ECDS FINDINGS

SAMPLE

The EAP-ECDS were administered to 1500 children in Cambodia. The data from 1465 children (including a special case of 296 children from ethnic minority families) were included in the analyses. The ethnicity status of 35 children was missing and therefore data from them were excluded from the analyses.

In order to avoid a sampling bias given that all of these ethnic minority children were from rural areas, we did not include them in the examination of effects of Age, Gender, and Urbanicity on child development and the validation of the scales. However, we did examine the differences in early development between these ethnic minority children and their peers in rural areas in additional analyses. Therefore, in the main analysis sections on scale validation and child development, we focused on the 1169 (586 girls and 583 boys) children from the (ethnic) majority families. Caregivers were interviewed in individual sessions. The majority of the interviewees were mothers (65.9%), while 13.7% and 20.4% of the caregivers interviewed were fathers and other family members, respectively. Specific information about the validation sample can be found in Table 4.1.

Table 4.1
Sample distribution in terms of Age, Gender, and Urbanicity in Cambodia
(n = 1169)

Age	Gender		Urbanicity	
	Girls	Boys	Rural	Urban
3Y	198	189	173	214
4Y	194	196	178	212
5Y	194	198	180	212
Total	586	583	531	638

RELIABILITY AND VALIDITY

Our results indicated that items within the same domain have satisfactory reliability with alpha coefficients ranging from 0.70 to 0.94. Among the seven domains, motor development has relatively weaker internal consistency. Table 4.2 shows the Cronbach's alpha for each domain.

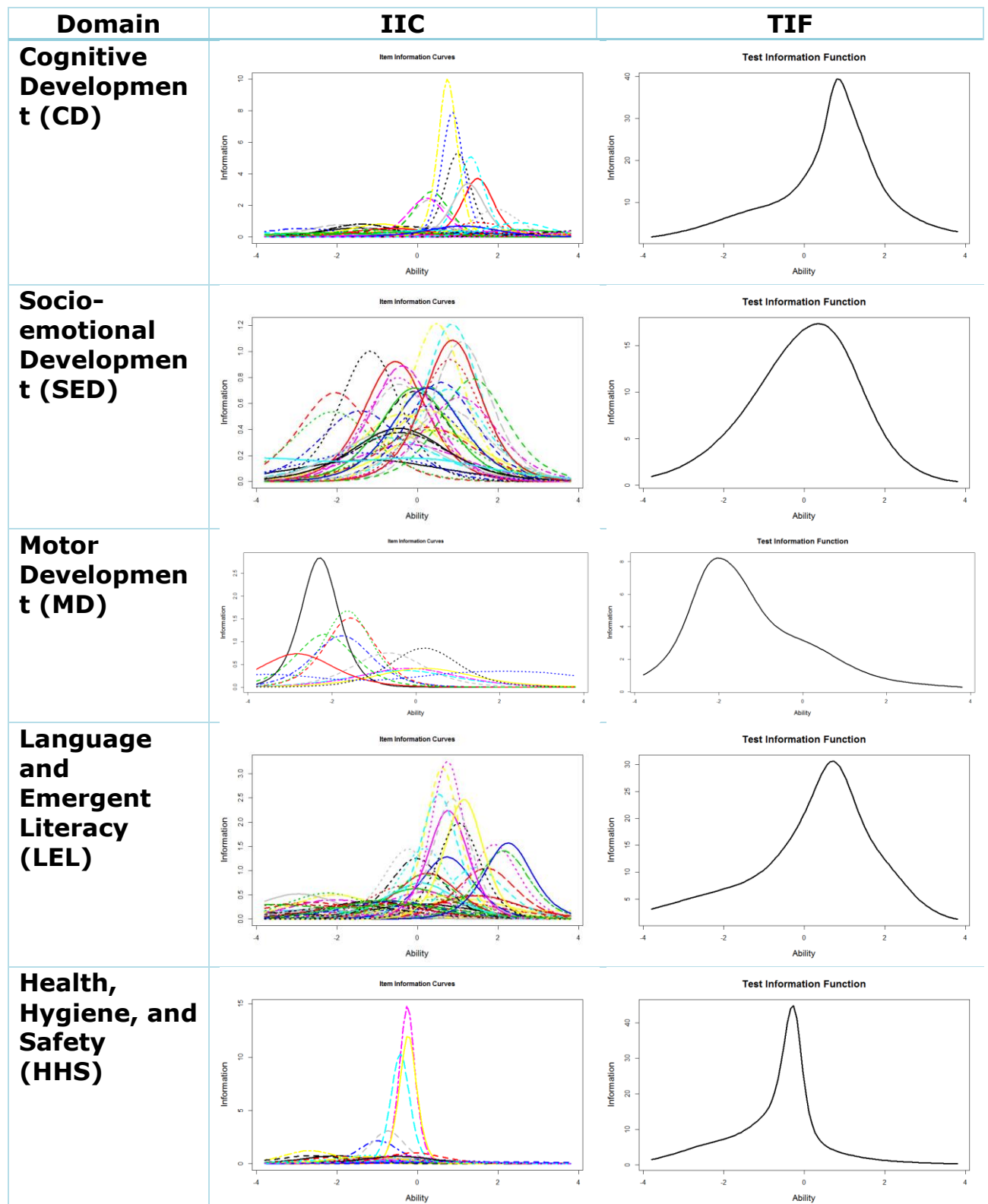
Table 4.2
Internal consistency for each domain (Cambodia Scale)

Domain	Cronbach's alpha (all items)
Cognitive development	0.94
Socio-emotional Development	0.93
Motor Development	0.70
Language and Emergent Literacy	0.94
Health, Hygiene, and Safety	0.91
Cultural Knowledge and Participation	0.91
Approaches to Learning	0.92

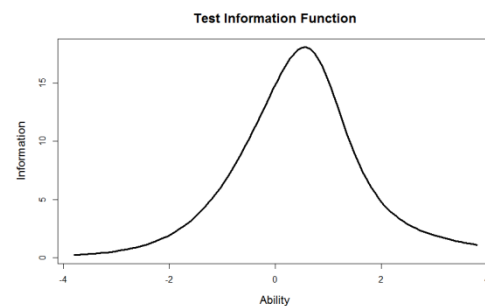
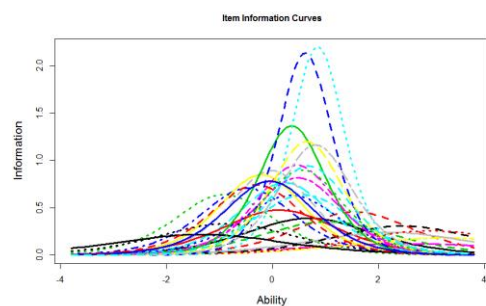
ITEM ANALYSIS

Figure 4.2 shows the item information curves (IIC) and test information function (TIF) for each domain. These graphs indicate the latent ability level at which the assessment offers the most information. It is worthy to note that information tended to concentrate on mid-high level of ability for cognitive development, socio-emotional development, language and emergent literacy, and cultural knowledge and participation. As for motor skills, most information was represented at the lower ability level. Item information curves (IIC) and test information function (TIF) indicated that, in general, test items in all domains adequately reflect a wide spectrum of ability level among children.

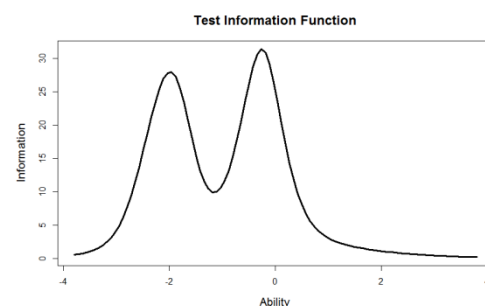
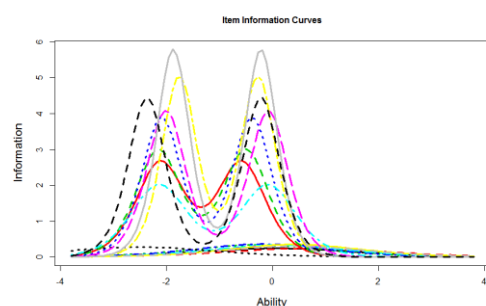
Figure 4.2
Item information curves (IIC) and test information function (TIF) for each domain (Cambodia Scale)



Cultural Knowledge and Participation (CKP)



Approaches to Learning (ATL)



EASIEST AND MOST DIFFICULT ITEMS IN EACH DOMAIN

Item analysis results further indicated items that may be too easy or difficult and potentially lack sufficient discrimination power to differentiate across ability level. For example, in the Cognitive Development domain, the item that asked children to sit on the chair (item 9.2) appeared to be too easy. On the other hand, the item that required children to name 7 to 8 shapes (item 21.3) was the most difficult. Few children, even those with relatively high overall ability, were able to provide the correct response. As for the Socio-emotional Development domain, the easiest item was "Please tell me your mummy's name" (item 23.1). The most difficult item was to provide a second reason for queuing up (item 34.6). With respect to Motor Development, the easiest item was to keep balance when walking forward (item 43.1). The most difficult item was to hit the target using a ball on three out of three attempts (item 40). As for Language and Emergent Literacy, the easiest item was to orally identify the action of kicking a ball (item 46.4). The most difficult item was to write the family name in full (item 56.3). With regard to Health, Hygiene and Safety, the easiest item was to identify the eye (item 66.1) and the most difficult item was to describe the function of an elbow (item 66.6). For Cultural Knowledge and Participation, the easiest item was to identify national flag of their own country (item 77) and the most difficult item was to provide another detail of the celebration (item 74.3). For Approaches to Learning, the easiest item was showing the ability to delay gratification (item 81), and the most difficult item was to state a second skill that the child could do well (item 79.2). Detailed results can be found in Table 4.3. The easiest and hardest items from different domains from different countries are discussed in Chapter 10.

Table 4.3
Easiest and most difficult items in each domain (Cambodia Scale)

Item No.	Item Description	Passing Rate (%)
Cognitive Development		
<i>3 easiest items</i>		
9.2	Sat on the chair	96.4
2.1	Comparing quantities: 3 vs. 9	96.0
9.1	Brought the block/toy to assessor	93.0
<i>3 most difficult Items</i>		
21.3	Named at least 7 to 8 simple geometric shapes	0.3
19.3	Could read a clock: 3:30	1.2
21.2	Named at least 4-6 simple geometric shapes	4.3
Socio-emotional Development		
<i>3 easiest items</i>		
23.1	Gave mother's given and family names	91.6
23.2	Gave father's given and family names	90.8
26.1	Knew who to ask for help when cutting finger	81.4
<i>3 most difficult Items</i>		
34.6	Gave another reason for why queuing up is appropriate	16.0
34.3	Gave another reason for why it is wrong to point at parents	19.9
29.4	Gave 1 more answer on what makes the child angry	23.2
Motor Development		
<i>3 easiest items</i>		
37.1	Poured water to designated line in cup	97.9
43.1	Strung large beads	97.3
43.2	Strung small beads	96.7
<i>3 most difficult Items</i>		
40	Hit the target on three out of three attempts	6.2
41	Caught ball three times	27.9
42.2	Following instructions to fold a piece of paper (steps 4-7)	43.8
Language and Emergent Literacy		
<i>3 easiest items</i>		
46.4	Identified action of kicking a ball	96.3
44.1	Identified action of combing hair	96.2
44.2	Identified action of washing face	92.6
<i>3 most difficult Items</i>		
56.3	Wrote first or family name in full without model	3.9
56.2	Wrote about half of their name without model	5.0
52.3	Named 8 to 10 letters/characters	6.8

Health, Hygiene, and Safety		
<i>3 easiest items</i>		
66.1	Identified eyes	97.6
66.3	Identified teeth	96.2
60.1	Showed how to clean their face and hands	91.6
<i>3 most difficult Items</i>		
66.6	Described the function of an elbow	17.2
64.2	Gave an acceptable reason for not following a stranger	42.9
61	Mentioned washing hands after using the toilet	44.5
Cultural Knowledge and Participation		
<i>3 easiest items</i>		
77	Identified national flag of their own country	74.5
70.1	Named 1 item used at night for sleeping	73.9
71.1	Named 1 natural object in the sky	69.2
<i>3 most difficult Items</i>		
74.3	Provided another relevant detail of the celebration	6.9
73.2	Named one more festival	7.9
74.2	Provided 1 more relevant detail of the	9.4
Approaches to Learning		
<i>3 easiest items</i>		
81	Showed ability to delay gratification	90.2
82.1	Showed persistence in items 2-6	65.2
82.2	Showed persistence in items 80-81	64.2
<i>3 most difficult Items</i>		
79.2	Stated a second skill he/she could do well	36.6
80.5	Followed instructions about tapping a pencil (assessor taps once, child should tap twice)	36.5
80.6	Assessor tapped twice, child tapped once	40.6

COMPARISONS ACROSS DIFFERENT DOMAINS AND GROUPS

A 3 (Age) × 2 (Gender) × 2 (Urbanicity) MANOVA was performed with children's scores in each domain as dependent variables. The omnibus analysis yielded significant effects of Age, $F(14, 2302) = 67.50$, $p < .001$, $\eta_p^2 = .29$, Gender, $F(7, 1151) = 2.45$, $p < .05$, $\eta_p^2 = .02$, and Urbanicity, $F(7, 1151) = 26.24$, $p < .001$, $\eta_p^2 = .14$. Follow-up univariate tests were further conducted and results are presented by domain in Table 4.4. Post-hoc comparisons were performed using the Tukey's HSD test with p set at .05 for examinations of interaction effects. No multiple effects were detected.

Table 4.4
Age, Gender and Urbanicity differences in domain scores (Cambodia)

Domain	Age		Gender		Urbanicity		Age × Gender		Age × Urbanicity		Gender × Urbanicity	
	<i>F</i> (2, 1157)	η_p^2	<i>F</i> (1, 1157)	η_p^2	<i>F</i> (1, 1157)	η_p^2	<i>F</i> (2, 1157)	η_p^2	<i>F</i> (2, 1157)	η_p^2	<i>F</i> (1, 1157)	η_p^2
CD	372.77***	.39	0.22	.00	92.29***	.07	0.12	.00	1.74	.00	0.77	.00
SED	244.22***	.30	4.43*	.00	34.00***	.03	0.22	.00	0.50	.00	4.91*	.00
MD	218.96***	.28	2.99	.00	6.68*	.01	4.15*	.01	0.15	.00	0.20	.00
LEL	398.18***	.41	4.49*	.00	155.05***	.12	0.14	.00	7.94***	.01	0.72	.00
HHS	336.08***	.37	2.71	.00	37.90***	.03	1.92	.00	0.29	.00	0.76	.00
CKP	247.05***	.30	4.94*	.00	58.32***	.05	0.08	.00	1.42	.00	3.11	.00
ATL	177.25***	.24	1.98	.00	29.86***	.03	0.62	.00	0.18	.00	0.02	.00

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

DOMAIN 1: COGNITIVE DEVELOPMENT

As shown in Table 4.4, there were significant effects of Age and Urbanicity. Five-year-olds ($M_{adjusted} = 56.30$, $SD = 17.43$, $SE = 0.74$) did significantly better than 4-year-olds ($M_{adjusted} = 40.36$, $SD = 15.45$, $SE = 0.74$), and 4-year-olds did significantly better than 3-year-olds ($M_{adjusted} = 27.62$, $SD = 12.20$, $SE = 0.75$). The performance of urban children ($M_{adjusted} = 45.56$, $SD = 20.01$, $SE = 0.58$) was significantly better than that of rural children ($M_{adjusted} = 37.30$, $SD = 17.21$, $SE = 0.64$).

Figure 4.3
Age and Gender differences in Cognitive Development (Cambodia)

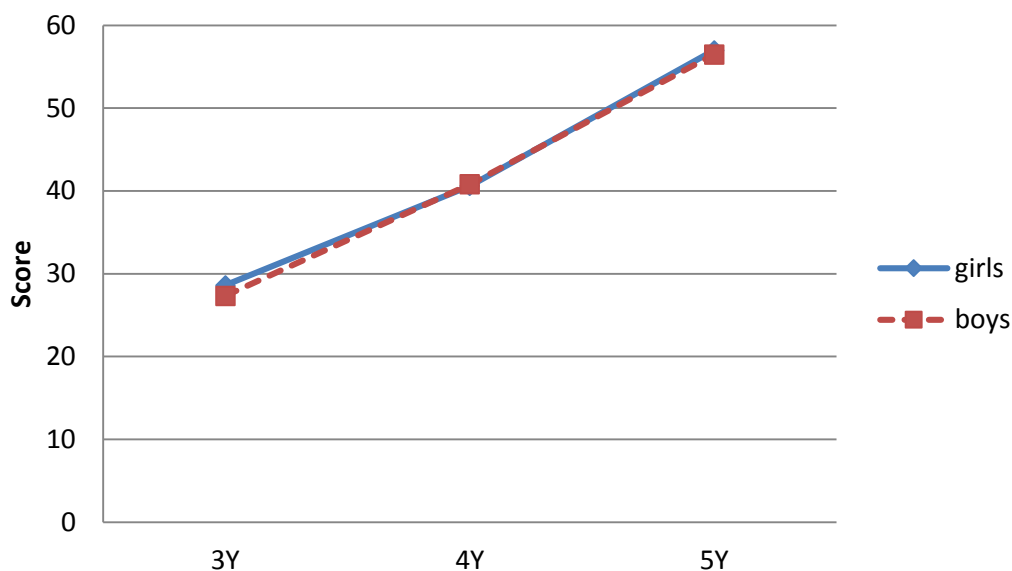


Figure 4.4
Age differences in Cognitive Development in children living in rural and urban areas (Cambodia)

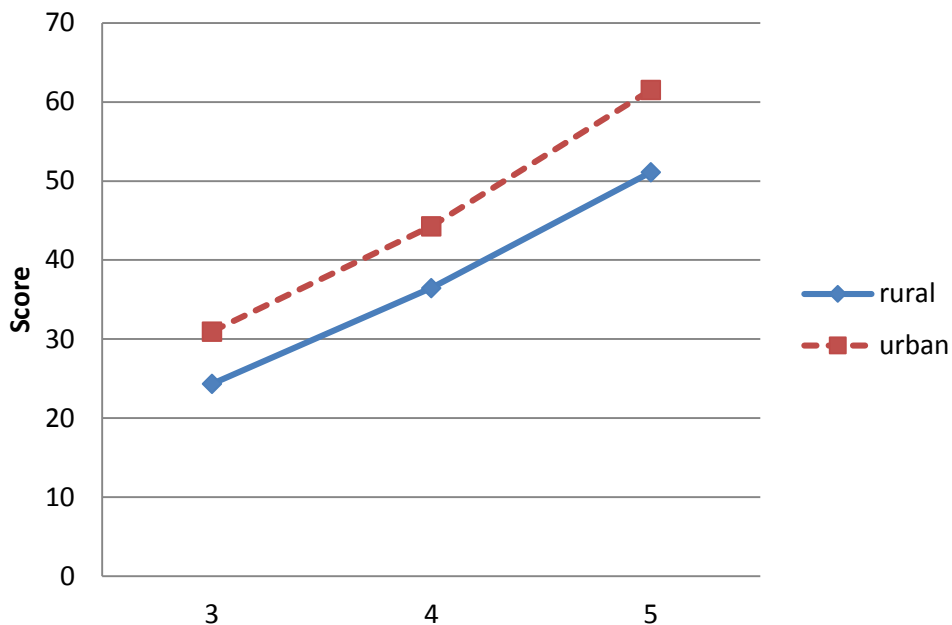
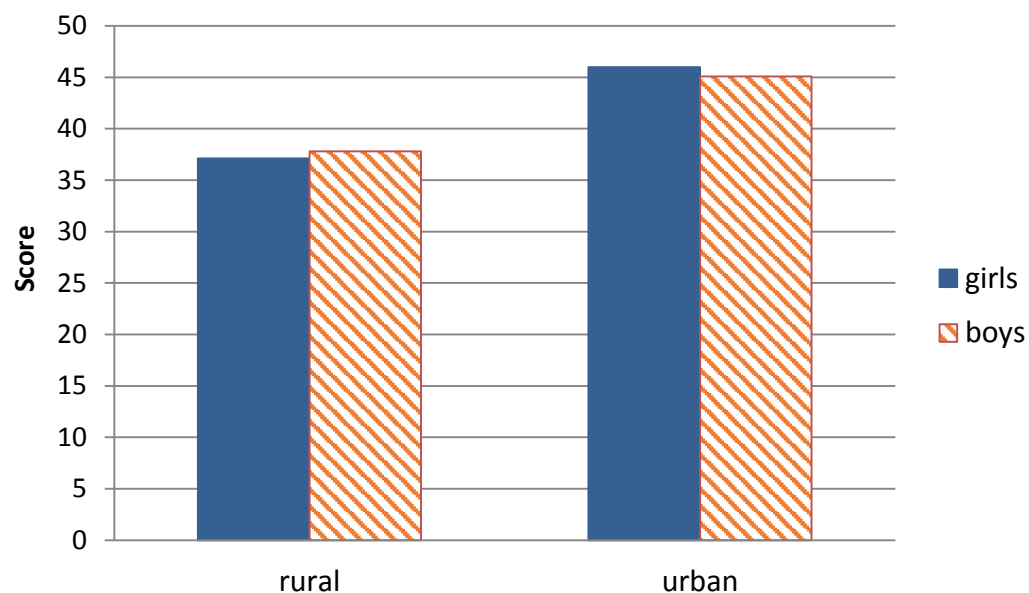


Figure 4.5
Gender differences in Cognitive Development in children living in rural and urban areas (Cambodia)



DOMAIN 2: SOCIO-EMOTIONAL DEVELOPMENT

There were significant effects of Age, Gender and Urbanicity in the domain of Socio-emotional Development (see Table 4.4). The Gender \times Urbanicity interaction was also significant. Five-year-olds ($M_{adjusted} = 66.28$, $SD = 19.52$, $SE = 0.99$) had significantly better Socio-emotional

Development than 4-year-olds ($M_{adjusted} = 52.52, SD = 21.43, SE = 0.99$), and 4-year-olds did significantly better than 3-year-olds ($M_{adjusted} = 35.40, SD = 18.21, SE = 0.99$). There were no significant gender differences for rural children, but urban girls did significantly better than the urban boys (see Figure 4.6).

Figure 4.6
Age and Gender differences in Socio-emotional Development (Cambodia)

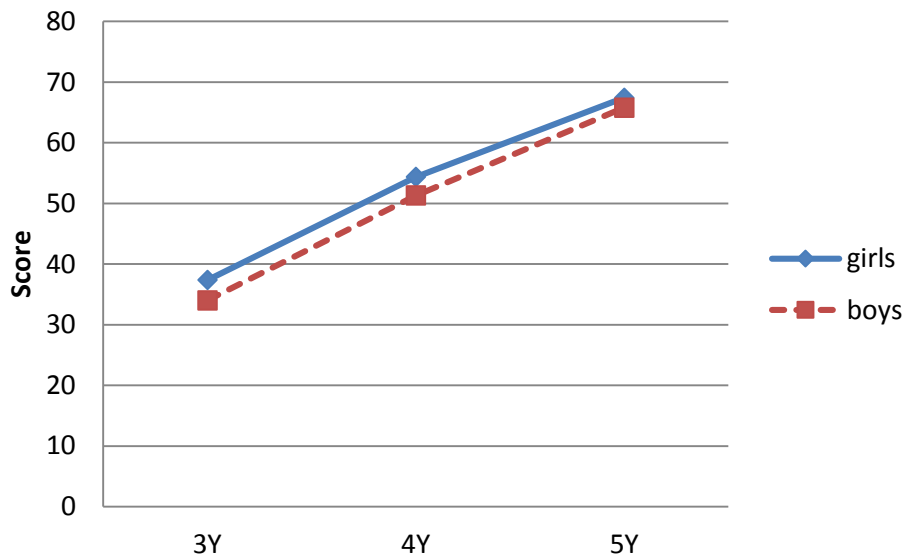


Figure 4.7
Age differences in Socio-emotional development in children living in rural and urban areas (Cambodia)

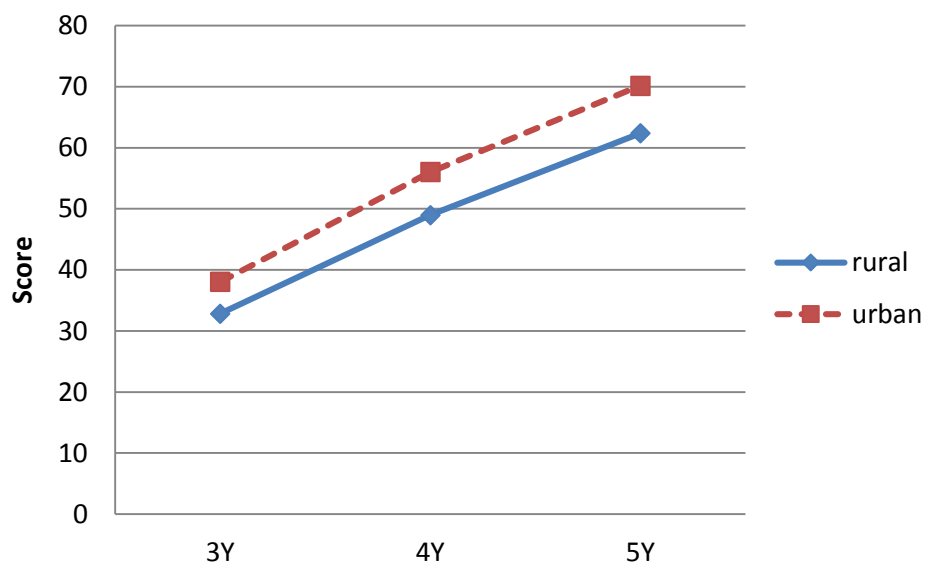
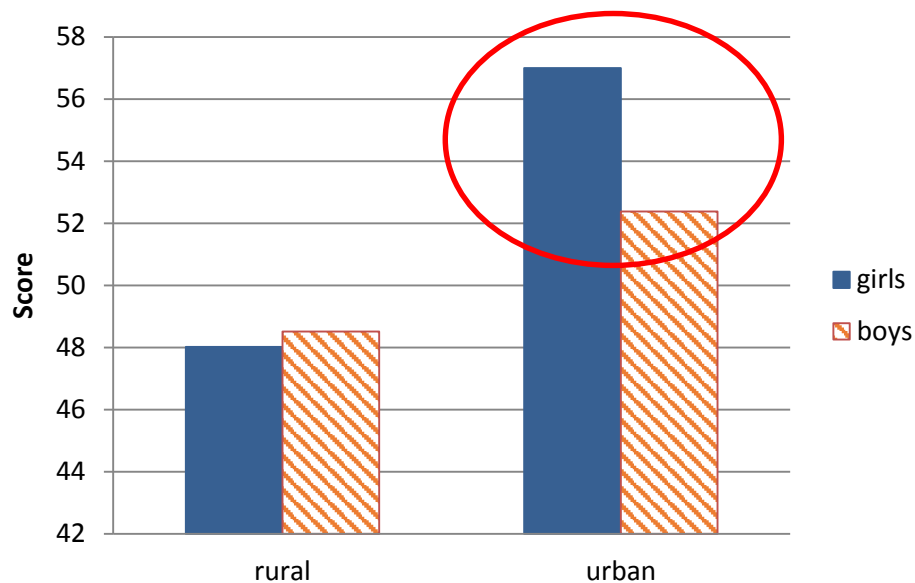


Figure 4.8
Gender differences in Socio-emotional development in children living in rural and urban areas (Cambodia)



DOMAIN 3: MOTOR DEVELOPMENT

There were significant effects of Age and Urbanicity on children's Motor Development (see Table 4.4). Further, the Age X Gender interaction was significant. No significant gender differences were found among children aged 3 and 4, but as shown in Figure 4.9, 5-year-old boys did significantly better than 5-year-old girls. Children from urban areas ($M_{adjusted} = 65.92$, $SD = 17.12$, $SE = 0.58$) did significantly better than the rural children ($M_{adjusted} = 63.71$, $SD = 17.12$, $SE = 0.63$).

Figure 4.9
Age and Gender differences in Motor Development (Cambodia)

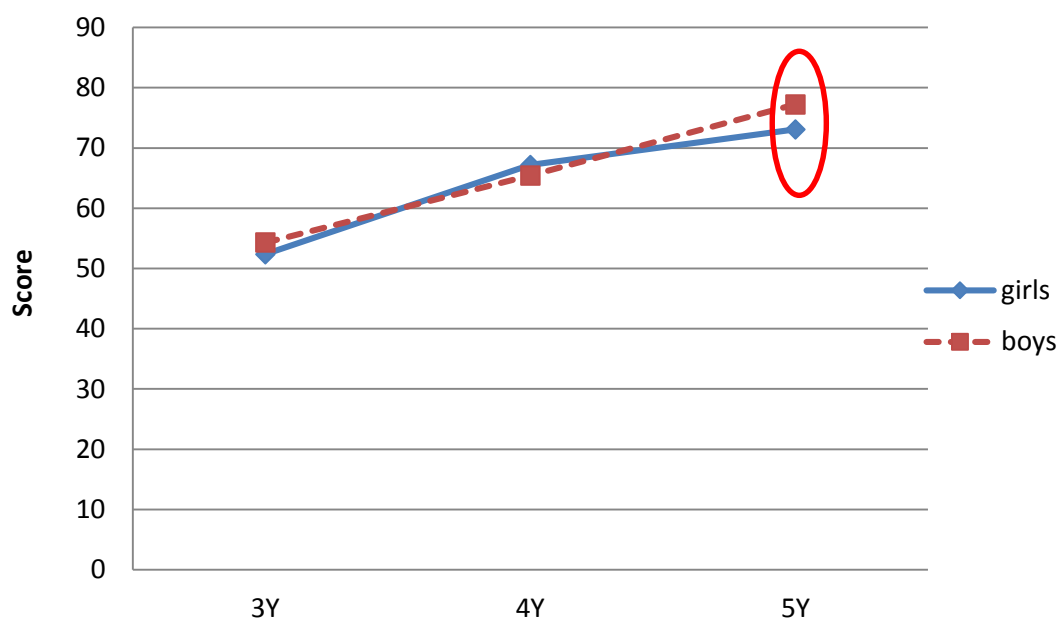


Figure 4.10

Age differences in Motor development in children living in rural and urban areas (Cambodia)

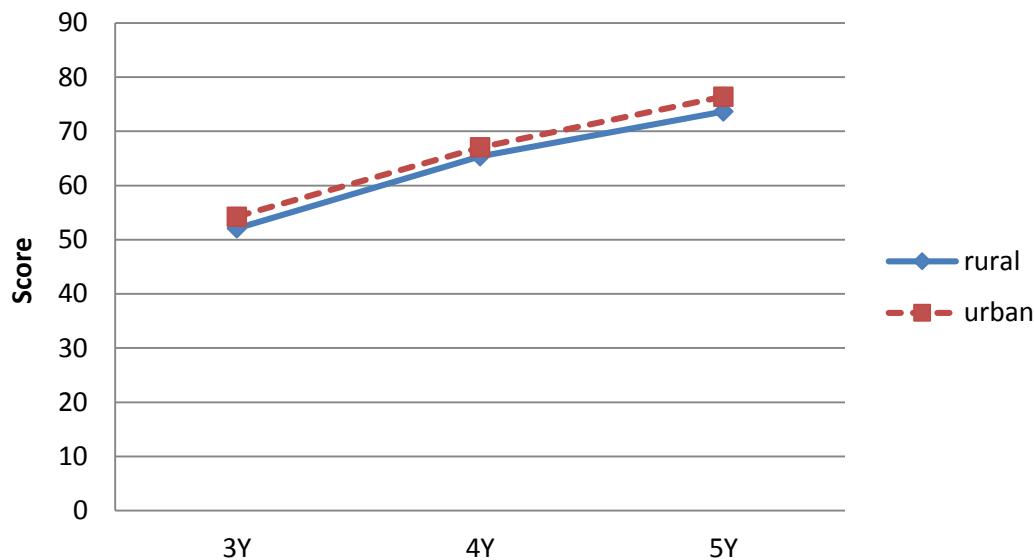
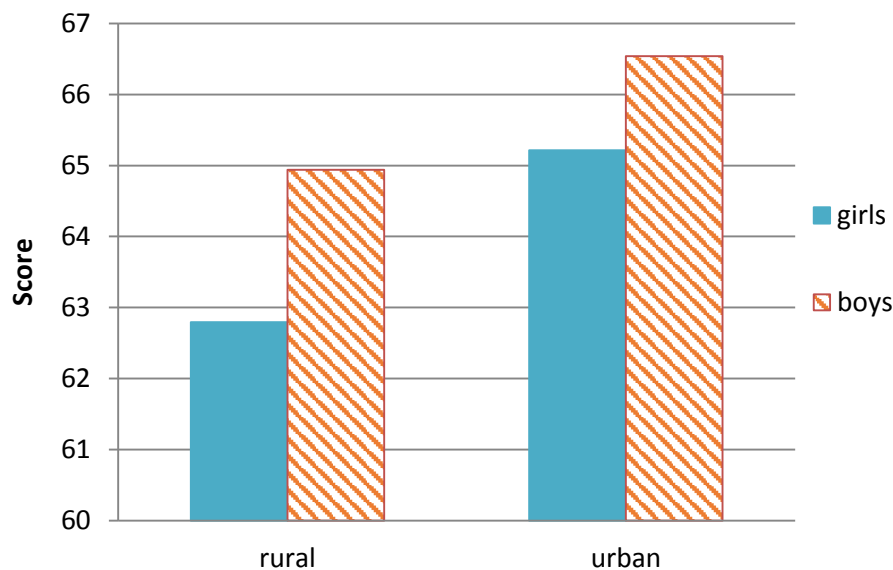


Figure 4.11

Gender differences in Motor development in children living in rural and urban areas (Cambodia)



DOMAIN 4: LANGUAGE AND EMERGENT LITERACY

There were significant effects of Age, Gender, and Urbanicity for Language and Emergent Literacy as shown in Table 4.4. The Age \times Urbanicity interaction was also significant. Girls ($M_{adjusted} = 51.52$, $SD = 20.17$, $SE = 0.60$) showed significantly better performance in Language and Emergent Literacy than boys ($M_{adjusted} = 49.73$, $SD = 18.83$, $SE = 0.60$). As shown in Figure 4.13, urban children did significantly better than the rural children across all age groups, but the differences increased as children matured ($\eta_p^2 = .06$, $.10$, and $.19$ for the 3-year-olds, 4-year-olds, and 5-year-olds, respectively).

Figure 4.12
Age and Gender differences in Language and Emergent Literacy
(Cambodia)

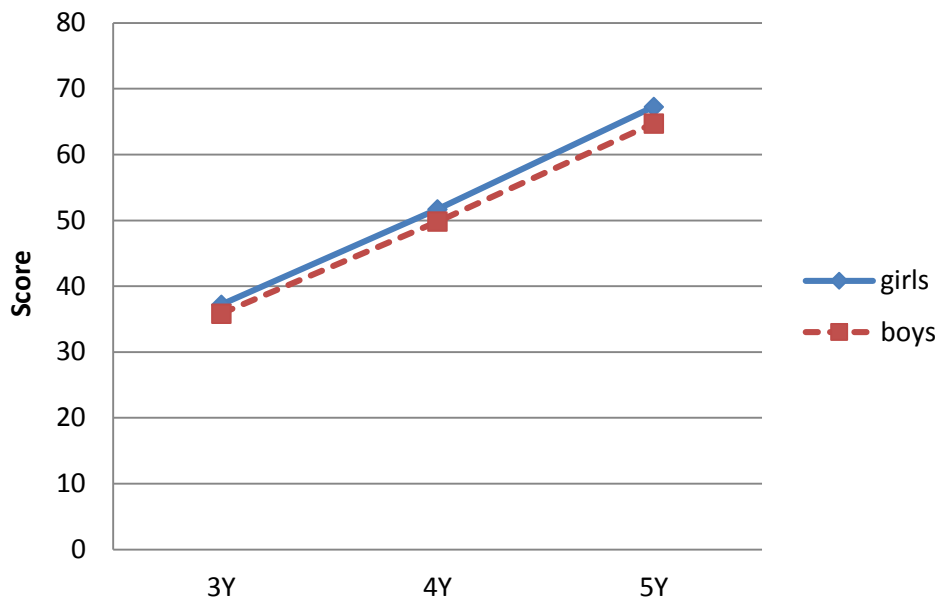


Figure 4.13
Age differences in Language and Emergent Literacy in children living in
rural and urban areas (Cambodia)

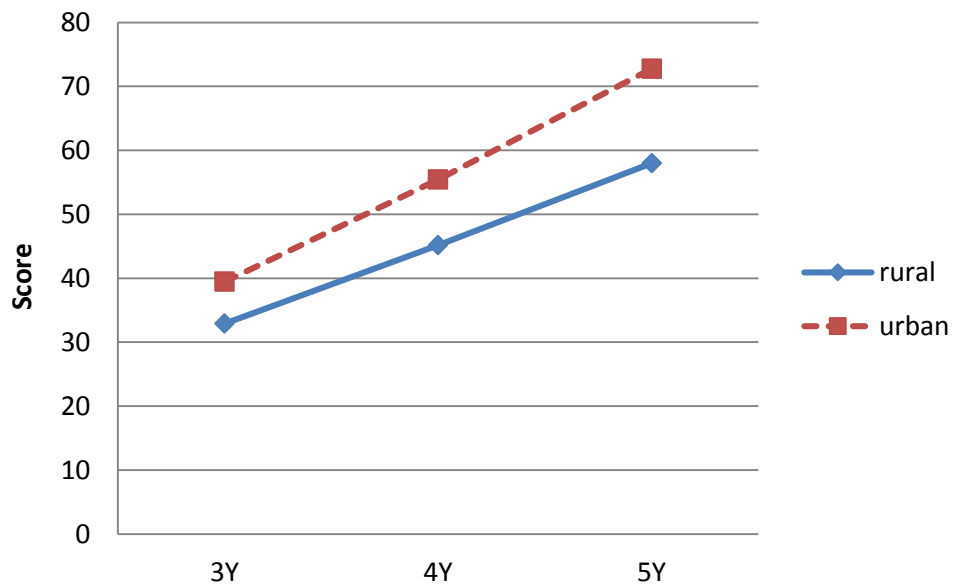
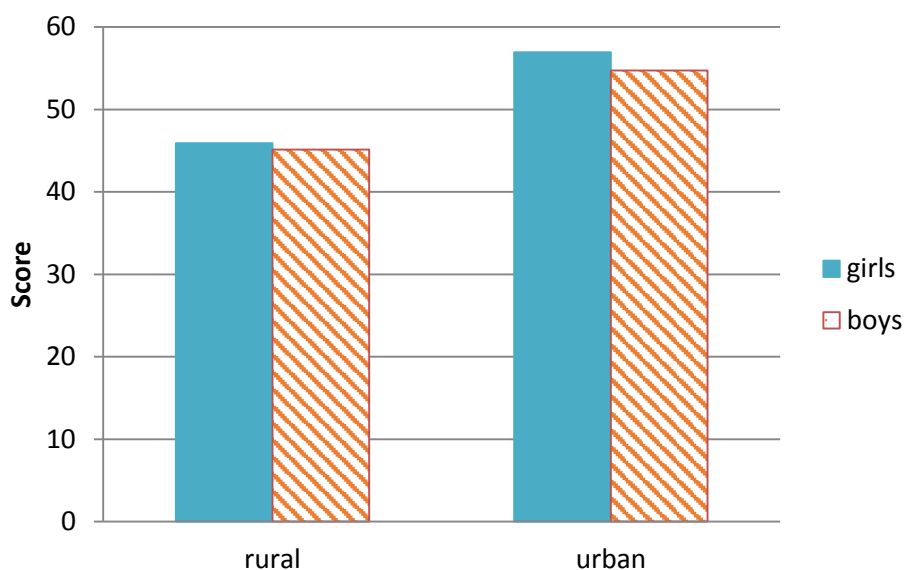


Figure 4.14
Gender differences in Language and Emergent Literacy in children living in rural and urban areas (Cambodia)



DOMAIN 5: HEALTH, HYGIENE, AND SAFETY

There were significant age and Urbanicity effects for Health, Hygiene and Safety. Five- year-olds ($M_{adjusted} = 80.67$, $SD = 14.62$, $SE = 0.91$) performed significantly better than the 4-year-olds ($M_{adjusted} = 66.00$, $SD = 19.77$, $SE = 0.91$), and the 4-year-olds performed significantly better than the 3-year-olds ($M_{adjusted} = 47.17$, $SD = 19.97$, $SE = 0.92$). Urban children ($M_{adjusted} = 67.87$, $SD = 22.52$, $SE = 0.71$) did significantly better than the rural children ($M_{adjusted} = 61.36$, $SD = 22.75$, $SE = 0.71$).

Figure 4.15
Age and Gender differences in Health, Hygiene and Safety (Cambodia)

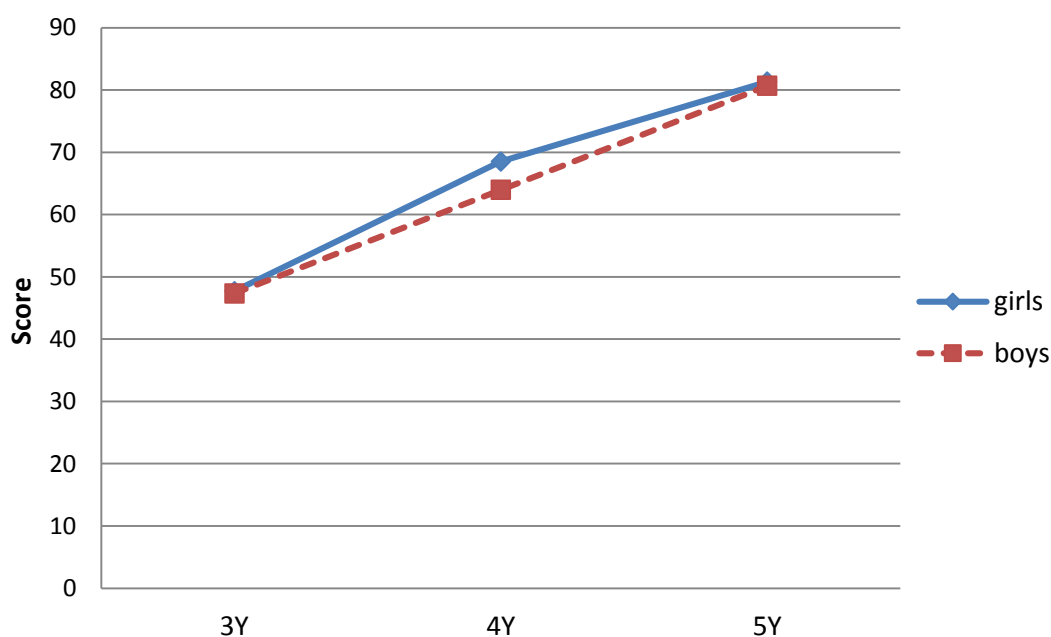


Figure 4.16

Age differences in Health, Hygiene and Safety in children living in rural and urban areas (Cambodia)

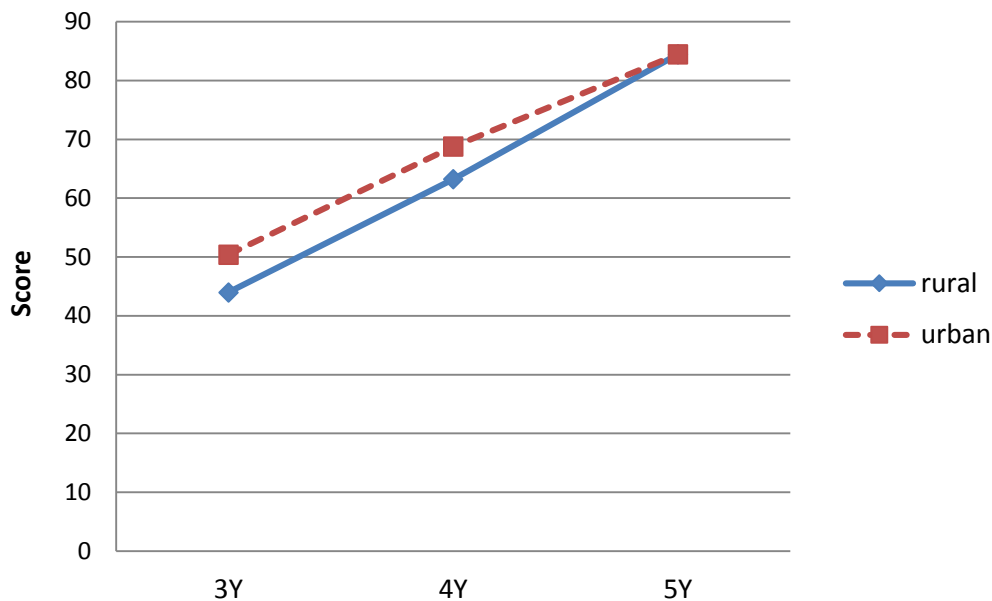
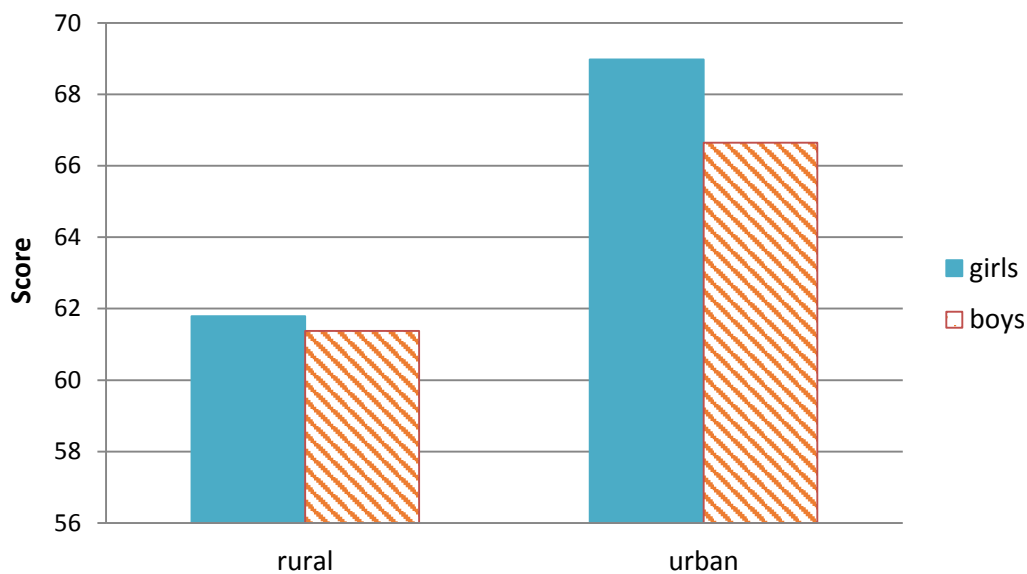


Figure 4.17

Gender differences in Health, Hygiene and Safety in children living in rural and urban areas (Cambodia)



DOMAIN 6: CULTURAL KNOWLEDGE AND PARTICIPATION

The main effects of Age, Gender, and Urbanicity were significant for Cultural Knowledge and Participation. Five-year-olds ($M_{adjusted} = 53.27$, $SD = 21.15$, $SE = 1.00$) performed significantly better than the 4-year-olds ($M_{adjusted} = 37.19$, $SD = 21.97$, $SE = 1.00$), and the 4-year-olds performed significantly better than the 3-year-olds ($M_{adjusted} = 21.77$, $SD = 17.11$, $SE = 1.01$). Girls ($M_{adjusted} = 38.70$, $SD = 24.34$, $SE = 0.82$) did

significantly better than boys ($M_{adjusted} = 36.13, SD = 23.51, SE = 0.82$). Urban children ($M_{adjusted} = 41.83, SD = 24.15, SE = 0.78$) showed higher performance than rural children ($M_{adjusted} = 32.99, SD = 22.86, SE = 0.86$).

Figure 4.18
Age and Gender differences in Cultural Knowledge and Participation
(Cambodia)

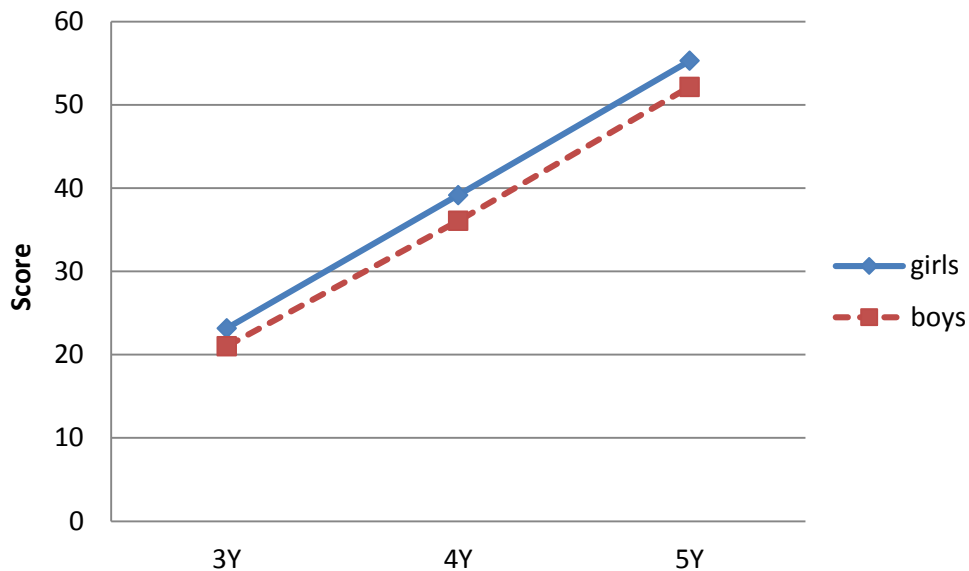


Figure 4.19
Age differences in Cultural Knowledge and Participation in children living
in rural and urban areas (Cambodia)

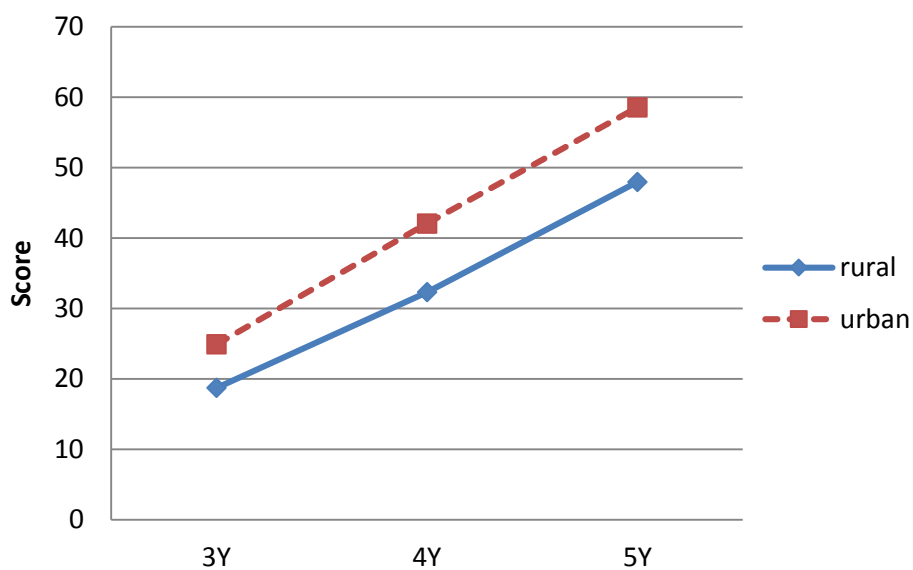
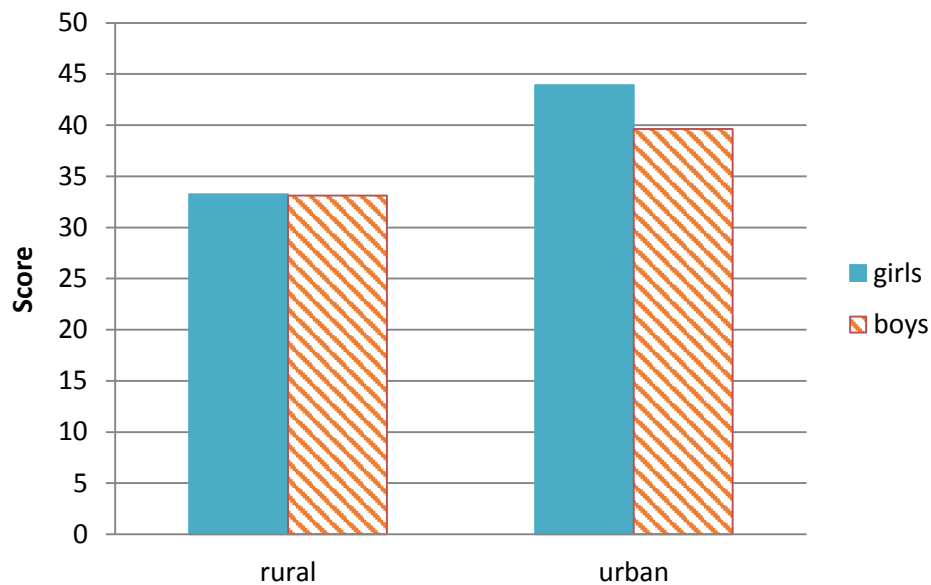


Figure 4.20
Gender differences in Cultural Knowledge and Participation in children living in rural and urban areas (Cambodia)



DOMAIN 7: APPROACHES TO LEARNING

There were significant main effects of Age and Urbanicity in Approaches to Learning. Five-year-olds ($M_{adjusted} = 80.45$, $SD = 18.65$, $SE = 1.04$) performed significantly better than 4-year-olds ($M_{adjusted} = 66.85$, $SD = 21.92$, $SE = 1.04$), and 4-year-olds performed significantly better than 3-year-olds ($M_{adjusted} = 52.61$, $SD = 21.67$, $SE = 1.05$). Urban children ($M_{adjusted} = 69.94$, $SD = 23.27$, $SE = 0.81$) showed higher performance than rural children ($M_{adjusted} = 63.34$, $SD = 23.79$, $SE = 0.81$).

Figure 4.21
Age and Gender differences in Approaches to Learning (Cambodia)

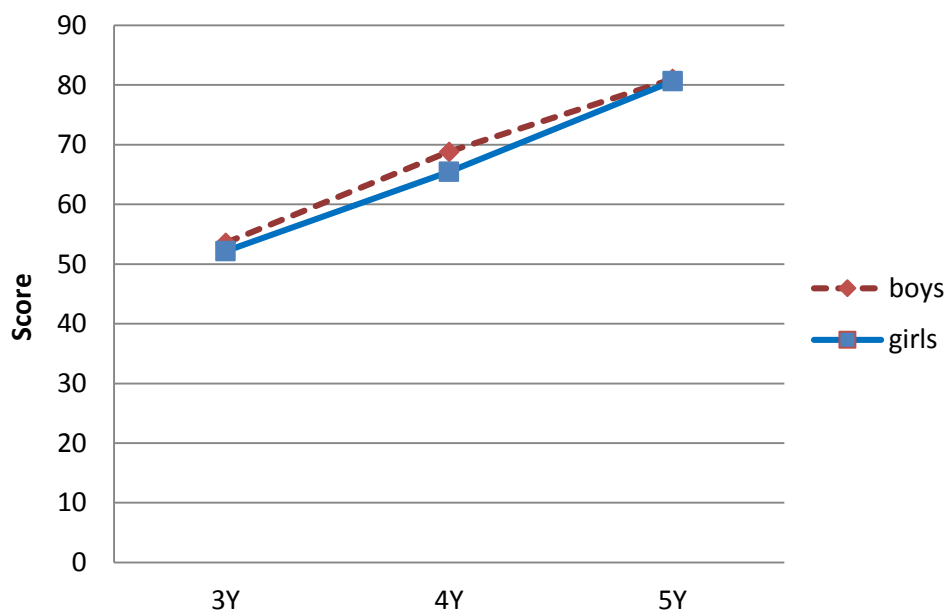


Figure 4.22
Age differences in Approaches to Learning in children living in rural and urban areas (Cambodia)

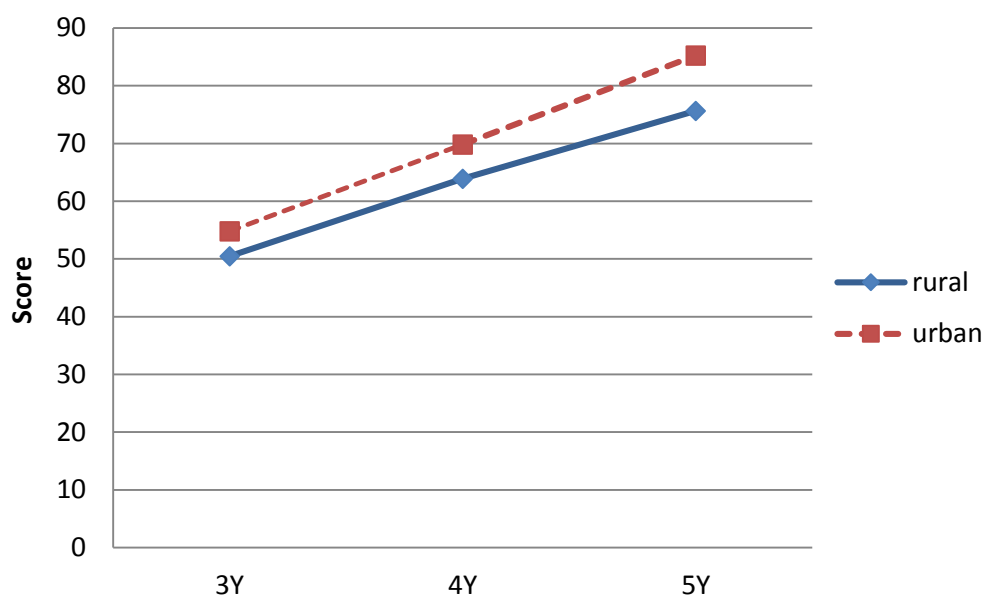
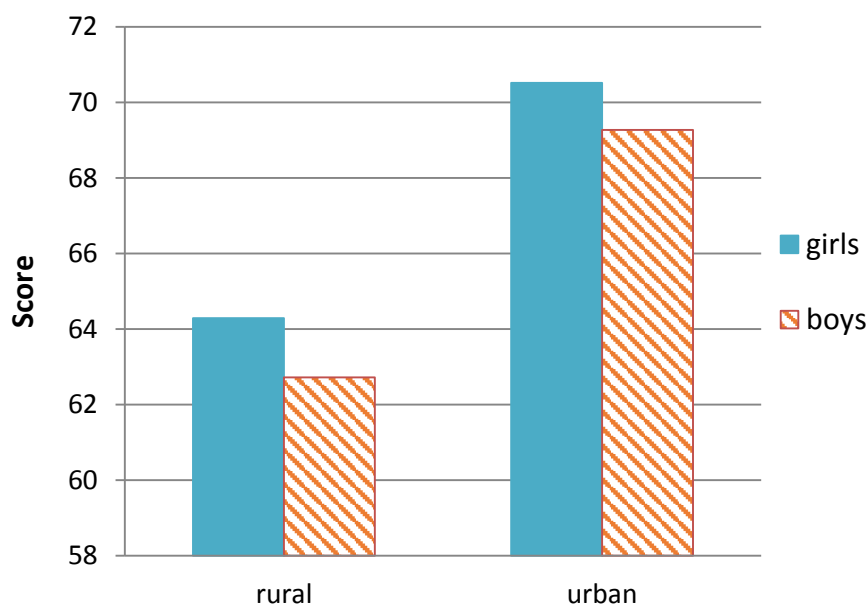


Figure 4.23
Gender differences in Approaches to Learning in children living in rural and urban areas (Cambodia)



THE DEVELOPMENT OF ETHNIC MINORITY CHILDREN

We oversampled children from ethnic minority groups in Cambodia as stakeholders wanted to gain a better understanding of the early development and learning of children from these groups. About 20% of our overall sample was from ethnic minority groups all of whom lived in

rural areas. In this section, we report on the development of these children from ethnic minority families by comparing them with children from ethnic majority families residing in rural areas. The sample distribution can be found in Table 4.5.

Table 4.5

Sample distribution in terms of Age, Gender, and ethnic minority status of children from rural Cambodia

Age	Gender		Ethnic Minority Status	
	Girls	Boys	Ethnic Minority group	Ethnic Majority group
3Y	134	138	99	173
4Y	138	141	101	178
5Y	134	142	96	180
Total	406	421	296	531

A 3 (Age) \times 2 (Gender) \times 2 (Ethnicity) MANOVA was performed with children's scores in each domain as dependent variables. The omnibus analysis yielded significant effects of Age, $F(14, 1618) = 35.79$, $p < .001$, $\eta_p^2 = .24$, and Ethnicity, $F(7, 809) = 61.91$, $p < .001$, $\eta_p^2 = .35$. Age \times Ethnicity interaction was also significant, $F(14, 1618) = 2.72$, $p < .01$, $\eta_p^2 = .02$. The results of follow-up univariate tests are presented in Table 4.6 by domain. Post-hoc comparisons were also performed using the Tukey's HSD test with p set at .05 for examinations of interaction effects. No multiple effects were detected.

Table 4.6

Univariate analyses of Age, Gender, and Urbanicity effects for scores in each domain (Cambodia)

Domain	Age		Gender		Ethnicity		Age \times Gender		Age \times Ethnicity		Gender \times Ethnicity	
	$F(2, 815)$	η_p^2	$F(1, 815)$	η_p^2	$F(1, 815)$	η_p^2	$F(2, 815)$	η_p^2	$F(2, 815)$	η_p^2	$F(1, 815)$	η_p^2
CD	191.14***	.32	0.94	.00	24.37***	.03	1.15	.00	6.09**	.02	0.36	.00
SED	102.05***	.20	0.03	.00	229.30***	.22	1.44	.00	7.22**	.02	0.07	.00
MD	145.08***	.26	0.00	.00	0.33	.00	3.87*	.01	1.92	.01	2.71	.00
LEL	158.02***	.28	0.60	.00	275.60***	.25	0.73	.00	1.67	.00	0.06	.00
HHS	152.48***	.27	0.45	.00	150.55***	.16	2.22	.01	3.73*	.01	0.00	.00
CKP	104.36***	.20	0.00	.00	120.87***	.13	0.29	.00	8.28***	.02	0.13	.00
ATL	79.61***	.16	1.46	.00	61.17***	.07	2.26	.01	.41	.00	0.00	.00

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

DOMAIN 1: COGNITIVE DEVELOPMENT

The main effects of Age, Ethnicity, and the Age \times Ethnicity interaction were significant (see Table 4.6). As shown in Figure 4.24, the rural children from ethnic majority families aged 4 and 5 performed

significantly better than their ethnic minority counterparts; but no significant ethnicity differences were found among the 3-year-old rural children.

Figure 4.24

Age differences in Cognitive Development between children from ethnic minority and ethnic majority families living in rural areas (Cambodia)

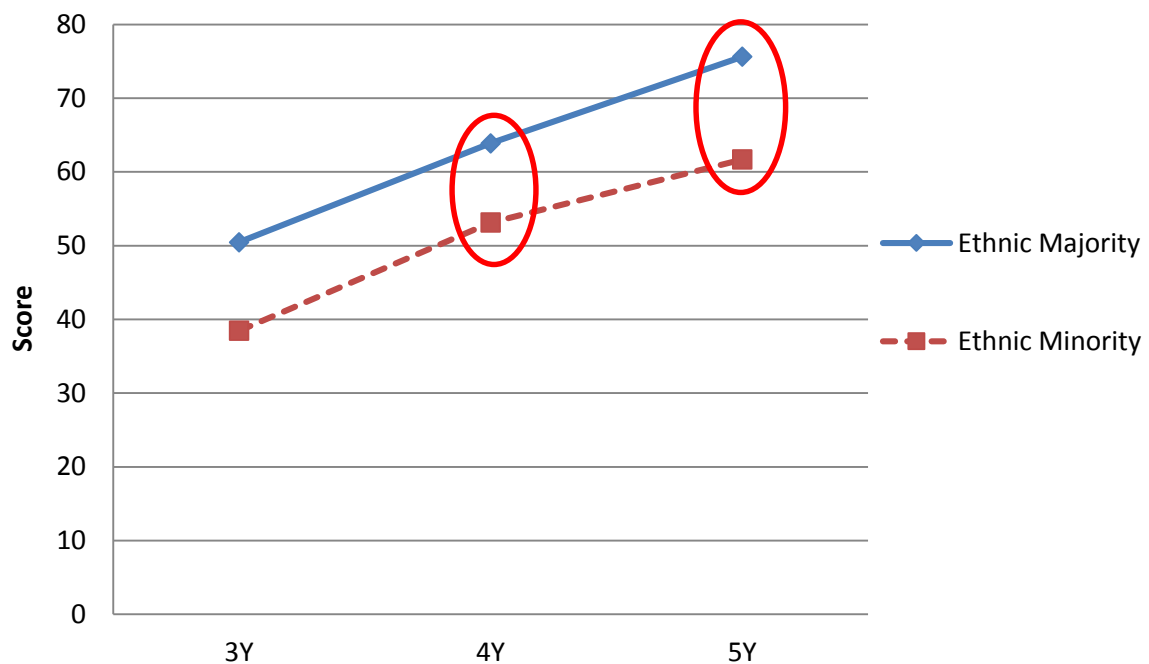
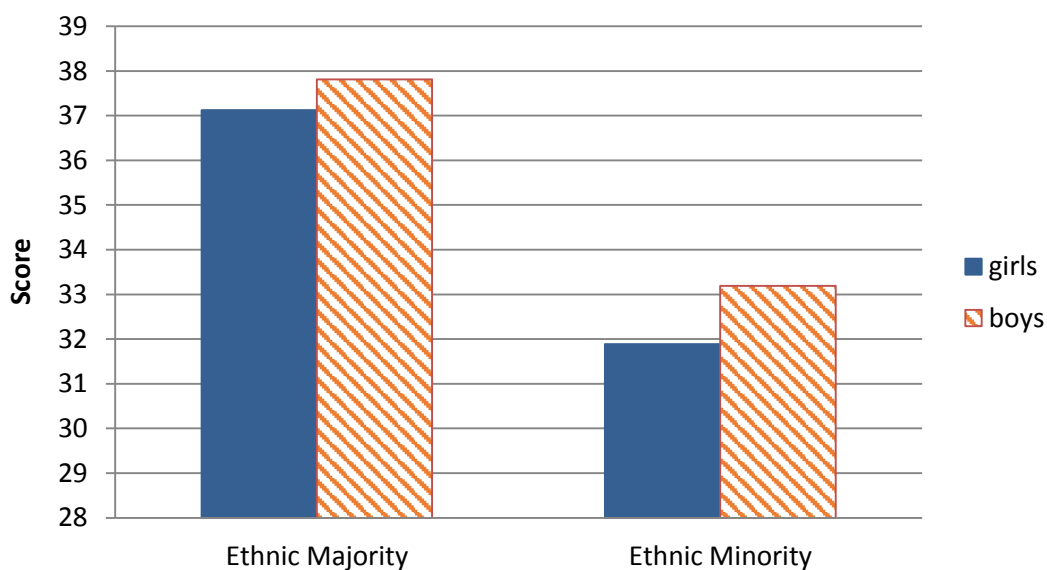


Figure 4.25

Gender differences in Cognitive Development between children from ethnic minority and ethnic majority families living in rural areas (Cambodia)



DOMAIN 2: SOCIO-EMOTIONAL DEVELOPMENT

There were significant age and ethnicity effects on Socio-emotional Development and the Age \times Ethnicity interaction was significant (see Table 4.6). The performance of children from ethnic majority families was significantly better than their ethnic minority peers across all age groups and the gaps between the two groups of children increased as children matured ($\eta_p^2 = .13, .22, \text{ and } .30$ for 3-year-olds, 4-year-olds, and 5-year-olds, respectively).

Figure 4.26

Age differences in Socio-emotional Development between children from ethnic minority and ethnic majority families living in rural areas (Cambodia)

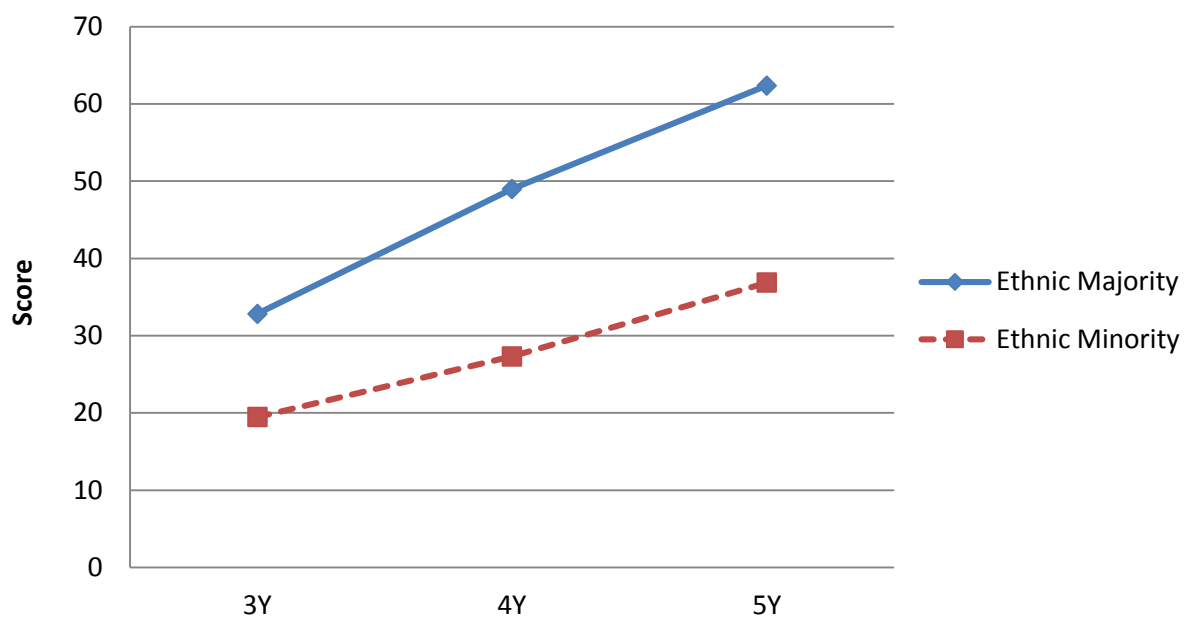
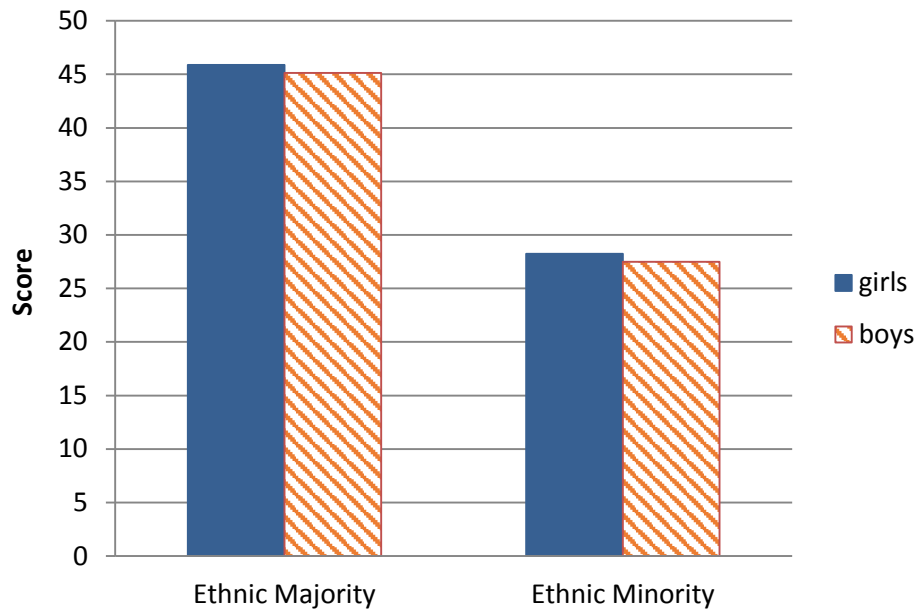


Figure 4.27
Gender differences in Socio-emotional Development between children from ethnic minority and ethnic majority families living in rural areas (Cambodia)



DOMAIN 3: MOTOR DEVELOPMENT

As shown in Table 4.6, neither the main effect of ethnicity nor the interaction effects between ethnicity and other variables were significant on children's performance on Motor Development. This indicates that the ethnic minority and non-ethnic minority rural children were at a similar level in terms of Motor Development.

Figure 4.28

Age differences in Motor Development between children from ethnic minority and ethnic majority families living in rural areas (Cambodia)

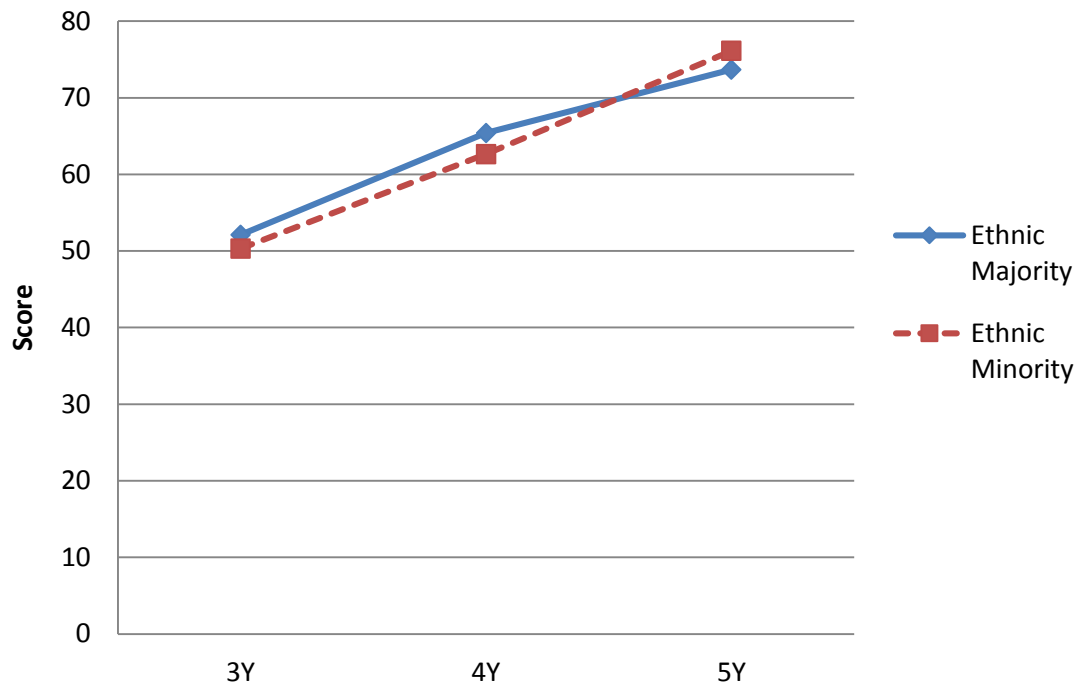
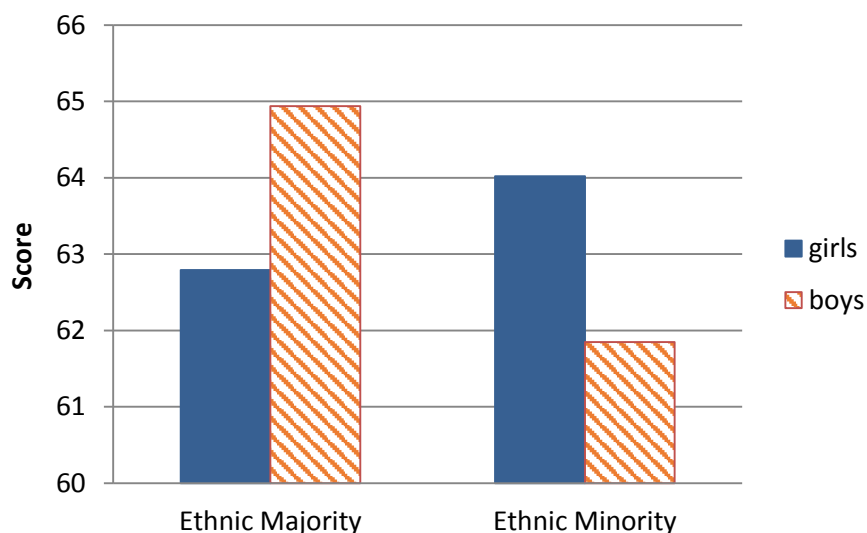


Figure 4.29

Gender differences in Motor Development between children from ethnic minority and ethnic majority families living in rural areas (Cambodia)



DOMAIN 4: LANGUAGE AND EMERGENT LITERACY

There were significant effects of Age and Ethnicity on children's Language and Emergent Literacy competence. Children from ethnic majority families ($M_{adjusted} = 45.36$, $SD = 17.38$, $SE = 0.63$) showed

significantly better performance than their peers from ethnic minority families ($M_{adjusted} = 27.96$, $SD = 17.14$, $SE = 0.84$).

Figure 4.30

Age differences in Language and Emergent Literacy between children from ethnic minority and ethnic majority families living in rural areas (Cambodia)

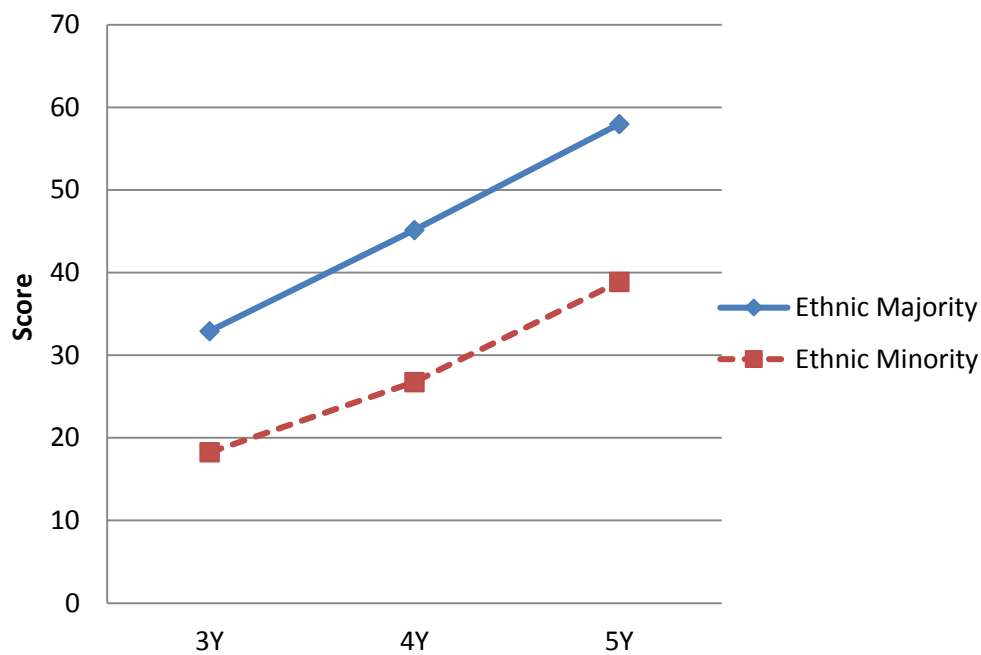
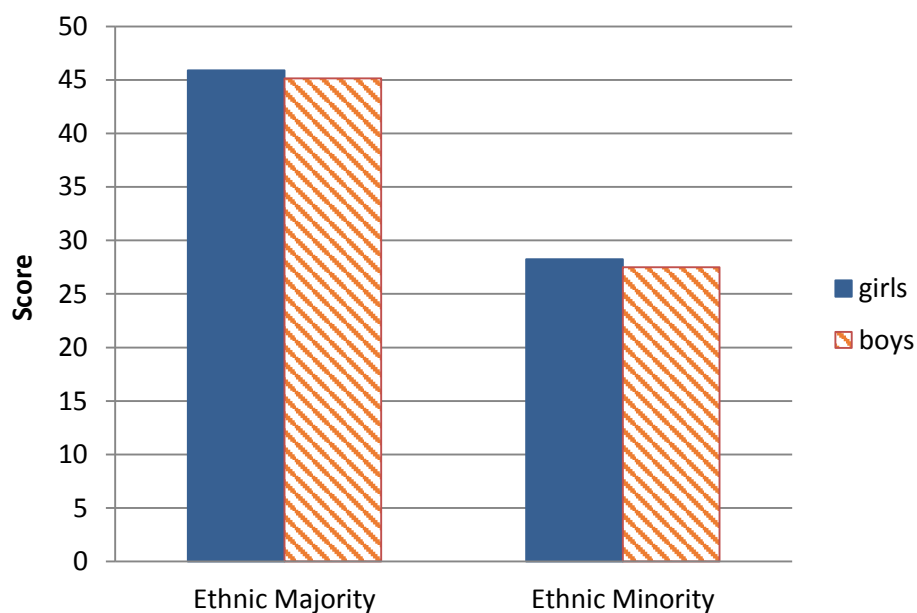


Figure 4.31

Gender differences in Language and Emergent Literacy between children from ethnic minority and ethnic majority families living in rural areas (Cambodia)



DOMAIN 5: HEALTH, HYGIENE, AND SAFETY

The main effects of Age and Ethnicity, and the Age × Ethnicity interaction were significant in Health, Hygiene, and Safety (see Table 4.6). Ethnic minority children across all age groups had a significantly lower score in Health, Hygiene, and Safety than those from the non-ethnic minority groups, and the differences became bigger with increasing age ($\eta_p^2 = .07, .17, \text{ and } .27$ for the 3-year-olds, 4-year-olds, and 5-year-olds, respectively).

Figure 4.32

Age differences in Health, Hygiene and Safety between children from ethnic minority and ethnic majority families living in rural areas Cambodia)

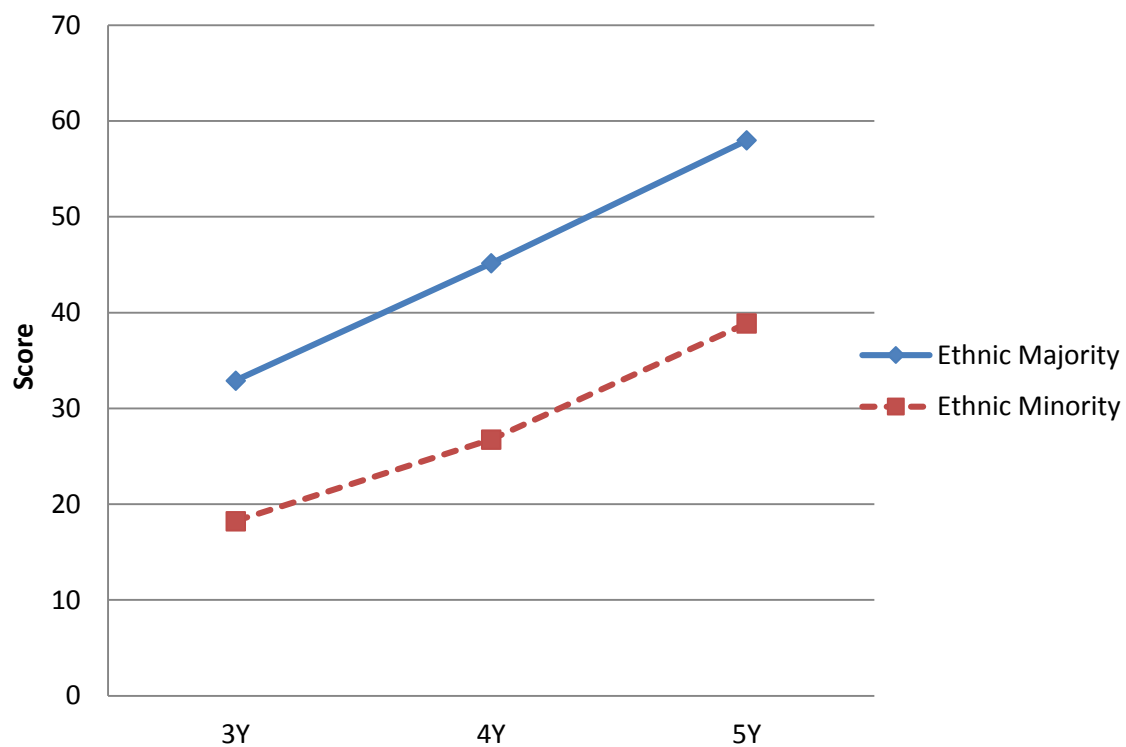
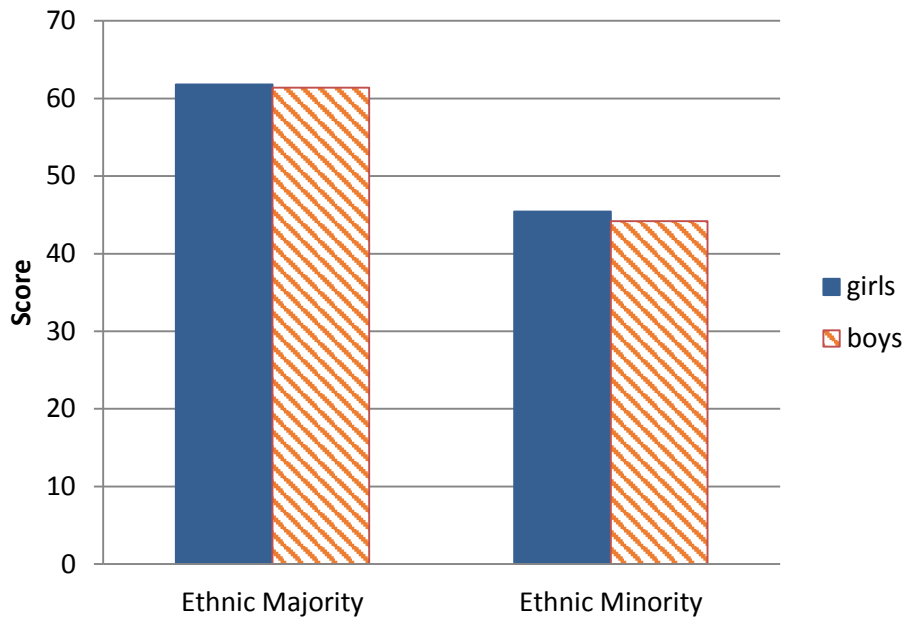


Figure 4.33
Gender differences in Health, Hygiene and Safety between children from ethnic minority and ethnic majority families living in rural areas (Cambodia)



DOMAIN 6: CULTURAL KNOWLEDGE AND PARTICIPATION

The effects of Age, Ethnicity, and Age \times Ethnicity were also significant on the performance in Cultural Knowledge and Participation. As in other domains, the performance of children from the ethnic majority group was significantly better than of children from ethnic minority groups, regardless of their ages. And the gaps between children from ethnic minority and majority groups enlarged as children matured ($\eta_p^2 = .07, .12, \text{ and } .20$ for the 3-year-olds, 4-year-olds, and 5-year-olds, respectively).

Figure 4.34
Age differences in Health, Hygiene and Safety between children from ethnic minority and ethnic majority families living in rural areas (Cambodia)

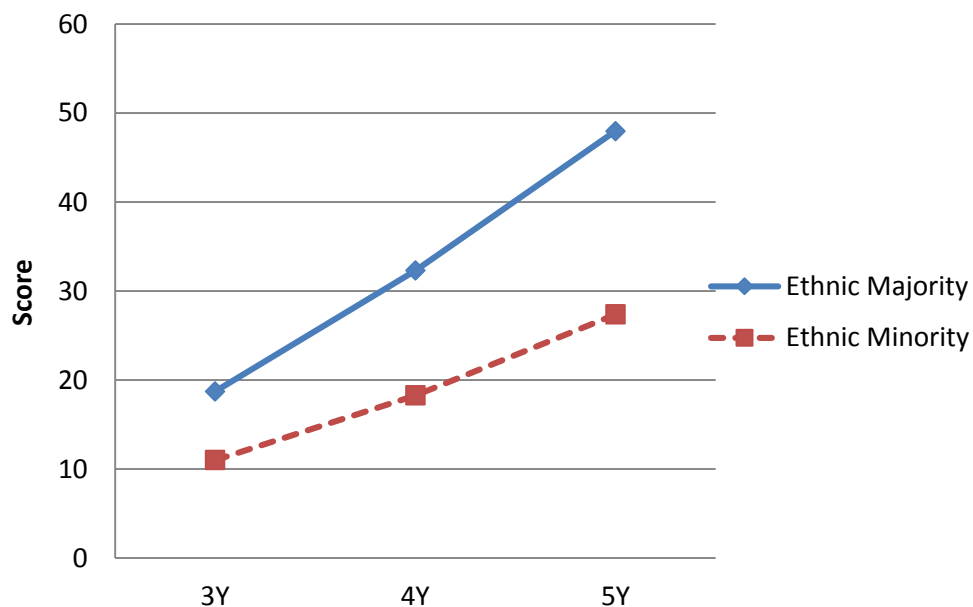
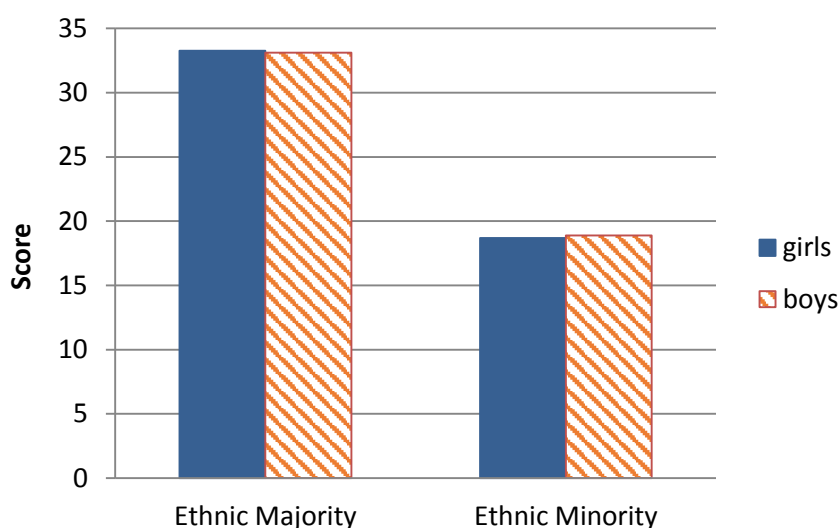


Figure 4.35
Gender differences in Cultural Knowledge and Participation between children from ethnic minority and ethnic majority children living in rural areas (Cambodia)



DOMAIN 7: APPROACHES TO LEARNING

The main effect of Ethnicity was detected on children's performance in Approaches to Learning. The children from ethnic majority families ($M_{adjusted} = 63.34$, $SD = 23.79$, $SE = 0.93$) showed a significantly better

performance than those from the ethnic minority group ($M_{adjusted} = 51.15$, $SD = 23.44$, $SE = 1.25$).

Figure 4.36

Age differences in Approaches to Learning between children from ethnic minority and ethnic majority families living in rural areas (Cambodia)

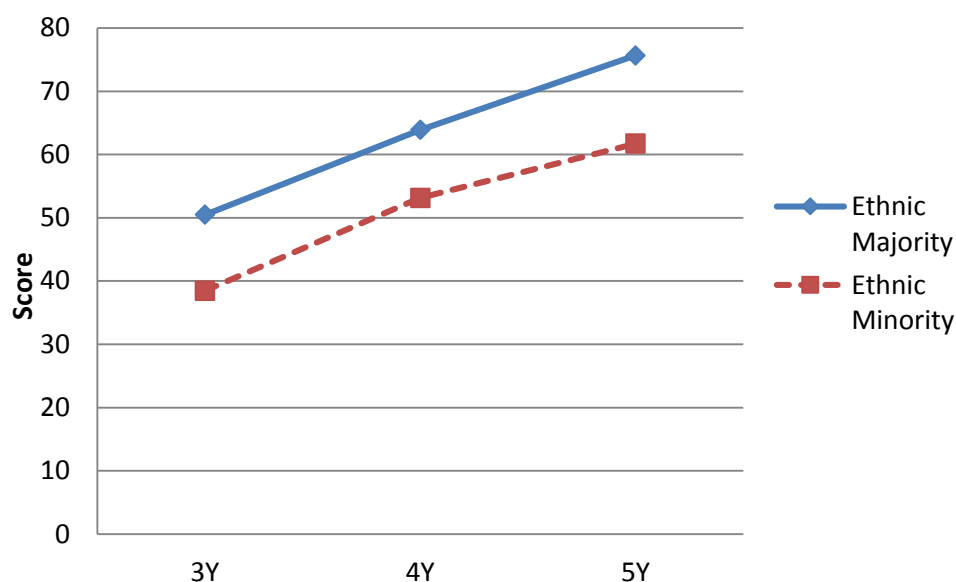
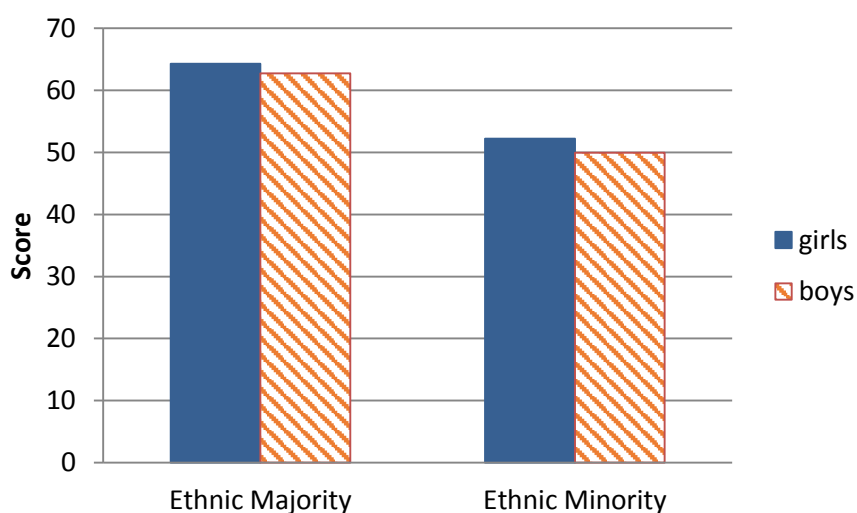


Figure 4.37

Gender differences in Approaches to Learning between children from ethnic minority and ethnic majority families living in rural areas (Cambodia)



EXAMINATION OF THE IMPACT OF PRE-SCHOOL ATTENDANCE ON CHILDREN DEVELOPMENT

A total of 489 children from the ethnic majority group in Cambodia had some type of preschool experience. The coefficients of the multi-level

model are presented in Table 4.8. After taking into account various socio-demographic factors including household assets, mother's education, children's age and gender, a significant difference was found between children whom attended pre-school compared to those who had not attended. Specifically, children whom attended pre-school on average scored 9.41% points higher than those who had not attended pre-school ($p < 0.001$)¹.

Table 4.7
Attendance in an early learning programme by Age and Gender
(Cambodia)

Preschool Enrolment	Gender		Urbanicity		Age		
	Girls	Boys	Rural	Urban	3Y	4Y	5Y
No	329	351	376	304	326	219	135
Yes	257	232	155	334	61	171	257
Total	586	583	531	638	387	390	392

Table 4.8
Regression coefficients from a multi-level model (Cambodia)

	Coefficients and 95% confidence intervals	P-values
Intercept	-2/31 (-7.44, 2.82)	0.38
Preschool attendance	9.41 ^Δ (5.66, 12.90)	<0.001
Household Asset	0.37 (-0.26, 0.99)	0.25
Mother's education	0.34 (-0.26, 0.94)	0.26
Sex (Girl as reference)	-1.05 (-2.41, 0.31)	0.13
Age	12.92 (11.99, 13.84)	<0.001

^Δ All coefficients for preschool attendance are from the multilevel model which included all six countries.

CONSISTENCY BETWEEN CHILDREN'S PERFORMANCE AND PARENTS' RATING

We conducted a correlational analysis to assess the consistency between children's performance and parents' rating of children's

¹ Cambodia has public, private and community-based preschools. The analyses undertaken for this report is disaggregated by type of preschool.

development. As shown in Table 4.9 parents' rating of children's abilities (Q48-52, Q54-56, and Q67-70 in the Parent Questionnaire) were positively correlated to the total score as well as the domain scores. This suggests that the parents' rating scales associated with the EAP-ECDS should be further developed given that it is less resource intensive than the EAP-ECDS.

Table 4.9
Correlations between children's performance on the EAP-ECDS and parents' rating (Cambodia)

	Parents' rating	EAP-ECDS Total	CD	SED	MD	LEL	HHS	CKP	ATL
Parents' rating	1	.46***	.40***	.37***	.36***	.47***	.42***	.45***	.22***
EAP-ECDS Total		1	.87***	.85***	.73***	.88***	.87***	.87***	.77***
CD			1	.72***	.60***	.76***	.71***	.71***	.61***
SED				1	.53***	.69***	.74***	.75***	.51***
MD					1	.59***	.60***	.53***	.50***
LEL						1	.70***	.71***	.67***
HHS							1	.74***	.58***
CKP								1	.58***
ATL									1

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

INFORMATION ABOUT THE FAMILY

Information about the family was obtained through individual interviews. The mean age of mothers was 31.83 years and the mean age of fathers was 34.99 years. Figure 4.38 shows the highest level of education attained by parents. Most (47.8%) mothers had primary education, 28.3% obtained lower secondary education and 10.4% had no formal education. Similarly, more than one third of the fathers (33.1%) had primary education, 30.1% obtained lower secondary education, 19.5% had upper secondary education and 7.2% had no formal education. Parents' occupations varied. Most of the parents (74.3% of mothers, and 97.3% of fathers) were employed. Details about parents' occupation can be found in Figure 4.39. There was stability of the families' accommodation. The families had lived in the current area for an average of 20.20 years at that time of the study.

Among the working mothers, only 11.1% got a paid maternity leave before the target child was born. The mean length of the maternity leave was 10.48 weeks with a wide range from one to 48 weeks. About one fifth (21.9%) of the mothers attended parenting class: a majority of them attended the class before the child was born (46.9%), 25.4% attended

when the infant was one to six months old and 23.3% attended when the infant was seven to 12 months.

Figure 4.38
Highest level of education attained by parents (Cambodia)

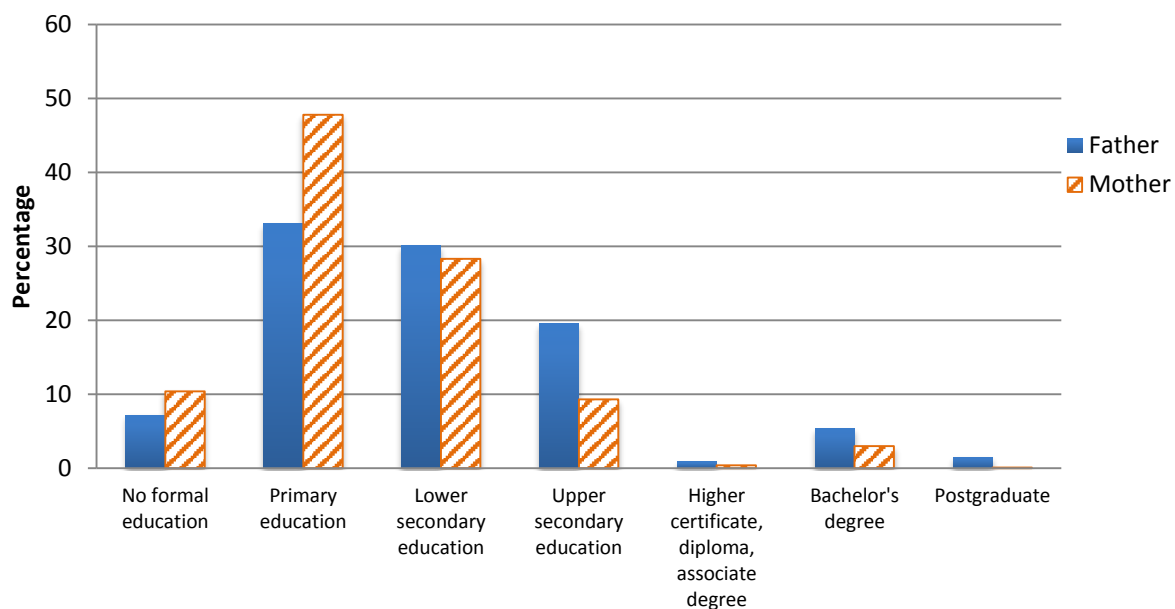
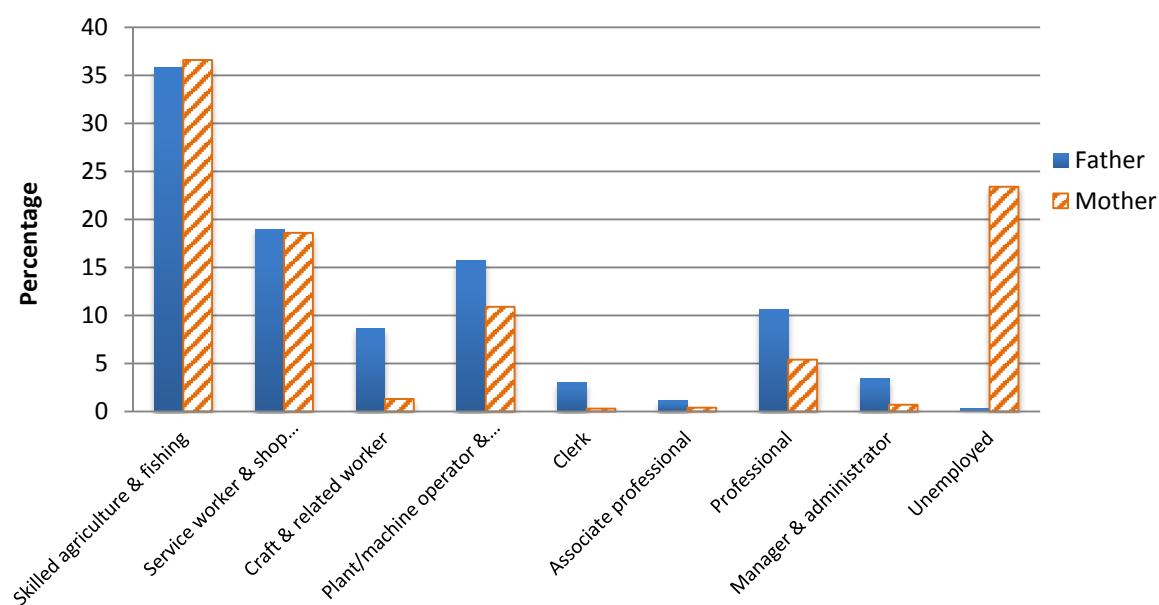


Figure 4.39
Parents' occupations (Cambodia)



The majority of families surveyed had a television (77.9%) and electricity (66.5%). It was common for a family member to have a mobile phone (90.2%), a motorcycle or scooter (72.9%), and a bicycle (60.7%). One third of the families reported that one or more family members had a watch (31%). Less than half of the families had a radio (42.7%). It was uncommon for the families to possess a fixed line telephone (26.6%), a refrigerator (17%), an animal-drawn cart (7.6%), a car or truck (14.8%), and a boat with motor (1.6%).

Most of the families (91.6%) lived in the house that they owned. Less than half of the families (42.6%) participating in this study owned land that could be used for agriculture and the mean area of the land was 2.13 hectares, with a range from 0.1 to 25 hectares. About 27.9% of the families owned livestock (herds, other farm animals, or poultry). Only 9.1% of the families had a bank account.

EARLY LEARNING AND DEVELOPMENT

We found that less than half (41.8%) of the children attended some type of organized learning or early childhood education programme. The logistic multiple regression indicated that children's age, gender, urban/rural residence and mother's education significantly predicted the probability of participating in an early education programme. The children who were older, a boy, of better-educated mothers, or living in the rural areas were more likely to be enrolled in an early learning programme than other children (see Table 4.10). The mean length of staying in an early learning programme was 8.55 months (range from one to 36 months) for those children who had attended any early childhood education programme.

Table 4.10
Predictors of the probability of enrolment in an early learning programme (Cambodia)

Predictor	β	$SE \beta$	Wald's χ^2	p	e^β
Child's age	1.31***	0.09	228.99	<.001	3.709
Child's gender	0.26	0.13	3.94	.047	1.29
Urban or Rural	-1.15***	0.15	59.00	<.001	0.32
Mother's age	-0.02	0.02	1.62	.203	0.98
Mother's education	0.20***	0.06	12.95	<.001	1.23
Father's age	0.00	0.01	0.09	.759	1.00
Father's education	0.06	0.04	1.91	0.17	1.06
Constant	-6.47	0.60	116.19	<.001	0.00

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Among the 489 children who had participated in an organized early learning programme, 97% attended such programmes within the seven

days preceding the survey. Almost all of them attended a public, private or community-based preschool (96.1%), and the rest participated in community centre or drop-in centre (2.5%) or other types of early learning programmes (1.5%). Nearly all the programmes were open five days a week (93.5%) and 72.7% of the programmes were free of charge. Most of the children (78.8%) attended such programmes for 10 to 20 hours a week. Figure 4.40 and Figure 4.41 show the duration children had attended the current early learning programme and the hours they spent per week in that programme. Most of the parents reported that their children “always” (48.5%) or “most of the time” (46.7%) wanted to attend the kindergarten.

Figure 4.40
Duration of attendance in an early learning programme (Cambodia)

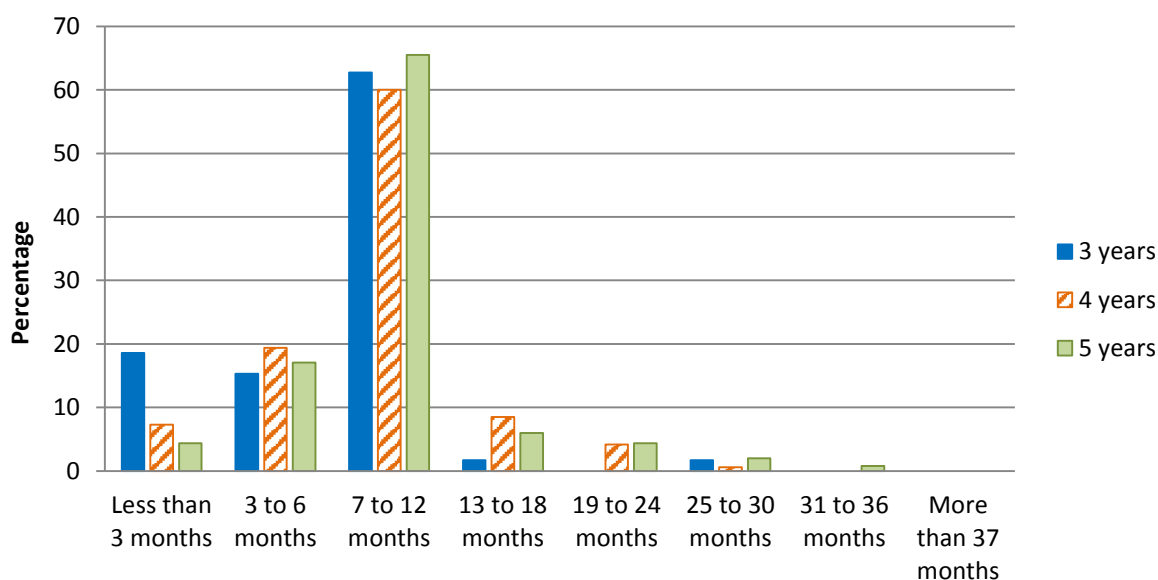


Figure 4.41
Number of hours of programme attendance per week (Cambodia)

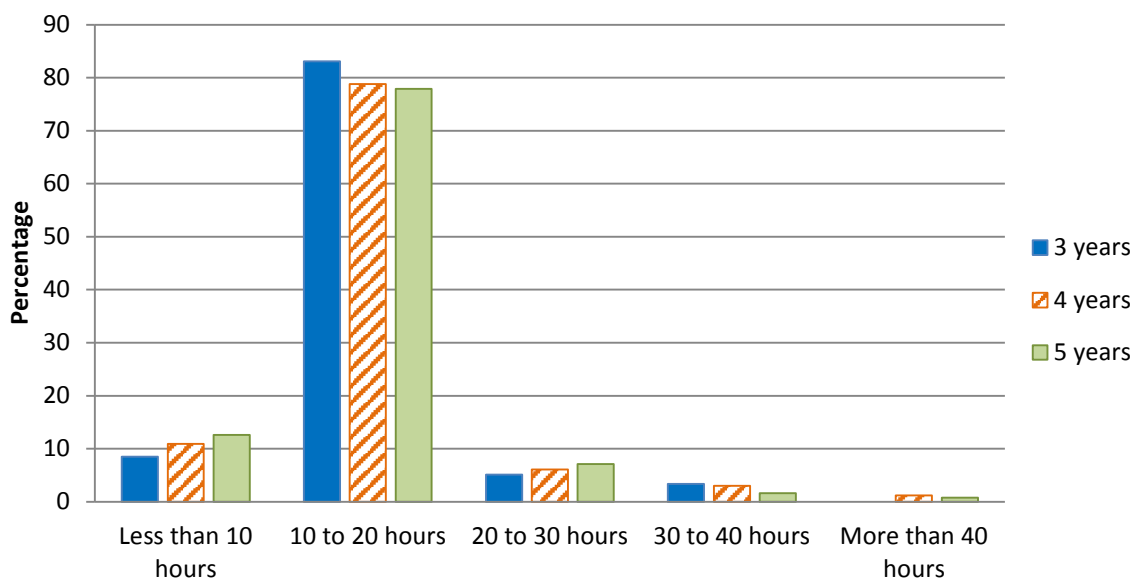


Table 4.7 mentioned earlier, indicated that preschool attendance increases with increased age. In our sample, 60 3-year-olds, 171 4-year-olds and 257 5-year-olds attended preschool.

Parents were asked to rate their children's abilities in terms of cognitive, language, motor, and social skills as well as societal knowledge. Most parents rated their child as "slightly above" compared to other children of a similar age in all domains, including ability to concentrate on learning new tasks (42.8%), ability to learn new things and solve new problems (43.5%), participation in important community events (34.8%), language skills (57.9%), ability to run and jump (58.3%), ability to hold chopsticks/spoons/pencils/pens (48.7%), practice healthy and hygienic habits (51.3%), follow safety rules (42.5%), and display social skills, such as show consideration of others and ability to manage emotions (43.1%). Only a small number of parents rated their child as "much above" or "much below" compared to other children in all domains.

Parents further evaluated their children's more general social competencies. Most parents gave slightly high evaluations to their children in the following three aspects: 66.1% of the parents reported their child got along well with other children of similar ages most of the time and 15.4% thought their child sometimes did so; 49% of the parents believed that their child was able to do the simple tasks assigned independently most of the time and 25.7% believed their child sometimes could do so; 35.7% of the parents believed their child never kicked, bit, or hit other children or adults and 28% reported their child sometimes did; A relatively low evaluation was given to the aspect of getting distracted easily with 44.3% of the parents stating that their child was sometimes distracted easily and 23.9% stating their child was distracted easily most of the time.

Parents were then also asked to report the level of early literacy of their child. They reported that their child could identify 4.15 graphemes on average (range from 0 to 33). Most of the parents (79.3%) believed

that their child could not read at least four simple and popular words and more than half of the parents (61.7%) reported that their child could not identify all numbers from 1 to 10.

Finally, parents' involvement in early learning-related activities at home was investigated. Parents were asked to report whether they or any other family members over 15 years engaged in six different early learning-related activities with the child in the past three days. Table 4.11 presents the percentages of mothers', fathers', and other family members' involvement in those six common early learning-related activities at home with the target children.

Table 4.11
Adults' involvement in early learning-related activities at home
(Cambodia)

Activities	Mothers (%)	Fathers (%)	Other Family Members (%)
Read books or looked at picture books with your child	31.7	11.0	26.3
Told stories to your child	29.6	9.9	22.3
Sang songs with your child	25.5	9.7	30.1
Took your child outside the home place	34.1	27.1	11.1
Played games with your child	27.8	19.2	17.3
Spent time with your child in naming things or counting things or drawing	45.6	14.1	15.7

We then summed up the scores of mothers', fathers' and other family members' involvement in each type of activity. Although the combined scores do not represent the frequencies of children's participation in such activities, they show the opportunities that children had to participate in specific activities at home with adults. As shown in Table 4.12, there were significant correlations among children's participation in those activities, which indicated that those children who were likely to do some activities with adults were also likely to participate in other activities with adults at home.

Table 4.12
Correlations among involvement in different early learning-related activities at home (Cambodia)

	i	ii	iii	iv	v	vi
i. Read books or looked at picture books with your child	1 ^{***}	.53 ^{***}	.43 ^{***}	.33 ^{***}	.31 ^{***}	.35 ^{***}
ii. Told stories to your child		1 ^{***}	.44 ^{***}	.27 ^{***}	.27 ^{***}	.27 ^{***}
iii. Sang songs with your child			1 ^{***}	.43 ^{***}	.41 ^{***}	.39 ^{***}
iv. Took your child outside the home place				1 ^{***}	.60 ^{***}	.37 ^{***}
v. Played games with your child					1 ^{***}	.43 ^{***}
vi. Spent time with your child in naming, counting or drawing						1 ^{***}

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

To better understand mothers', fathers', and other family members' involvement in early learning-related activities at home, we created separate variables to represent mothers', fathers', and other family members' involvement in these six types of activities by summing up the scores from each of the parties in the six items mentioned above. Paired t-tests showed that mothers ($M = 2.07$, $SD = 1.89$) were involved the most in early learning-related activities at home compared with other family members ($M = 1.28$, $SD = 1.73$) ($t(1154) = 8.86$, $p < .001$), and fathers ($M = 0.97$, $SD = 1.41$) ($t(1154) = 16.89$, $p < .001$). Other family members also had more such activities with children at home than fathers ($t(1154) = -4.23$, $p < .001$). Fathers were involved the least compared to mothers and other family members at home.

Separate multiple regression analyses were conducted to examine the extent to which mothers', fathers', and other family members' involvement in such activities at home was predicted by child age, gender, urban/rural residence, mothers' age, and education, as well as fathers' age and education. As Table 4.13 shows, urban/rural residence and mothers' education significantly contributed to prediction of mothers' involvement. Urban and more educated mothers were more likely to be engaged in activities with their child. Similarly, children of more educated parents were more likely to have activities at home with their fathers. Urban/rural residence, mother's age and education significantly predicted other family members' involvement in early learning-related activities at home.

Table 4.13
Predictors of family involvement in early learning-related activities at home (Cambodia)

Variables	Mother				Father				Other			
	B	SE B	β	p	B	SE B	β	p	B	SE B	β	p
Constant	1.54	0.44		.001	-0.09	0.34		.790	0.46	0.42		.268
Child's age	-0.05	0.06	-.03	.39	0.02	0.05	.01	.707	0.10	0.06	.05	.108
Child's gender	-0.16	0.11	-.04	.143	0.11	0.08	.04	.175	-0.06	0.10	-.02	.537
Urban or Rural	0.74	0.12	.20	<.001	0.07	0.09	.02	.452	-0.53	0.11	-.16	<.001
Mother's age	-0.01	0.01	-.05	.263	-0.01	.01	-.02	.561	0.03	0.01	.09	.033
Mother's education	0.20	0.05	.14	<.001	0.12	0.04	.11	.002	0.10	0.05	.07	.032
Father's age	0.00	0.01	.00	.984	0.01	0.01	.04	.399	-0.01	0.01	-.05	.253
Father's education	0.05	0.04	.05	.159	0.11	0.03	.12	<.001	-0.02	0.04	-.02	.659
R^2	.09				.05				.03			
F	16.48***				7.47***				4.69***			

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

CHILD'S HEALTH AND HABITS

Almost all (98.1%) target children in this study had all vaccinations, but nearly all (92.3%) the families did not take the child for a regular health check-up to the clinic or hospital. Nearly all of the target children had not had their vision/hearing/speech checked by professionals. Only 3.1% of the target children had their vision checked by professionals, 2% of the children had their hearing checked by professionals, and 1.4% had their speech checked by professionals. A total score of families' health facilitation practices was created by summing up the scores of the above-mentioned items. The multiple regression analyses child age, gender, urban/rural residence, mothers' age, and education, as well as fathers' age and education as predictors revealed that only Urbanicity significantly contributed to prediction of health facilitation practices (see Table 4.14). Families in urban areas showed more health facilitation practices than other families.

Table 4.14
Predictors of health facilitation practices (Cambodia)

Variables	B	SE B	β	<i>p</i>
Constant	0.91	0.13		<.001
Child's age	0.01	0.02	.01	.719
Child's gender	0.01	0.03	.01	.822
Urban or Rural	0.14	0.03	.13	<.001
Mother's age	-0.00	0.00	-.03	.489
Mother's education	0.01	0.01	.03	.342
Father's age	0.00	0.00	.06	.207
Father's education	0.00	0.01	.01	.881
<i>R</i> ²				.03
<i>F</i>				4.21***

Note. **p* < .05. ***p* < .01. ****p* < .001

The percentage of children who had the habit of brushing teeth every day was 69.5%. Among them, 23.6% did so at both morning and night, 73.7% brushed their teeth only in the morning, and 2.7% only did so at night. In addition, parents were asked whether their child had three basic health-related habits. Without adults' directions, 36.3% of the children were considered to be able to wash their hands after using the toilet most of the time and 28.6% could do so sometimes. In addition, 42.9% of the children washed their hands before meals without adults' directions most of the time and 33.3% could do so sometimes. As to eating vegetables, 37.9% of the parents reported their child would always do so without adults' directions most of the time and 26.5% would do so sometimes. A total score of children's health-related habits was created

by summing up the scores of these four items. A multiple regression was conducted on the score of children's habits formation with the predictors of child age, gender, urban/rural residence, mothers' age, and education, as well as fathers' age and education. As shown in Table 4.15, older children, girls, and those with more educated fathers had better health and hygiene habits than other children.

Table 4.15
Predictors of children's health and hygiene habits (Cambodia)

Variables	B	SE B	β	<i>p</i>
Constant	4.02	0.67		<.001
Child's age	0.68	0.10	.21	<.001
Child's gender	-0.33	0.16	-.06	.044
Urban or Rural	0.08	0.18	.01	.659
Mother's age	0.01	0.02	.02	.645
Mother's education	0.03	0.07	.01	.687
Father's age	-0.00	0.02	-.01	.871
Father's education	0.18	0.06	.11	.001
<i>R</i> ²	.06			
<i>F</i>	10.53***			

Note. **p* < .05. ***p* < .01. ****p* < .001

About 3.3% of the parents reported a medical condition or chronic illness of their children, and 5.5% reported that their child had allergies. 19.3% of the children had stayed in hospital for more than 3 days. We further asked parents to report whether their child had some specific health problems in the past month. About 8.6% reported wheezing attacks, 12.5% had snoring, 0.5% had seizures, 5.5% had dizziness, 4.6% had persistent cough, 1.8% had joints problems, 18.5% had vomiting, 2.5% had constipation or hard stools for 2 weeks, 6.4% had skin rash with red swelling, 1.9% had numbness or weakness in limbs, 2.4% had trouble with eyes, 2.7% had trouble with nose and sinuses, 1.5% had trouble with ears and 14% had trouble with teeth, mouth or gums. The relatively common health problems were common cold or influenza-like illness and diarrhoea. More than half of the target children (53.3%) suffered from cold or influenza-like illness, and 21.3% had suffered from diarrhoea in the past month. A total score representing children's basic health situation was created by summing up the scores in these items. A higher score represented more health problems reported by caregivers. None of the predictors in the model significantly predicted children's health situation as shown in the multiple regression analyses (see Table 4.16).

Table 4.16
Predictors of children's health situation (Cambodia)

Variables	B	SE B	β	<i>p</i>
Constant	1.72	0.40		<.001
Child's age	-0.07	0.06	.04	.228
Child's gender	0.16	0.10	.05	.104
Urban or Rural	0.18	0.11	.06	.079
Mother's age	-0.02	0.01	-.08	.061
Mother's education	0.07	0.04	.06	.121
Father's age	0.01	0.01	.07	.130
Father's education	-0.01	0.03	-.01	.854
<i>R</i> ²	.02			
<i>F</i>	2.57*			

Note. **p* < .05. ***p* < .01. ****p* < .001

SUMMARY AND DISCUSSION OF FINDINGS FOR CHILDREN FROM ETHNIC MAJORITY FAMILIES

EAP-ECDS

1. There were significant developmental differences in the EAP-ECDS. Older children performed better than younger children in all the following seven domains of the Scales: Cognitive Development; Socio-emotional Development; Motor Development; Language and Emergent Literacy; Health Hygiene and Safety; Cultural Knowledge and Participation; and Approaches to Learning. This finding is not unexpected as the EAP-ECDS is a developmental scale with adequate validity and reliability.
2. There were significant gender differences favouring girls on the EAP-ECDS in the following domains: Socio-emotional Development, Language and Emergent Literacy; and Cultural Knowledge and Participation. The only domain in which girls did not do better than boys was in Motor Development. This is consistent with other findings reported in the literature (Thomas & French, 1985).
3. Urban children did better than rural children in all the following seven domains of the Scales: Cognitive Development; Socio-emotional Development; Motor Development; Language and Emergent Literacy; Health Hygiene and Safety; Cultural Knowledge and Participation; and Approaches to Learning.

EARLY LEARNING AND DEVELOPMENT

4. Less than half (41.8%) of the participating children attended some form of early education programme. There are disparities within the country with relatively low coverage rates among the rural population. The children who were older or of better-educated parents were more likely enrolled in an early learning programme than other. Almost all the children who attended an early childhood programme went to kindergartens and most of them spent 10 to 20 hours a week in the kindergarten.
5. Less than half of caregivers reported having involvement in early learning-related activities at home. However, mothers were more involved in early learning activities than other family members and urban educated mothers were more likely to support early learning at home than other mothers.

CHILD'S HEALTH AND HABITS

6. In terms of health, almost all children had had their vaccinations. Urban/rural residence was the only predictor of health facilitation practices. Parents reported on basic health-related habits such as always washing hands after using the toilet and before meals without adults' directions and eating vegetables without adults' directions. Regression results indicated that older children, girls, and those with more educated fathers tended to have better health and hygiene habits than other children.

SUMMARY AND DISCUSSION OF FINDINGS FOR CHILDREN FROM ETHNIC MINORITY FAMILIES

EAP-ECDS

1. Ethnic minority children by and large also showed improvement with age, and in most cases, at a similar rate to that of the ethnic majority children. Gender differences between ethnic minority children were also largely similar to the gender differences that exist within children from ethnic majority families.
2. With the exception of the motor development domain, there were significant developmental differences in all of the other domains between children from ethnic minority and ethnic majority families. The latter performed better than the other children in the following domains: Cognitive Development; Socio-emotional Development; Language and Emergent Literacy; Health Hygiene and Safety; Cultural Knowledge and Participation; and Approaches to Learning.
3. Significant differences between children from ethnic minority and ethnic majority families are a cause for concern.
4. First the achievement and knowledge gap between the two groups of children is worrying because it appears that the "achievement" gap between these groups either increases or stays the same. For example, there were no significant differences in cognitive

development among the groups at three years but significant differences emerged at age 4 and these differences were larger at age 5 (see Figure 4.24). Large and significant differences were found between the groups for all three ages in: Socio-emotional Development, Health Hygiene and Safety, Cultural Knowledge and Participation; and Approaches to Learning, Further, differences in Language and Emergent Literacy were large (about 20 points) but not significant.

5. Group differences in Cognitive Development, Language and Emergent Literacy and Approaches to Learning are of particular concern as these domains are typically associated with school readiness and early achievement. If children from ethnic minority groups are so far behind at the starting gate of school, they are more likely to drop out of school or repeat a grade.
6. Some form of early childhood education is highly recommended for this group of children.
7. Ethnic minority families need more access to parent education. Steps should be taken to increase their geographical proximity to resources, their awareness of resources and decrease exclusion of children from early childhood services.
8. There were no significant differences between children from ethnic majority and ethnic minority families in Motor Development.

Further analyses regarding children from ethnic minority families are yet to be undertaken.

CHAPTER 5 CHINA



Figure 5.1

Map of China

Source: Central Intelligence Agency. (2014). The World Fact Book.

<https://www.cia.gov/library/publications/the-world-factbook/geos/mg.html>

GENERAL INFORMATION

China, the third largest country in the world, borders 15 countries including Mongolia, Russia, India and North Korea. It consists of 22 provinces, five autonomous regions and two special administrative regions. China, the most densely populated country in the world, has a population of 1.35 billion. It is estimated that around 32 million 3- to 6-year-olds from the rural areas do not have access to any preschool education (Rao et al., 2012) and most of these children usually attend only one year of preschool compared to the three years of preschool education that children living in urban areas typically receive (Wu, Young, & Cai, 2011). The largest ethnic group, Han, constitutes 91% of the population (Central Intelligence Agency, 2013). Driven by rapid industrialisation and growth in exports after the Opening Door policy in 1978, China's economy has been growing rapidly. In 2010, it became the world's second largest economy. The country's gross domestic product (GDP) per capita adjusted for purchasing power parity (PPP) is US\$9083. Despite the substantial economic growth, many citizens still have a poor living standard with 11.8% of the population living on less than US\$1.25 per day (World Bank, 2009) and children in China still face different kinds of health problems. For instance the infant and under mortality rates are 20 and 25, respectively and 9% of children are stunted (UNESCO, 2014).

State-issued documents indicate that there are three main types of early childhood centres in China: nurseries, which provide care for children from birth to three years of age; kindergartens, which provide care and education to children between three and six, or seven years of age; and pre-primary classes, which cater to the needs of children from five to six or seven years of age, and which are typically attached to rural primary schools. The gross enrolment ratio in 2011 for children aged 4-6 was 61 with an equal ratio between boys and girls (UNESCO, 2014) but there is a significant gap between rural and urban areas in the provision of services (UNESCO Institute of Statistics, 2012). The enrolment rate in urban areas has been as high as 99%, while the enrolment in rural areas as low as 10% or lower. In the past 10 years, investment in early childhood education was only 1.24-1.44% of the total annual educational investment in China (Zhou, 2011). Due to inadequate funding, the quality of services provided in rural areas was inferior to that in urban areas.

There are problems such as poor facilities and inadequate number of teachers. In rural areas, the child teacher ratio is as high as 55: 1, far exceeding the limit set by the government UNESCO International Bureau of Education, 2011). To improve the situation, the Chinese government launched a landmark policy that mandated one year of universal preschool education in its national development plan and the development of Early Childhood Care and Education (ECCE) in rural areas was particularly emphasised in its National Middle- and Long-Term Education Reform and Development Plan (2010-2020) (Ministry of Education, 2010). The State Council further issued ten specific guidelines in Suggestions on Current Development of Pre-School Education (Suggestions) (The State

Council, 2010) to facilitate the development of ECCE (Sun, Rao, & Pearson, 2014). In order to facilitate the development of early childhood education (ECE) services in rural area, the government invested 500 million RMB in 10 provinces in western China to support 61 counties in building ECE programmes in rural areas. In 2011, the central government further increased levels of investment for this project (Zhou, 2011). Professional development was also carried out to enhance the overall quality of the teaching staff.

EAP-ECDS FINDINGS

SAMPLE

A total of 1803 children (908 girls and 895 boys) and their parents participated in the study. The sample was recruited from 5 provinces (or Municipalities), including Guizhou (Guiyang), Heilongjiang (Mudanjiang), Jiangsu (Changzhou), Shanghai and Zhejiang (Ningbo). Around 3/4 of the sample (78.6%) was from urban areas. Since there were 2- and 6-year-olds in the sample, we only focused on children aged 3-5 in the analyses of data for Scale validation in each domain ($n = 1592$). All children were included in the analyses of information from parent questionnaires. Around 75% of questionnaires were completed by mothers, 20.9% were completed by fathers, and 4.1% were completed by other family members. Most of them (90.9%) were Han, 9.1% were from ethnic minority groups. Detailed sample information can be found from Table 5.1.

Table 5.1
Sample distribution in terms of Age, Gender, and Urbanicity in China

Age	Rural			Urban			Urbanicity Missing			Total
	Girls	Boys	Miss-ing	Girls	Boys	Miss-ing	Girls	Boys	Miss-ing	
2Y	1	0	0	0	3	0	0	0	0	4
3Y	60	59	0	214	188	0	25	34	0	580
4Y	51	58	0	214	197	0	35	34	0	589
5Y	67	47	0	199	238	0	34	30	0	615
6Y	1	1	0	5	5	0	0	0	0	12
NA	0	0	0	1	0	0	1	1	0	3
Total	180	165	0	633	631	0	95	99	0	1803

RELIABILITY AND VALIDITY

Our results indicated that items within the same domain have satisfactory reliability with alpha ranging from 0.70 to 0.94. Among the seven domains, Motor Development had the lowest internal consistency. Table 5.2 shows the average Cronbach's alpha for each domain.

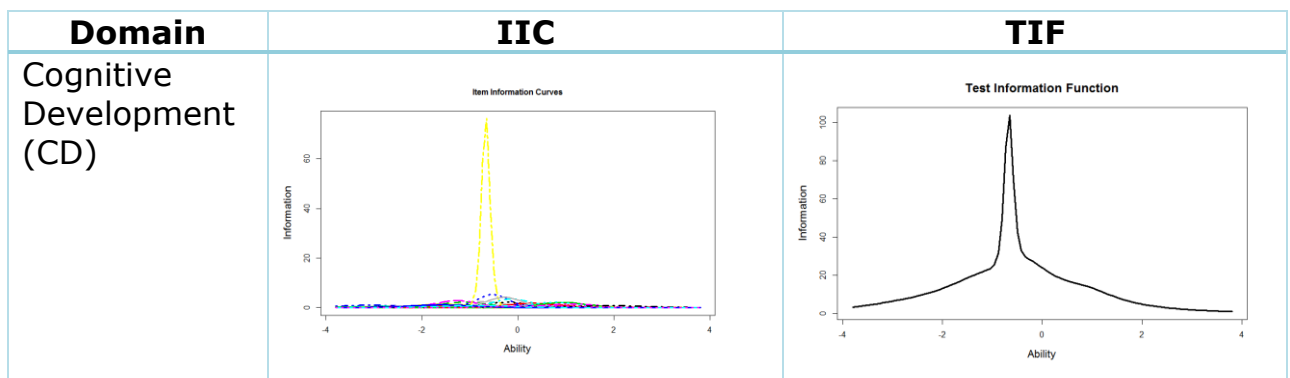
Table 5.2
Internal consistency for each domain (China Scale)

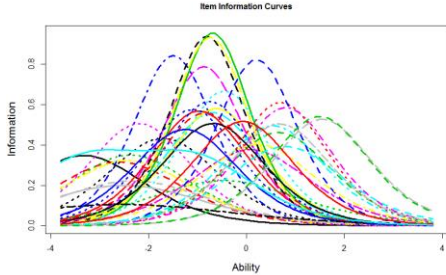
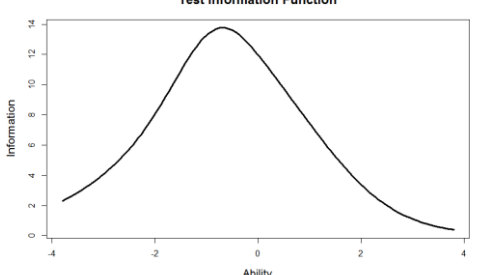
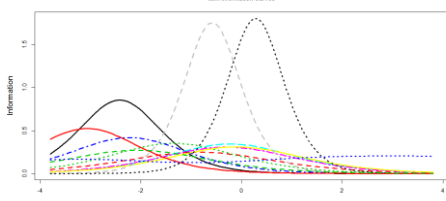
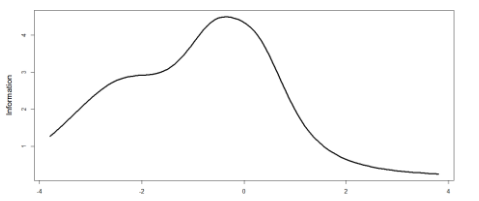
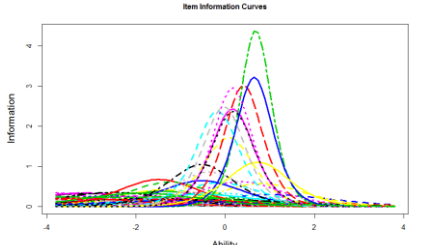
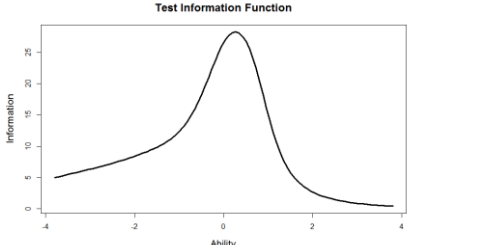
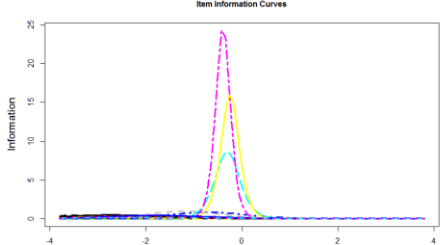
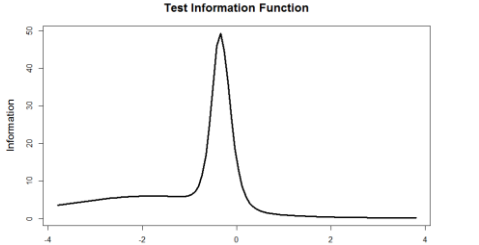
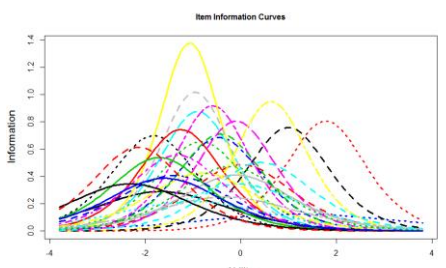
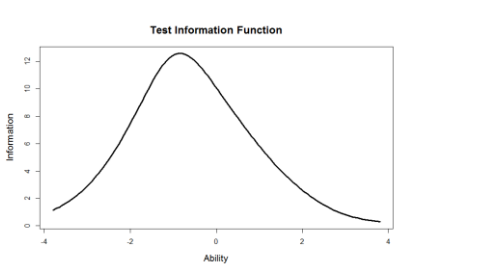
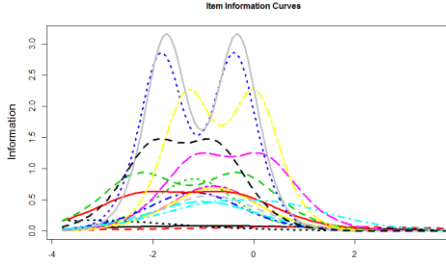
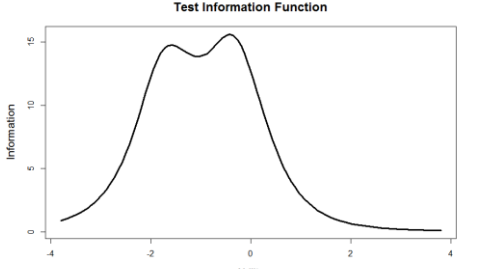
Domain	Cronbach's alpha (all items)
Cognitive development	0.94
Socio-emotional Development	0.91
Motor Development	0.74
Language and Emergent Literacy	0.93
Health, Hygiene, and Safety	0.84
Cultural Knowledge and Participation	0.89
Approaches to Learning	0.88

ITEM ANALYSIS

Figure 5.2 shows the item information curves (IIC) and test information function (TIF) for each domain. These graphs indicate the latent ability level at which the assessment offers the most information. It is worthy to note that information tended to concentrate on mid-high level of ability for cognitive development, socio-emotional development, language and emergent literacy, and cultural knowledge and participation. As for motor skills, most information were represented at the lower ability level.

Figure 5.2
Item information curves (IIC) and test information function (TIF) for each domain (China Scale)



<p>Socio-emotional Development (SED)</p>		
<p>Motor Development (MD)</p>		
<p>Language and Emergent Literacy (LEL)</p>		
<p>Health, Hygiene, and Safety (HHS)</p>		
<p>Cultural Knowledge and Participation (CKP)</p>		
<p>Approaches to Learning (ATL)</p>		

EASIEST AND MOST DIFFICULT ITEMS IN EACH DOMAIN

Item analysis results indicated items which may be too easy or too difficult and which potentially lack sufficient discrimination power to differentiate across ability level. In the Cognitive Development domain, the item that asked children to compare quantities (item 2.1) appeared to be relatively easy. On the other hand, the item that asked children to identify 3:30 on a clock (item 19.3) was the most difficult. As for the Socio-emotional Development domain, the easiest item was to state their own age (item 22) and the most difficult item was to provide a second reason why it was wrong to point at parents (item 34.3). With respect to Motor Development, the easiest item was to string large beads (item 43.1) and the most difficult item was to hit the target in three out of three attempts (item 40). As for Language and Emergent Literacy, the easiest item was to orally identify the action of washing hands (item 46.1) while the most difficult item was to link all pictures in the correct sequence (item 47.3). With regard to Health, Hygiene and Safety, the easiest item was to state that the rotten apple should not be eaten (item 67.3) and the most difficult item was to identify the elbow (item 66.5). For Cultural Knowledge and Participation, the easiest item was to state that throwing garbage into a river is bad for the environment (item 78.1) and the most difficult item was to provide another relevant detail about a celebration (item 74.3). For Approaches to Learning, the easiest item was to show the ability to delay gratification (item 81) and the most difficult item was to state another skill he/she could do well (item 79.2). The easiest items and most difficult items for the different domains are shown below.

Table 5.3

Easiest and most difficult items in each domain (China Scale)

Item No.	Item Description	Passing Rate (%)
Cognitive Development		
<i>3 easiest items</i>		
2.1	Compare quantities: 3 vs. 9	98.2
2.2	Compare quantities: 8 vs. 6	94.3
10.1	Repeated the 5-word sentence	92.3
<i>3 most difficult Items</i>		
19.3	Could read a clock: 3:30	7.0
14	Sorted all the items into three groups according to the third criterion	11.1
8.3	Sequenced pattern: third trial	16.7
Socio-emotional Development		
<i>3 easiest items</i>		
22	Knew own age	96.3
23.1	Gave mother's given and family names	91.5
23.2	Gave father's given and family names	90.6

<i>3 most difficult Items</i>		
34.3	Gave another reason for why it is wrong to point at parents	16.0
34.6	Gave another reason for why queuing up is appropriate	16.8
29.4	Gave 1 more answer on what makes the child angry	29.3
Motor Development		
<i>3 easiest items</i>		
43.1	Strung large beads	97.1
37.1	Poured water to designated line in cup	95.8
39	No spills while walking or putting cup down	90.7
<i>3 most difficult Items</i>		
40	Hit the target on three out of three attempts	3.1
41.3	Caught ball three times	32.7
42.2	Following instructions to fold a piece of paper (steps 4-7)	40.5
Language and Emergent Literacy		
<i>3 easiest items</i>		
46.1	Identified picture of washing hands	98.1
44.6	Identified picture of brushing teeth	97.9
44.2	Identified action of washing face	96.8
<i>3 most difficult Items</i>		
47.3	Linked all 4 pictures with some cohesion	30.1
56.2	Wrote about half of their name without model	31.7
52.4	Named 11 to 13 letters/characters	33.5
Health, Hygiene, and Safety		
<i>3 easiest items</i>		
67.3	Stated that the rotten apple should not be eaten	97.9
66.3	Identified teeth	97.8
65.1	Stated that he/she should not touch the fire	97.2
<i>3 most difficult items</i>		
66.5	Identified the elbow	14.3
66.6	Described the function of an elbow	18.7
60.2	Showed how to brush their teeth	52.8
Cultural Knowledge and Participation		
<i>3 easiest items</i>		
78.1	Stated that throwing garbage into the river is bad for the environment	93.0
77	Identified national flag of their own country	90.3
71.1	Named 1 natural object in the sky	90.0
<i>3 most difficult items</i>		
74.3	Provided another relevant detail of the celebration	10.6

74.2	Provided one more relevant detail of the celebration	25.1
72.1	Mentioned informing an adult in the teddy bear situation	31.3
Approaches to Learning		
<i>3 easiest items</i>		
81	Showed ability to delay gratification	90.9
80.1	Tapped a stick a specific number of times	80.8
85	Worked independently during the whole assessment	73.1
<i>3 most difficult items</i>		
79.2	Stated a second skill he/she could do well	34.5
83.2	Did not want to let go of materials	37.0
79.1	Said one item he/she could do well	61.2

COMPARISONS ACROSS DIFFERENT DOMAINS AND GROUPS

A 3 (Age) × 2 (Gender) × 2 (Urbanicity) MANOVA was performed with children's scores in each domain as dependent variables. The omnibus analysis yielded significant effects of Age, $F(14, 3148) = 124.53, p < .001, \eta p^2 = .36$, Gender, $F(7, 1574) = 4.36, p < .02, \eta p^2 = .02$, and Urbanicity, $F(7, 1574) = 17.56, p < .001, \eta p^2 = .07$. Follow-up univariate tests were further conducted and results are presented in Table 5.4 by domain. Post-hoc comparisons were performed using the Tukey's HSD test with p set at .05 for examinations of interaction effects. No multiple effects were detected.

Table 5.4

Age, Gender and Urbanicity differences in domain scores (China Scale)

Domain	Age		Gender		Urbanicity		Age × Gender		Age × Urbanicity		Gender × Urbanicity	
	$F(2, 1580)$	ηp^2	$F(1, 1580)$	ηp^2	$F(1, 1580)$	ηp^2	$F(2, 1580)$	ηp^2	$F(2, 1580)$	ηp^2	$F(1, 1580)$	ηp^2
CD	754.76***	.49	0.19	.00	78.70***	.05	1.98	.00	5.39**	.01	0.36	.00
SED	340.31***	.30	8.09**	.01	25.06***	.02	1.61	.00	0.38	.00	0.77	.00
MD	384.64***	.33	1.04	.00	8.49**	.01	1.01	.00	1.88	.00	1.22	.00
LEL	679.93***	.46	11.66**	.01	33.03***	.02	2.37	.00	0.97	.00	0.00	.00
HHS	325.68***	.29	15.90***	.01	10.61**	.01	0.92	.00	0.87	.00	0.00	.00
CKP	291.29***	.27	3.33	.00	23.80***	.02	0.10	.00	0.38	.00	0.01	.00
ATL	197.56***	.20	7.37**	.01	49.99***	.03	0.78	.00	1.38	.00	0.26	.00

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

DOMAIN 1: COGNITIVE DEVELOPMENT

As shown in Table 5.4, there were significant effects of Age and Urbanicity. The interaction of Age × Urbanicity was also significant. As

shown in Figure 5.4, although urban children performed significantly better than their rural peers in all age groups, the disparity was the largest among 4-year-olds the smallest among 5-year-olds (η_p^2 s for 3-, 4-, and 5-year-olds were .04, .08, and .02, respectively).

Figure 5.3
Age and Gender differences in Cognitive Development (China)

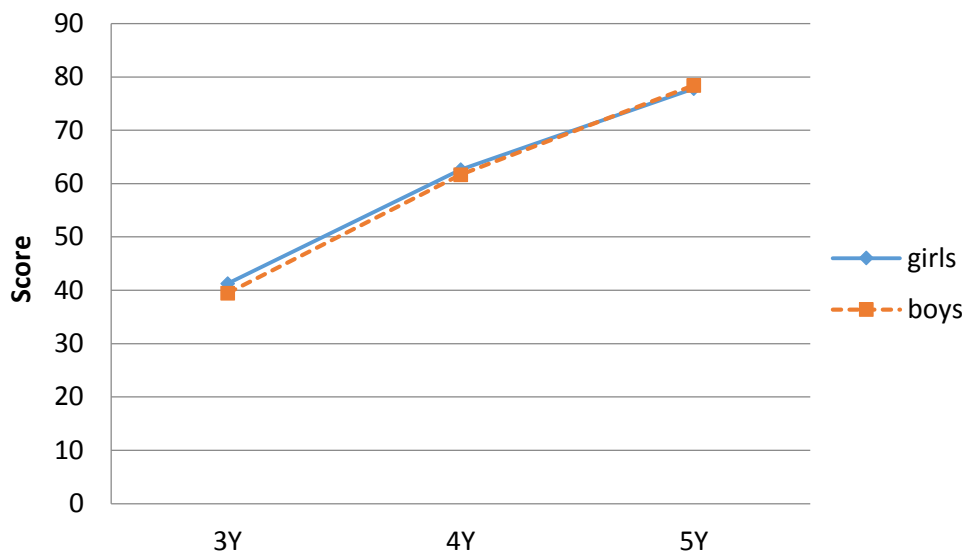


Figure 5.4
Age differences in Cognitive Development in children living in rural and urban areas (China)

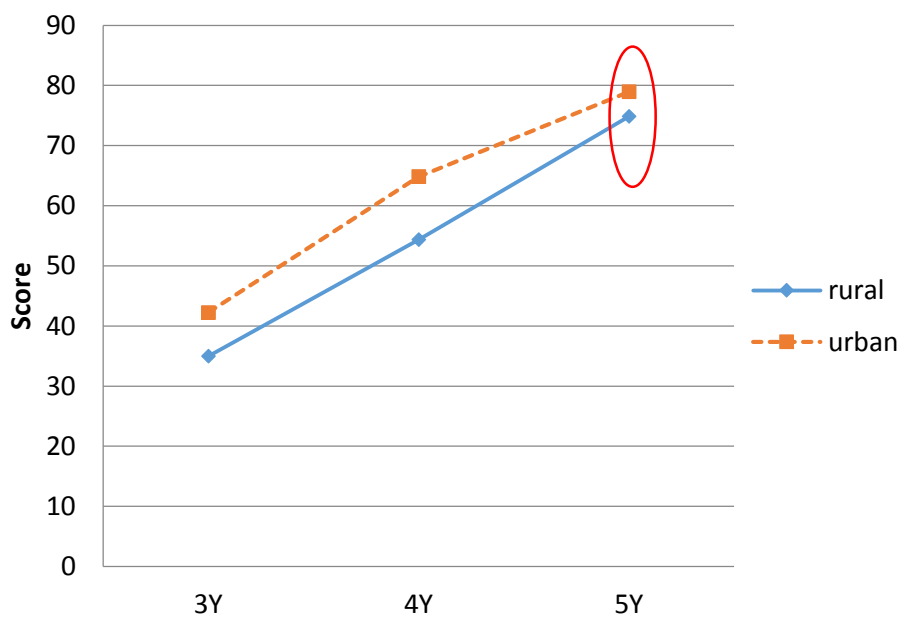
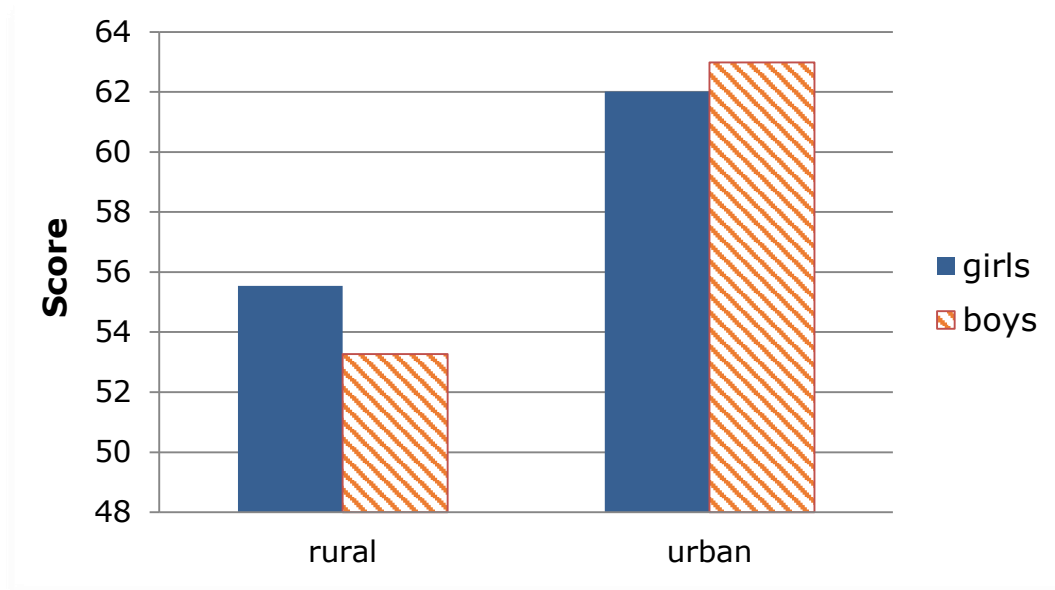


Figure 5.5
Gender differences in Cognitive Development in children living in rural and urban areas (China)



DOMAIN 2: SOCIO-EMOTIONAL DEVELOPMENT

There were significant effects of Age, Gender, and Urbanicity in children's performance in Socio-emotional Development. Five-year-olds ($M_{adjusted} = 76.27$, $SD = 13.74$, $SE = 0.84$) performed significantly better than 4-year-olds ($M_{adjusted} = 65.76$, $SD = 16.10$, $SE = 0.85$), and 4-year-olds performed significantly better than 3-year-olds ($M_{adjusted} = 46.26$, $SD = 17.62$, $SE = 0.82$). Girls ($M_{adjusted} = 64.13$, $SD = 20.02$, $SE = 0.67$) showed significantly better performance than boys ($M_{adjusted} = 61.40$, $SD = 20.08$, $SE = 0.69$). Urban children ($M_{adjusted} = 65.17$, $SD = 19.86$, $SE = 0.45$) did significantly better than rural children ($M_{adjusted} = 60.36$, $SD = 20.28$, $SE = 0.85$) in Socio-emotional Development.

Figure 5.6
Age and Gender differences in Socio-emotional Development (China)

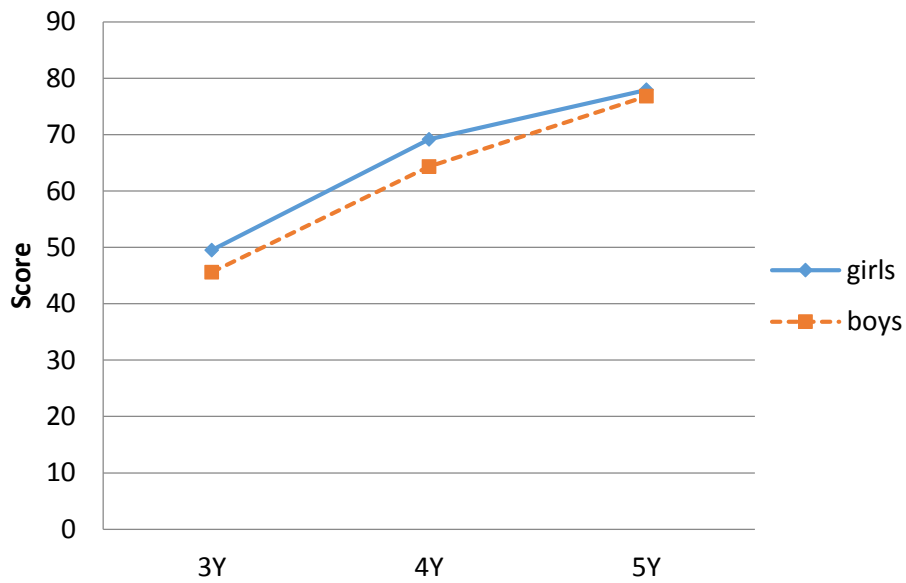


Figure 5.7
Age differences in Socio-emotional development in children living in rural and urban areas (China)

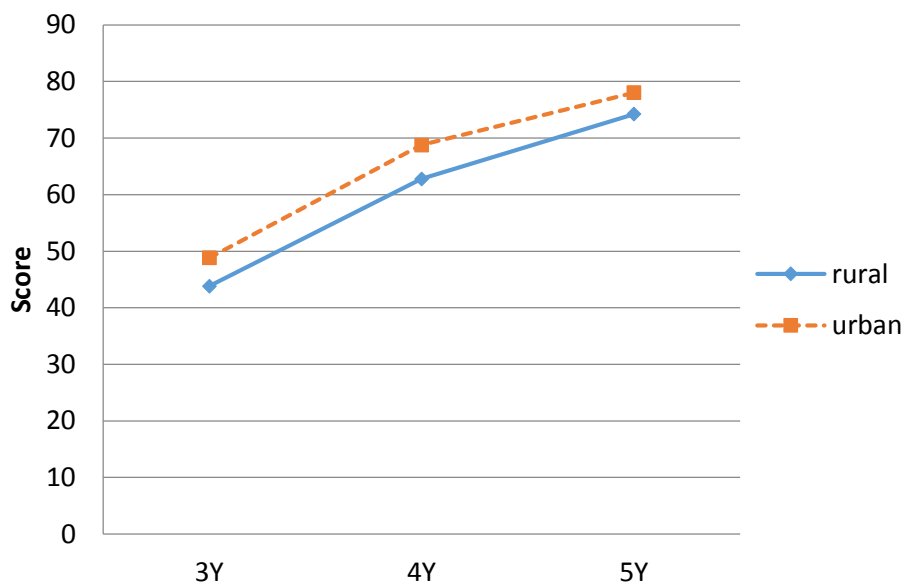
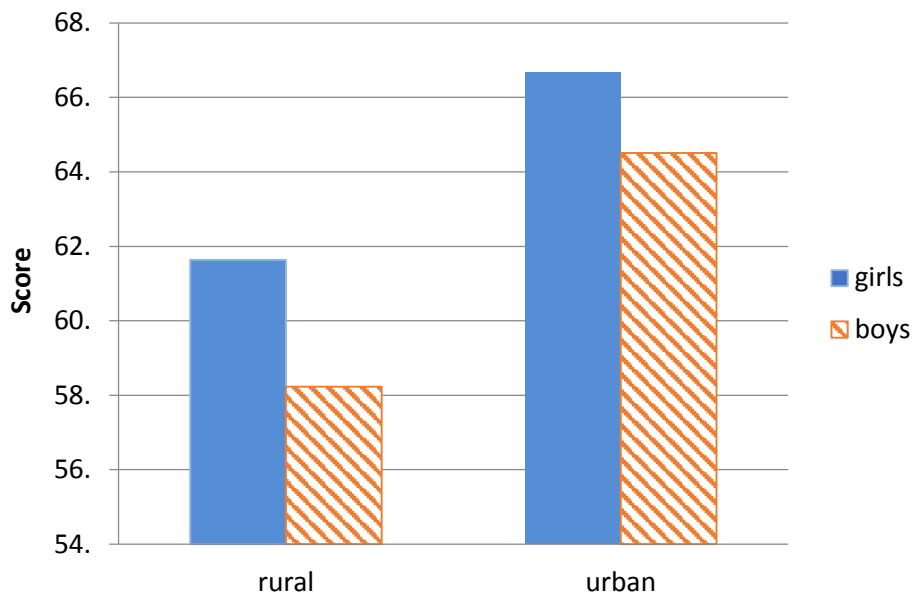


Figure 5.8

Gender differences in Socio-emotional development in children living in rural and urban areas (China)



DOMAIN 3: MOTOR DEVELOPMENT

There were significant effects of Age and Urbanicity in children's performance in Motor Development. Similarly, 5-year-olds ($M_{adjusted} = 74.14$, $SD = 12.74$, $SE = 0.76$) performed significantly better than 4-year-olds ($M_{adjusted} = 63.95$, $SD = 15.19$, $SE = 0.77$), and 4-year-olds performed significantly better than 3-year-olds ($M_{adjusted} = 45.20$, $SD = 14.75$, $SE = 0.74$). However, unlike other domains, rural children ($M_{adjusted} = 62.37$, $SD = 18.29$, $SE = 0.77$) did significantly better than urban children ($M_{adjusted} = 59.83$, $SD = 19.06$, $SE = 0.40$) in Motor Development.

Figure 5.9
Age and Gender differences in Motor Development (China)

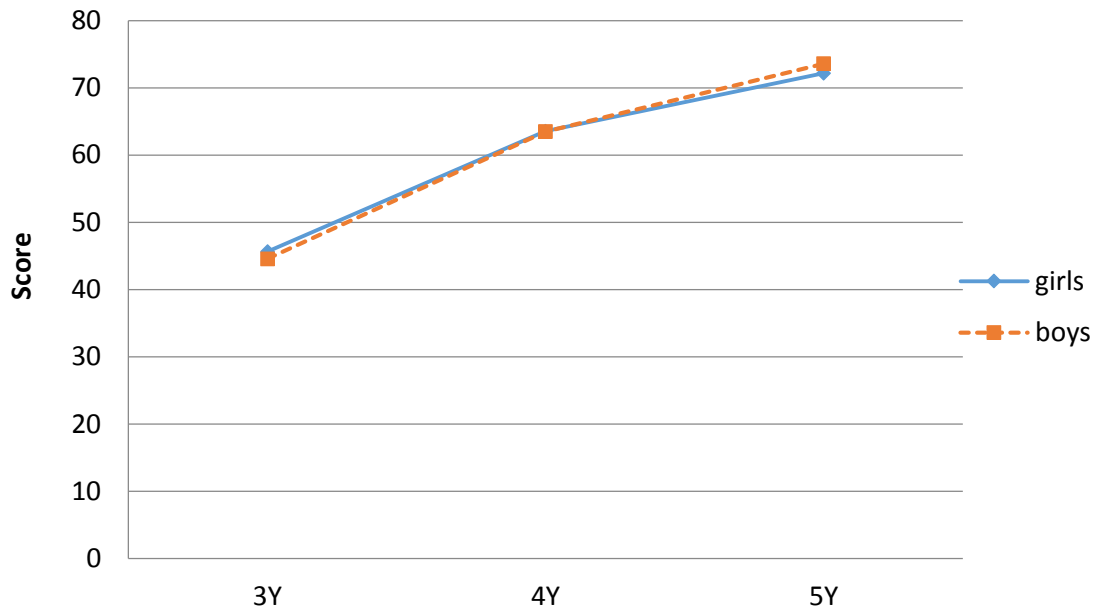


Figure 5.10
Age differences in Motor development in children living in rural and urban areas (China)

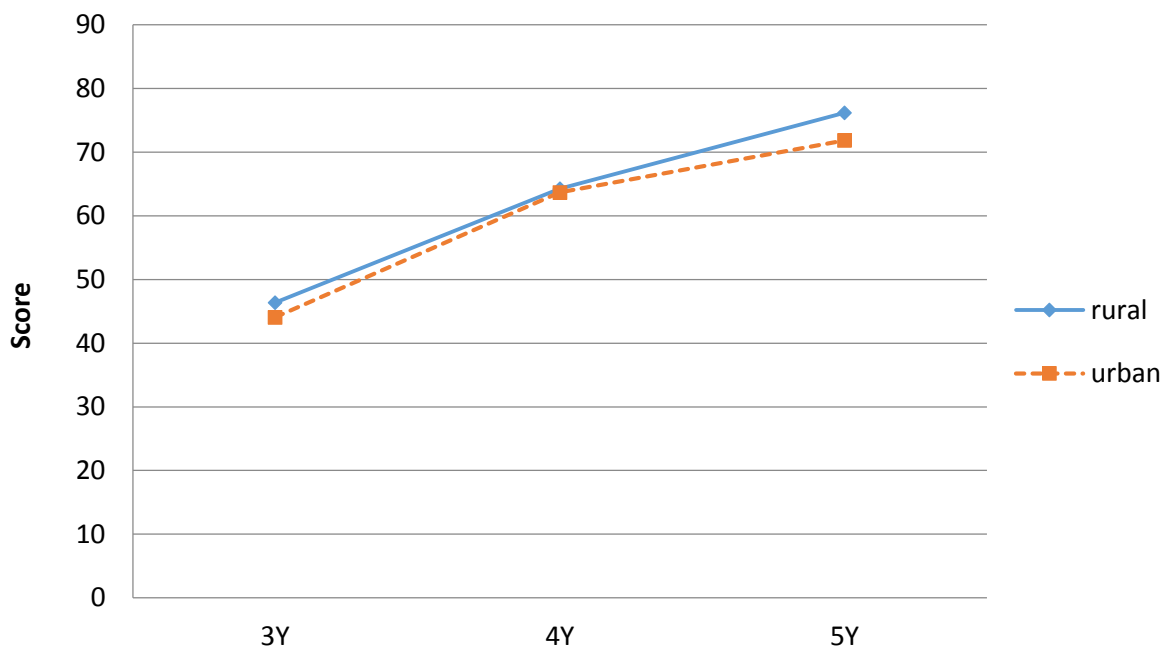
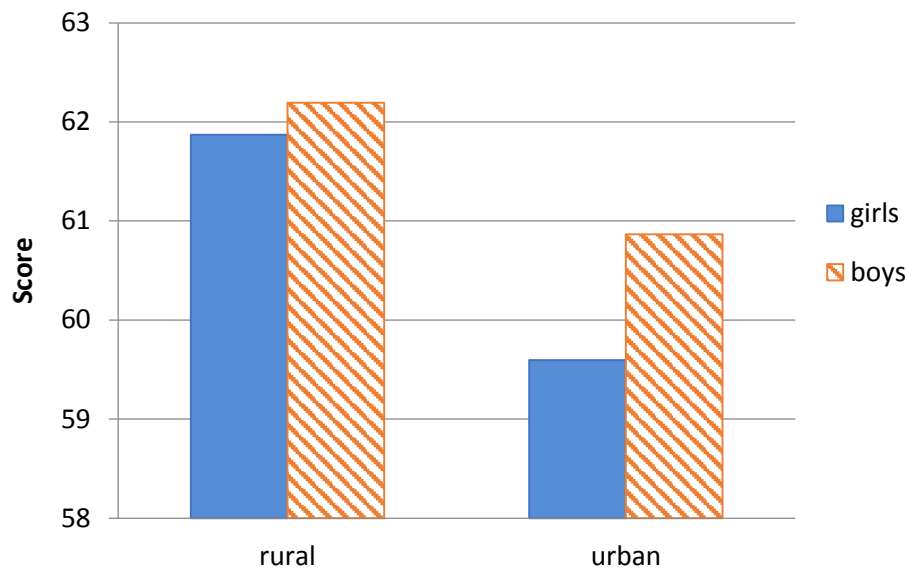


Figure 5.11
Gender differences in Motor development in children living in rural and urban areas (China)



DOMAIN 4: LANGUAGE AND EMERGENT LITERACY

The significant effects of Age, Gender, and Urbanicity were detected in children's performance in Language and Emergent Literacy. Five-year-olds ($M_{adjusted} = 84.63$, $SD = 9.86$, $SE = 0.64$) performed significantly better than 4-year-olds ($M_{adjusted} = 70.88$, $SD = 13.56$, $SE = 0.65$), and 4-year-olds performed significantly better than 3-year-olds ($M_{adjusted} = 51.70$, $SD = 13.05$, $SE = 0.63$). Girls ($M_{adjusted} = 70.33$, $SD = 17.94$, $SE = 0.51$) had significantly higher scores in Language and Emergent Literacy than boys ($M_{adjusted} = 67.81$, $SD = 18.28$, $SE = 0.53$). Urban children ($M_{adjusted} = 71.19$, $SD = 17.69$, $SE = 0.34$) did significantly better than rural children ($M_{adjusted} = 66.95$, $SD = 19.16$, $SE = 0.66$) in Language and Emergent Literacy.

Figure 5.12
Age and Gender differences in Language and Emergent Literacy (China)

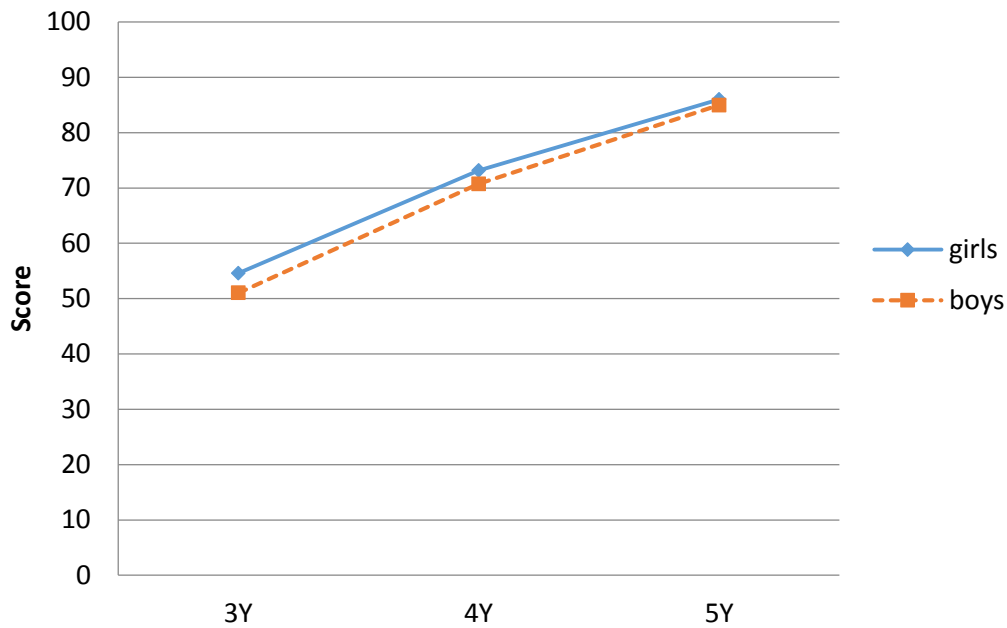


Figure 5.13
Age differences in Language and Emergent Literacy in children living in rural and urban areas (China)

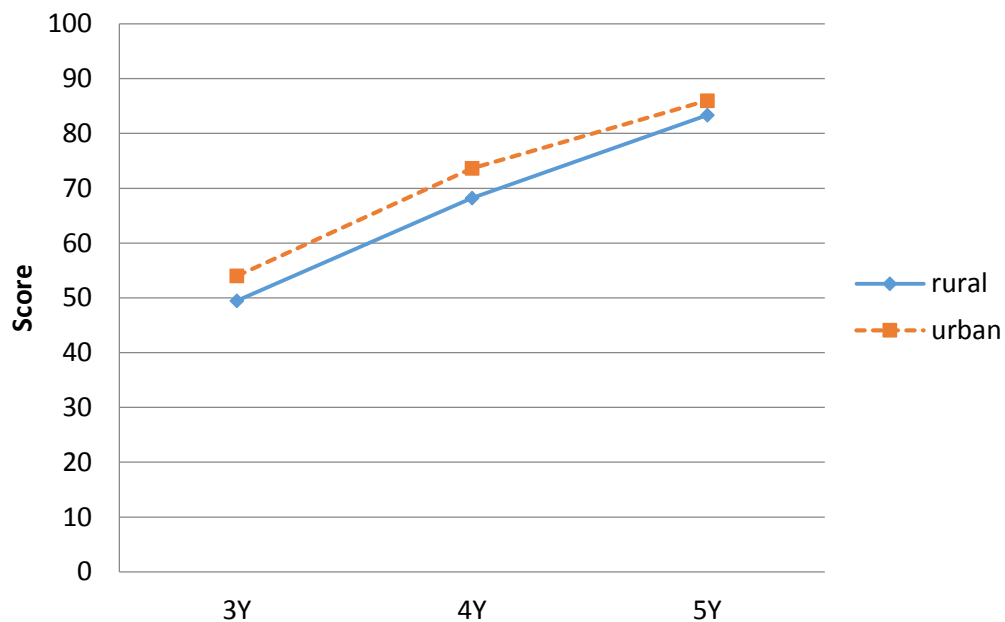
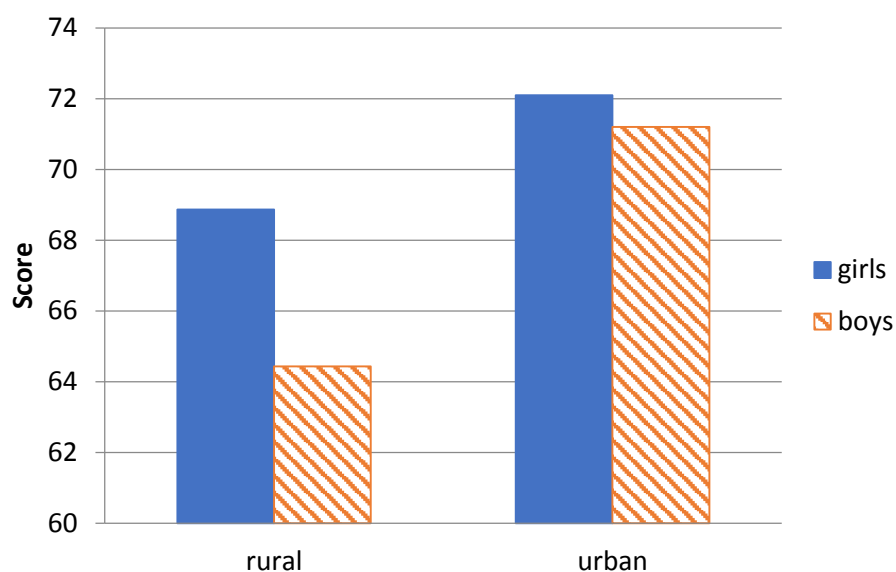


Figure 5.14
Gender differences in Language and Emergent Literacy in children living in rural and urban areas (China)



DOMAIN 5: HEALTH, HYGIENE, AND SAFETY

The significant effects of Age, Gender, and Urbanicity were also detected in children's performance in Health, Hygiene, and Safety. Five-year-olds ($M_{adjusted} = 86.48$, $SD = 8.54$, $SE = 0.65$) performed significantly better than 4-year-olds ($M_{adjusted} = 78.85$, $SD = 12.64$, $SE = 0.66$), and 4-year-olds performed significantly better than 3-year-olds ($M_{adjusted} = 63.65$, $SD = 15.15$, $SE = 0.64$). Girls ($M_{adjusted} = 77.82$, $SD = 15.39$, $SE = 0.52$) had significantly higher scores in Language and Emergent Literacy than boys ($M_{adjusted} = 74.83$, $SD = 15.63$, $SE = 0.54$). Urban children ($M_{adjusted} = 77.55$, $SD = 15.24$, $SE = 0.35$) did significantly better than rural children ($M_{adjusted} = 75.11$, $SD = 16.47$, $SE = 0.67$) in Health, Hygiene, and Safety.

Figure 5.15
Age and Gender differences in Health, Hygiene and Safety (China)

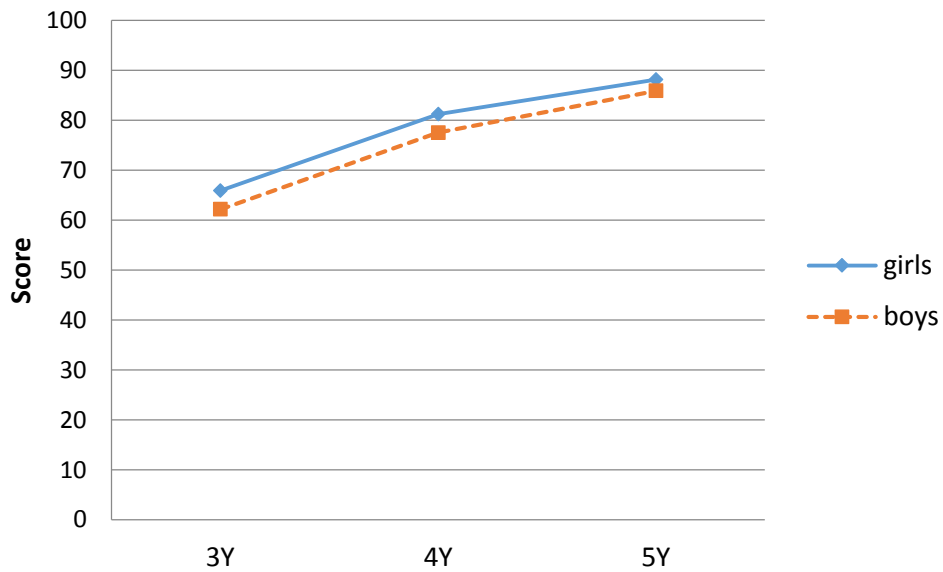


Figure 5.16
Age differences in Health, Hygiene and Safety in children living in rural and urban areas (China)

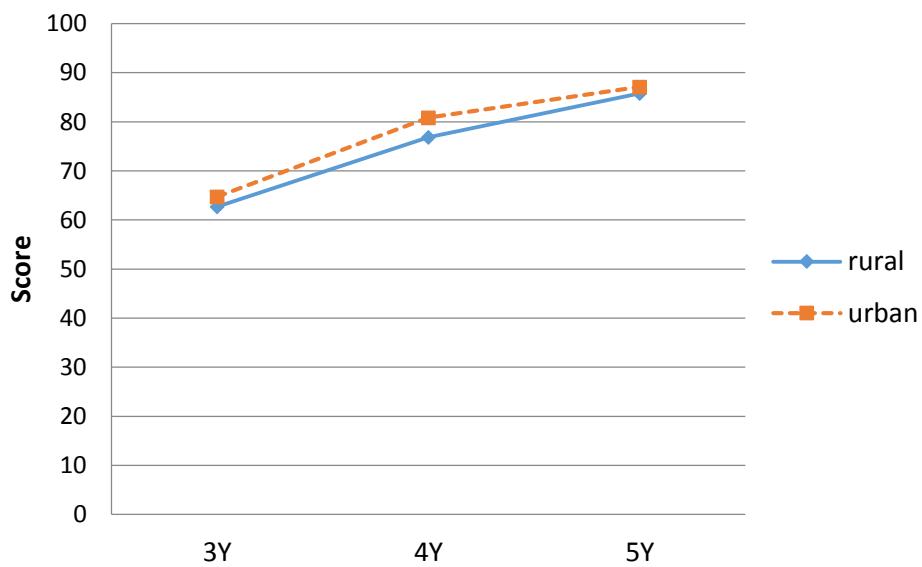
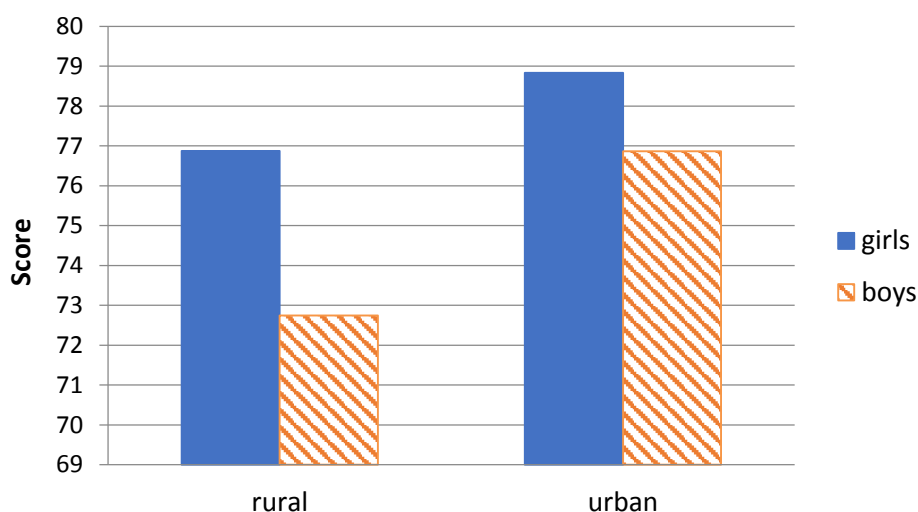


Figure 5.17
Gender differences in Health, Hygiene and Safety in children living in rural and urban areas (China)



DOMAIN 6: CULTURAL KNOWLEDGE AND PARTICIPATION

There were significant effects of Age and Urbanicity in children's performance in Culture Knowledge and Participation. Five-year-olds ($M_{adjusted} = 75.73$, $SD = 14.46$, $SE = 0.90$) performed significantly better than 4-year-olds ($M_{adjusted} = 65.93$, $SD = 16.99$, $SE = 0.91$), and 4-year-olds performed significantly better than 3-year-olds ($M_{adjusted} = 46.06$, $SD = 19.17$, $SE = 0.88$). Urban children ($M_{adjusted} = 65.09$, $SD = 20.97$, $SE = 0.48$) did significantly better than rural children ($M_{adjusted} = 60.05$, $SD = 20.88$, $SE = 0.92$) in Culture Knowledge and Participation.

Figure 5.18
Age and Gender differences in Cultural Knowledge and Participation (China)

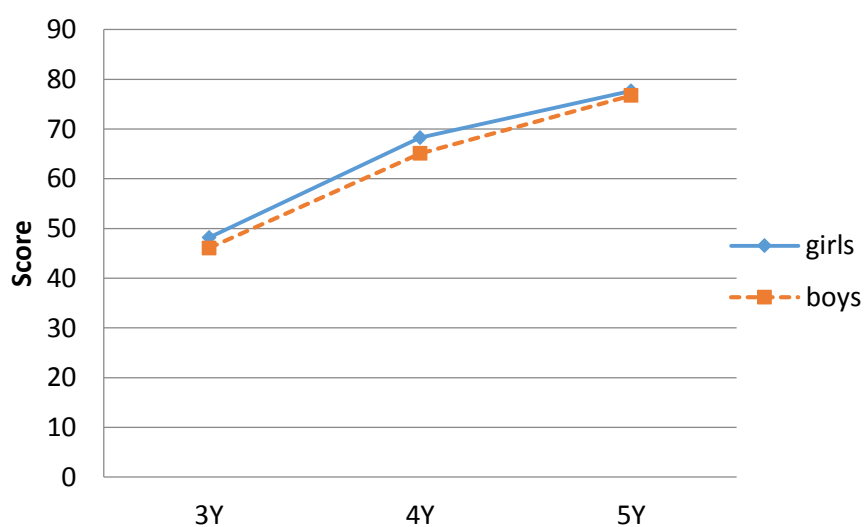


Figure 5.19
Age differences in Cultural Knowledge and Participation in children living in rural and urban areas (China)

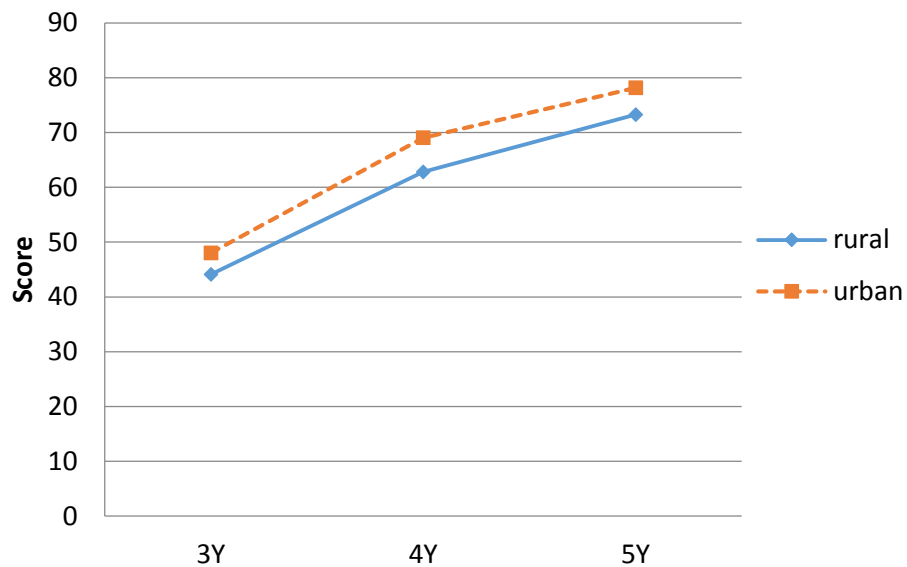
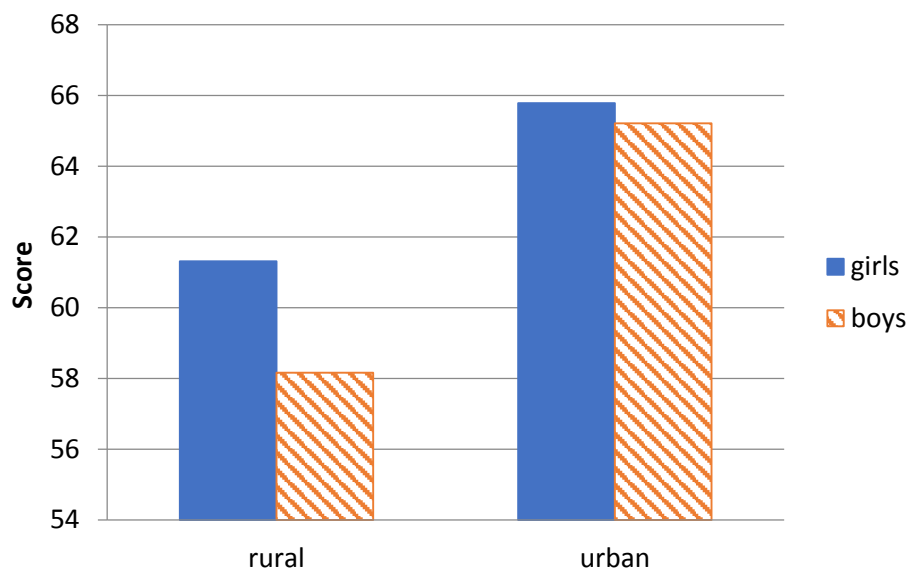


Figure 5.20
Gender differences in Cultural Knowledge and Participation in children living in rural and urban areas (China)



DOMAIN 7: APPROACHES TO LEARNING

Significant main effects of Age, Gender, and Urbanicity were detected in children's performance in Approaches to Learning. Five-year-olds ($M_{adjusted} = 80.46$, $SD = 14.70$, $SE = 0.98$) performed significantly better than the 4-year-olds ($M_{adjusted} = 72.23$, $SD = 17.88$, $SE = 0.99$), and the 4-year-olds performed significantly better than the 3-year-olds ($M_{adjusted} = 53.91$, $SD = 22.77$, $SE = 0.96$). Girls' performance ($M_{adjusted} = 70.40$, $SD = 21.68$, $SE = 0.78$) was significantly better than that of boys ($M_{adjusted} = 67.34$, $SD = 22.15$, $SE = 0.81$). Urban children ($M_{adjusted} = 72.81$, $SD = 21.83$, $SE = 0.52$) did significantly better than rural children ($M_{adjusted} = 64.92$, $SD = 21.06$, $SE = 1.00$) in Approaches to Learning.

Figure 5.21

Age and Gender differences in Approaches to Learning (China)

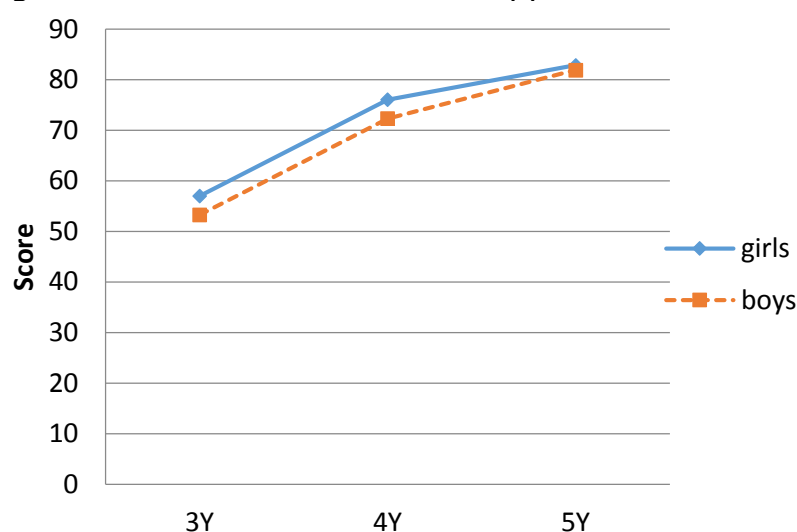


Figure 5.22

Age differences in Approaches to Learning in children living in rural and urban areas (China)

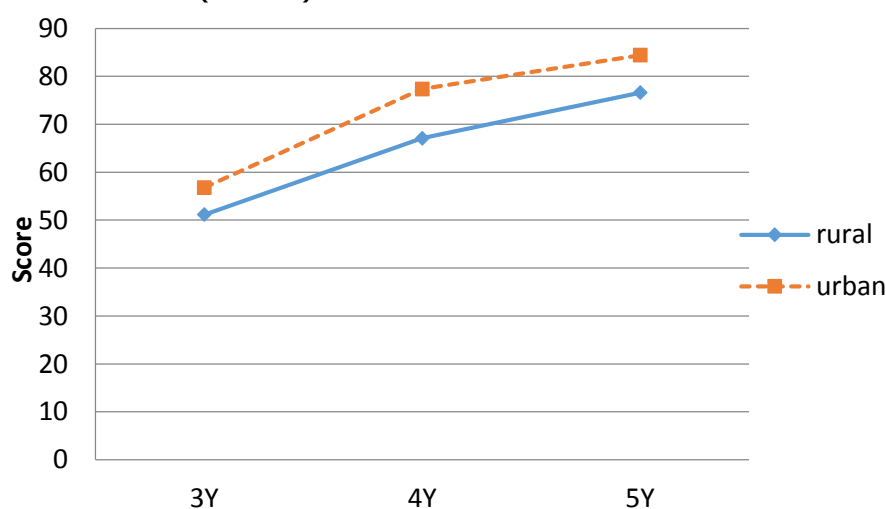
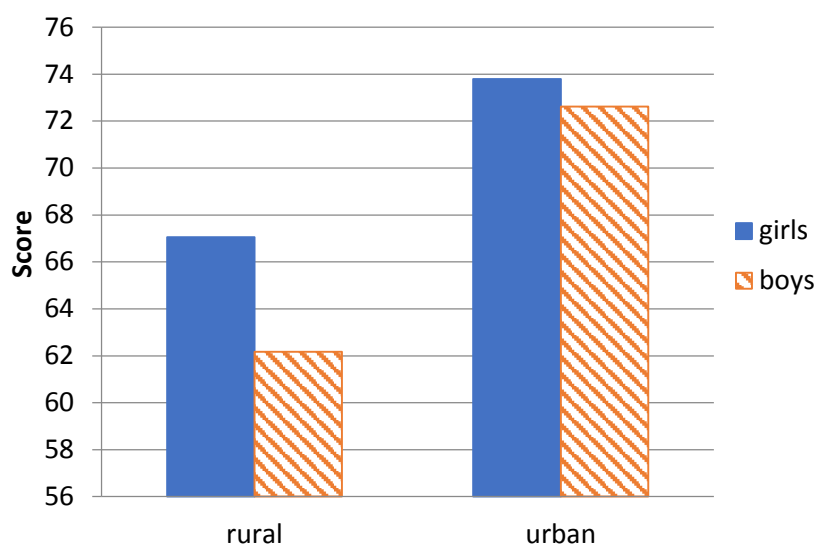


Figure 5.23
Gender differences in Approaches to Learning in children living in rural and urban areas (China)



EXAMINATION OF THE IMPACT OF PRE-SCHOOL ATTENDANCE ON CHILDREN DEVELOPMENT

All children in China were in preschool as shown in Table 5.5. The coefficients of the multi-level model are presented in Table 5.6. Mother's education, children's age and gender are significantly associated with children's performance.

Table 5.5
Attendance in an early learning programme by Age and Gender (China)

Age	Total
2Y	4
3Y	580
4Y	589
5Y	615
6Y	12
NA	3
Total	1803

Table 5.6
Regression coefficients from a multi-level model (China)

	Coefficients and 95% confidence intervals	P-values
Intercept	-1.59 (-6.23, 3.05)	0.502
Preschool attendance	7.16 (4.50, 9.95)	<0.001
Household Asset	-0.13 (-0.56, 0.31)	0.565
Mother's education	2.06 (1.66, 2.45)	<0.001
Sex (Girl as reference)	-1.86 (-2.80, -0.93)	<0.001
Age	14.68 (14.12, 15.24)	<0.001

^Δ All coefficients for preschool attendance are from the multilevel model which included all six countries.

CONSISTENCY BETWEEN CHILDREN'S PERFORMANCE AND PARENTS' RATING

We conducted a correlational analysis to assess the consistency between children's performance and parents' rating of children's development. As shown in Table 5.7 parents' rating of children's abilities (Q48-52, Q54-56, and Q67-70 in the Parent Questionnaire) was positively correlated to the total score as well as the domain scores.

Table 5.7
Correlations between children's performance on the EAP-ECDS and parents' rating (China)

	Parents' rating	EAP-ECDS Total	CD	SED	MD	LEL	HHS	CKP	ATL
Parents' rating	1	.26***	.29***	.20***	.19***	.29***	.18***	.19***	.17***
EAP-ECDS Total		1	.88***	.86***	.67***	.89***	.83***	.83***	.78***
CD			1	.71***	.58***	.80***	.69***	.68***	.60***
SED				1	.46***	.71***	.70***	.69***	.64***
MD					1	.60***	.50***	.42***	.35***
LEL						1	.71***	.68***	.61***
HHS							1	.66***	.57***
CKP								1	.61***
ATL									1

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

INFORMATION ABOUT THE FAMILY

Around 75% of the questionnaires were completed by mothers, 20.9% questionnaires by fathers and 4.1% were completed by other family members. The mean age of mothers was 32.37 (range from 22 to 48) and the mean age of fathers was 34.74 (range from 20 to 63). Figure 5.24 shows the distribution of parents' highest level of education attained. Most (37.4%) of the mothers participating in the survey had attained a higher certificate, diploma, or associate degree, 19.3% of them were bachelor's degree holders and 18.4% had upper secondary education. Similarly, most of the fathers (35.2%) had attained higher certificate, diploma, associate degree, 20.7% obtained bachelor's degree and 19.2% had upper secondary education. The majority of the mothers worked as clerks (23.5%), service and shop sales workers (22.6%), or were professionals (20.8%). Most of the fathers worked as managers and administrators (26.3%), were professional (19.7%) and service and shop sales worker (17.5%). Details about parents' occupations can be found in Figure 5.25.

Among the working mothers, 48% were granted paid maternity leave before the target child was born. The mean length of the maternity leave was 17.84 weeks with a wide range from 1 to 108 weeks. 35.8% of the mothers attended parenting class and a majority of them attended the class before the child was born (57.4%), 15.7% attended when the infant was 1 to 6 months old and 8.6% attended when the infant was 7 to 12 months.

Figure 5.24
Highest level of education attained by parents (China)

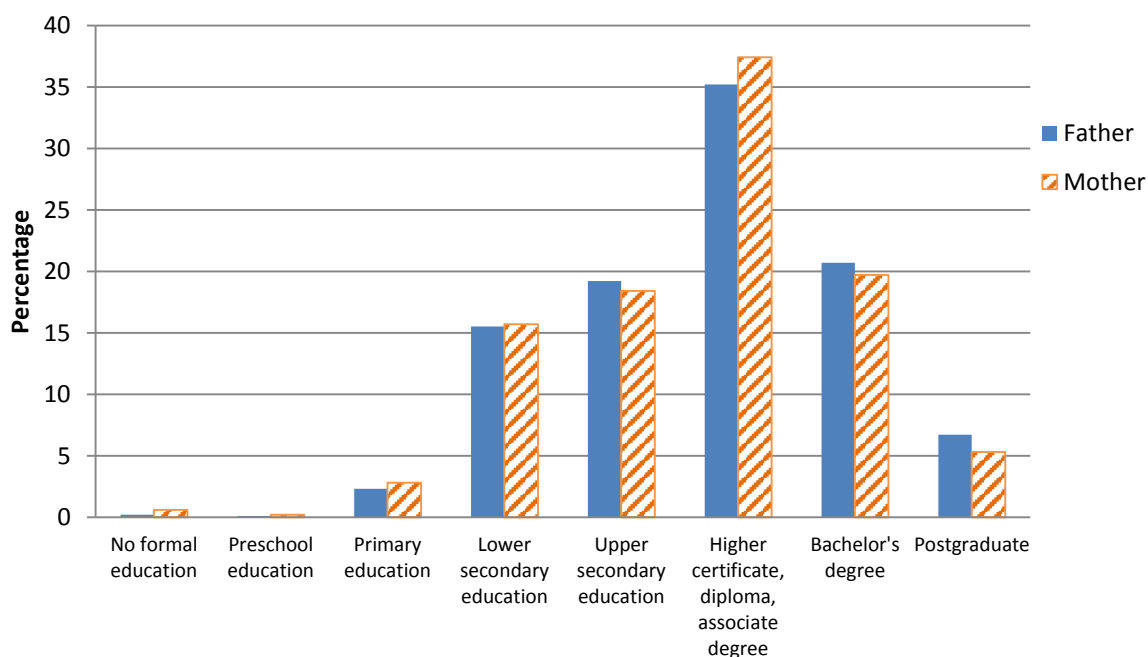
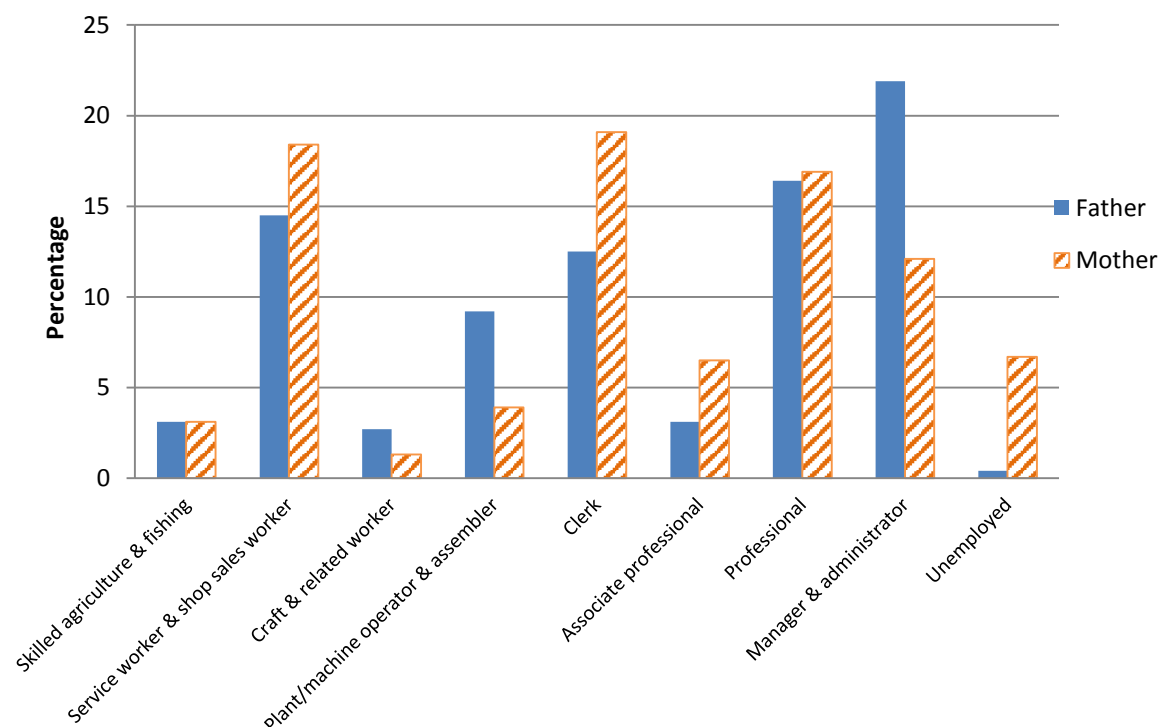


Figure 5.25
Parents' occupations (China)



Most of the families (82.0%) lived in a dwelling owned by them. Almost all of the families had electricity (99.7%), a television (99.4%) and a refrigerator (98.8%). Almost all the families reported that one or more family members had a mobile phone (99.6%). It was common for the family member to possess of a watch (86.1%), a bicycle (70.4%), a car or truck (68.6%) and a motorcycle or scooter (53.2%). The majority of the families had a fixed line telephone (70.5%) and radio (56%). It was rare for the family members to have an animal-drawn cart (4.9%) and a boat with motor (1.4%).

Only 19.5% of the families participating in this survey owned land that can be used for agriculture. About 7.5% of the families owned livestock, herds, other farm animals, or poultry. The majority of the families had a bank account.

EARLY LEARNING AND DEVELOPMENT

All children were enrolled in an early childhood programmes. Almost all of the programmes (98.5%) charged fees. The mean of the monthly fee was \$693.37. Most of the children attended such programmes for 30 to 40 hours a week (49.4%). Figures 5.26 and 5.27 show the duration children had stayed in the current early learning programme and the hours they spent per week in that programme. Most of the parents reported that their children wanted to attend kindergarten "always" (64.4%) or "most of the time" (26.5%).

Table 5.8
Duration of attendance in an Early Learning Programme for children living in urban and rural areas (China)

	Rural	Urban	Total
Less than 3 months	91	191	282
3 to 6 months	21	93	114
7 to 12 months	51	146	197
13 to 18 months	50	146	196
19 to 24 months	27	142	169
25 to 30 months	46	128	174
31 to 36 months	9	80	89
More than 37 months	10	57	67
Total	305	983	1288

Figure 5.26
Duration of attendance in an early learning programme (China)

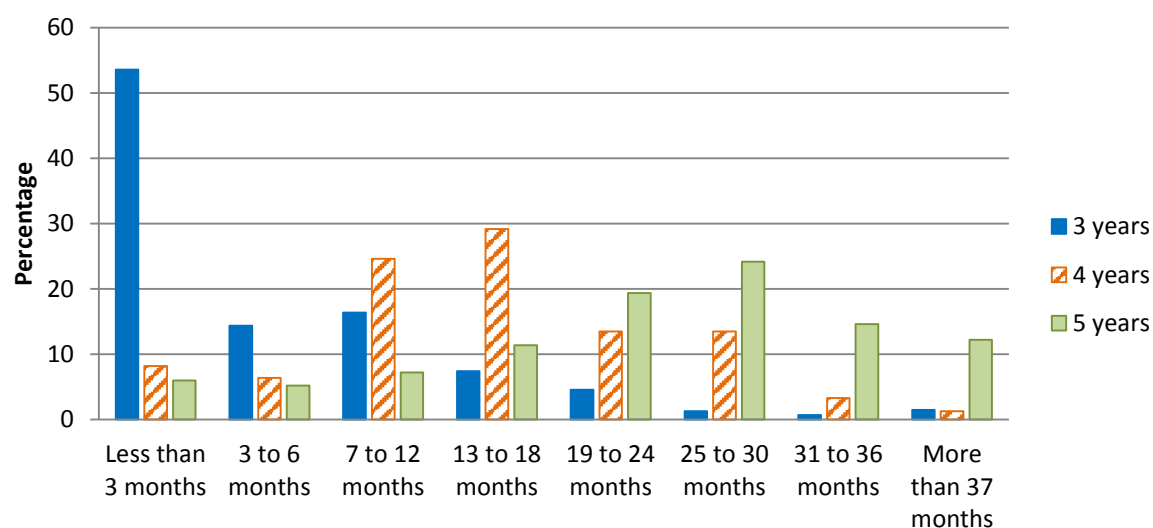
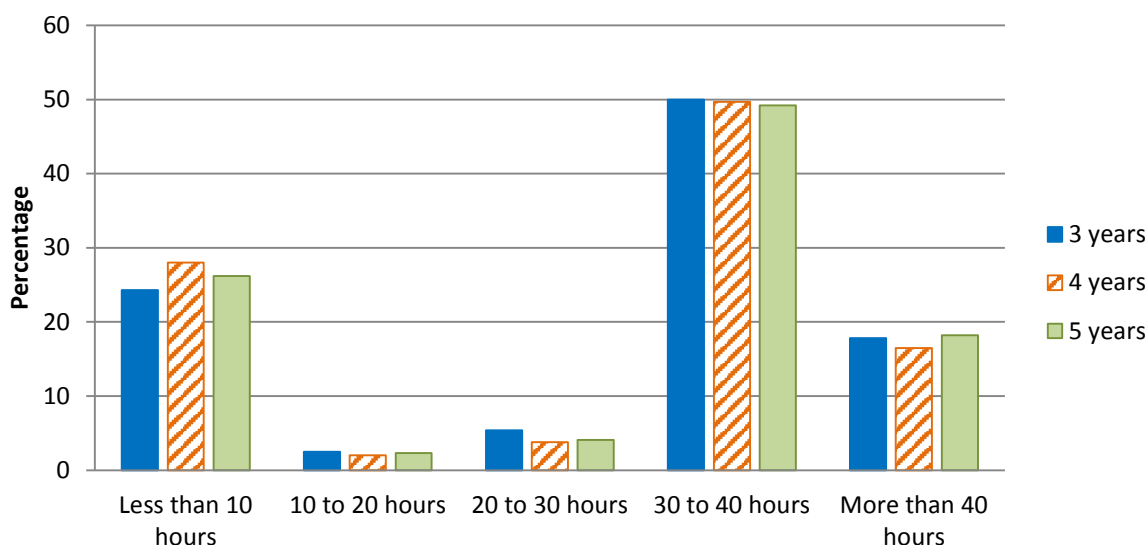


Figure 5.27
Number of hours of programme attendance per week (China)



Parents were asked to rate their children's abilities in terms of cognitive, language, motor, and social skills as well as knowledge about Chinese society. Most parents rated their child as "much above" compared to other children of a similar age in domains such as language skills (47.2%), ability to run and jump (72.1%), ability to hold chopsticks/spoons/pencils/pens (58.8%), practice healthy and hygienic habits (60.7%) and follow safety rules (59.7%). Most parents rated their child as "slightly above" in ability to concentrate on learning new tasks (34.7%), ability to learn new things and solve new problems (38.7%) and display social skills, such as show consideration of others and ability to manage emotions (35%). Most parents gave a relatively low evaluation in participation in important community events (including festivals) and 31.8% rated their child as about average for this item.

Parents further evaluated their children's more general social competencies. Most parents gave relatively high evaluations to their child in the following 3 aspects: 51.8% of the parents reported their child always got along well with other children of similar ages and 37.2% thought their child did so most of the time; 34% of the parents believed that their child was able to do the simple tasks assigned independently most of the time and 32.1% believed their child could always do so; 41.7% of the parents believed their child never kicked, bit, or hit other children or adults and 38.5% reported their child rarely did; A relatively low evaluation was given to the aspect of getting distracted easily which 61.8% of the parents recognized that their child sometimes got distracted easily and only 18.3% said their child rarely got distracted easily.

Most parents (79.2%) believed that their child could read at least four simple and popular words and more than half of the parents (89.4%) reported that their child could identify all numbers from 1 to 10.

Finally, parents' involvement in early learning-related activities at home was investigated. Parents were asked to report whether they or any other family members over 15 years engaged in six different early learning-related activities with the child in the past three days. Table 5.9 presents the percentages of mothers', fathers', and other family members' involvement in those six common early learning-related activities at home with the target children. Mothers engaged in these learning activities most frequently and about 40 - 60% of them reported interacting with their children through each activity.

Table 5.9
Adults' involvement in early learning-related activities at home (China)

Activities	Mothers (%)	Fathers (%)	Other Family Members (%)
Read books or looked at picture books with your child	58.9	25.3	11.7
Told stories to your child	57.2	25.2	11.2
Sang songs with your child	58.6	23.7	11.1
Took your child outside the home place	47.4	37.7	11.7
Played games with your child	47.1	35.1	13.8
Spent time with your child in naming things or counting things or drawing	56.1	27.0	12.7

We summed the scores of mothers', fathers' and other family members' involvement in each type of activity. Although the combined scores cannot represent the frequency of children's participation in such activities, they reveal the opportunities that children had to engage in specific activities at home with adults. As shown in Table 5.10 there were significant correlations among children's participation in those activities, which indicated that those children who were likely to engage in some activities with adults were also likely to engage in other activities with adults at home.

Table 5.10
Correlations among involvement in different early learning-related activities at home (China)

	i	ii	iii	iv	v	vi
i. Read books or looked at picture books with your child	1	.68***	.52***	.48***	.55***	.59***
ii. Told stories to your child		1	.55***	.44***	.52***	.53***
iii. Sang songs with your child			1	.48***	.50***	.50***
iv. Took your child outside the home place				1	.63***	.54***
v. Played games with your child					1	.63***
vi. Spent time with your child in naming things or counting things or drawing						1

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

To better understand mothers', fathers', and other family members' involvement in early learning-related activities at home, we created separate variables to represent mothers', fathers', and other family members' involvement in these six types of activities by summing up the scores for each of the parties in the six items mentioned above. Paired t-test showed that mothers ($M = 4.60$, $SD = 1.79$) were more involved in early learning-related activities at home compared to other family members ($M = 1.02$, $SD = 1.77$) ($t(1645) = 51.91$, $p < .001$), and fathers ($M = 2.50$, $SD = 2.08$) ($t(1645) = 51.91$, $p < .001$). Fathers also had more such activities with children at home than other family members ($t(1645) = 21.98$, $p < .001$).

Separate multiple regression analyses were conducted on scores of mothers', fathers', and other family members' involvement in such activities at home predicted by child age, gender, urban/rural residence, mothers' age, and education, as well as fathers' age and education. As Table 5.11 shows, mothers were more likely to be engaged in activities with younger children and better-educated mothers were more likely to have such activities with their child at home than other mothers. Fathers who had higher educational levels were more likely to engage such activities with the target children at home than other fathers. None of the variables in the model significantly predicted other family members' involvement in early learning-related activities at home.

Table 5.11
Predictors of family involvement in early learning-related activities at home (China)

Variables	Mother				Father				Other			
	B	SE B	β	p	B	SE B	β	p	B	SE B	β	p
Constant	2.32	0.47		<.001	-0.24	0.56		.674	1.64	0.49		.001
Child's age	-0.11	0.05	-.06	.038	-0.06	0.06	-.02	.366	-0.10	0.06	-.05	.065
Child's gender	0.05	0.09	.01	.602	0.03	0.11	.01	.786	0.07	0.09	.02	.482
Urban or Rural	0.20	0.13	.05	.119	0.12	0.15	.03	.411	-0.06	0.13	-.02	.626
Mother's age	0.02	0.02	.05	.173	0.01	0.02	.03	.504	-0.01	0.02	-.03	.525
Mother's education	0.26	0.06	.18	<.001	0.11	0.07	.07	.098	0.12	0.06	.08	.050
Father's age	0.00	0.01	.00	.980	0.01	0.02	.01	.738	-0.00	0.02	-.01	.797
Father's education	0.07	0.06	.05	.270	0.28	0.07	.17	<.001	-0.06	0.06	-.04	.353
R²	.07				.06				.01			
F	14.79***				12.58***				1.50			

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

CHILD'S HEALTH AND HABITS

Almost all (96.8%) target children in this study had all vaccinations. More than half of the families (58%) took the child for a regular health check-up to the clinic or hospital. About 79.6% of the target children had their vision checked by professionals, 80.3% of the children had their hearing checked by professionals, and 55.5% had their speech checked by professionals. A total score of families' health facilitation practices was created by summing up the scores from the above-mentioned items. A multiple regression analyses indicated that father's education significantly contributed to the prediction of families' health facilitation practices in China as shown in Table 5.12.

Table 5.12
Predictors of health facilitation practices (China)

Variables	B	SE B	β	<i>p</i>
Constant	2.52	0.36		<.001
Child's age	0.01	0.04	.01	.755
Child's gender	0.02	0.07	.01	.825
Urban or Rural	-0.03	0.09	-.01	.757
Mother's age	0.02	0.01	.06	.178
Mother's education	0.03	0.04	.03	.442
Father's age	-0.01	0.01	-.03	.504
Father's education	0.13	0.04	.13	.004
R ²	.03			
F	4.81***			

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

The percentage of children who had the habit of brushing teeth every day was 91.5%. Among them, 52.3% did this at both morning and night, 29.4% brushed teeth only in the morning, and 18.3% only did so at night. In addition, parents were asked whether their child had three basic health-related habits. Without adults' directions, 34% of the children were considered as being able to always wash their hands after using the toilet and 27.4% could do so sometimes. In addition, 30.8% of the children always washed their hands before meals without adults' directions and 29% would do so sometimes. As to eating vegetables, 34.1% of the parents reported their child would always do so without adults' directions and 28.3% would do so sometimes. Similarly, a total score of children's health-related habits were created by summing up the scores of these four items. Multiple regression analyses shown in Table 5.13 indicated that older children were more likely to show better health and hygiene habits than younger children.

Table 5.13
Predictors of children's health and hygiene habits (China)

Variables	B	SE B	β	<i>p</i>
Constant	5.10	0.78		<.001
Child's age	0.79	0.09	.25	<.001
Child's gender	-0.10	0.15	-.02	.505
Urban or Rural	0.40	0.21	.06	.058
Mother's age	-0.02	0.03	-.03	.526
Mother's education	-0.04	0.10	-.02	.680
Father's age	0.01	0.02	.01	.727
Father's education	0.19	0.10	.08	.056
<i>R</i> ²	.07			
<i>F</i>	13.73***			

Note. **p* < .05. ***p* < .01. ****p* < .001

About 9.8% of the parents reported medical conditions or chronic illness of their children, and 16.4% reported that their child had allergies. About 28.1% of the children had stayed in hospital for more than 3 days. We further asked parents to report whether their child had some specific health problems in the past month. Only 1.5% reported to have wheezing attacks, 13% had snoring, 0.3% had seizures, 1.6% had dizziness, 18.3% had persistent cough, 1.3% had joints problems, 10% had vomiting, 7.0% had diarrhoea, 7.7% had constipation or hard stools in the 2 weeks, 3.5% had skin rash with red swelling, 0.5% had numbness or weakness in limbs, 3.9% had trouble with eyes, 8.4% had trouble with nose and sinuses, 0.7% had trouble with ears and 12.4% had trouble with teeth, mouth or gums. The relatively common health problems were common cold or influenza-like illness. More than half of the target children (48.4%) suffered from cold or influenza-like illness in the past month. A total score representing children's basic health situation was created by summing up the scores in these items. A higher score represented more health problems. The multiple regression analyses showed that child age, Urbanicity, and mothers' education significantly contributed to the prediction of the reporting of children's health problems (see Table 5.14). Parents with more education and those with younger children and living in urban areas reported more health issues than other parents.

Table 5.14
Predictors of children's health situation (China)

Variables	B	SE B	β	p
Constant	1.19	0.44		.006
Child's age	-0.14	0.05	-.08	.007
Child's gender	-0.01	0.09	-.01	.869
Urban or Rural	0.33	0.12	.09	.006
Mother's age	-0.01	0.02	-.02	.691
Mother's education	0.15	0.05	.12	.007
Father's age	0.01	0.01	.03	.531
Father's education	-0.02	0.06	-.02	.735
R^2	.04			
F	6.17***			

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

SUMMARY AND DISCUSSION OF FINDINGS

EAP-ECDS

1. There were significant developmental differences in the EAP-ECDS. Older children performed better than younger children in all the following seven domains of the Scales: Cognitive Development; Socio-emotional Development; Motor Development; Language and Emergent Literacy; Health Hygiene and Safety; Cultural Knowledge and Participation; and Approaches to Learning. This finding is not unexpected as the EAP-ECDS is a developmental scale with adequate validity and reliability.
2. There were significant gender differences favouring girls on the EAP-ECDS in the following domains: Socio-emotional Development, Language and Emergent Literacy; Health Hygiene and Safety, and Approaches to Learning. Boys and girls did not differ on Cognitive Development, Motor Development, and Cultural Knowledge and Participation.
3. Urban children did better than rural children in all domains of the Scales, except in Motor Development.

EARLY LEARNING AND DEVELOPMENT

4. The GER for preschool education in China is 61. However, all children in our sample, even those in rural areas, attended early education programmes and nearly half of them (49.4%) spent 30 to 40 hours a week in the kindergarten.
5. More than half of caregivers reported having involvement in early learning-related activities at home. However, mothers were more involved in early learning activities than other family members and

educated mothers were more likely to support early learning at home than other mothers. The same is true of educated fathers.

CHILD'S HEALTH AND HABITS

6. In terms of health, almost all children (96.8%) had had their vaccinations. Father's education was the only predictor of parents' health facilitation practices such as taking the child for a health check. Parents reported on basic health-related habits such as always washing hands after using the toilet and before meals without adults' directions and eating vegetables without adults' directions. Regression results indicated that older children tended to have better health and hygiene habits than younger children. However, urban parents and better educated mothers were more likely to report that their children had health problems. It is not clear whether urban children suffer poorer health or whether urban parents are more aware of children health issues and are more likely to report health concerns.

CHAPTER 6 MONGOLIA



Figure 6.1

Map of Mongolia

Source: Central Intelligence Agency. (2014). The World Fact Book.

<https://www.cia.gov/library/publications/the-world-factbook/geos/mg.html>

GENERAL INFORMATION

Mongolia, the world's second-largest landlocked country, is one of the least densely populated countries in the world. It has a population of about 2.8 million (UNESCO, 2014) and occupies approximately 1,564,116 square kilometres. It has 21 provinces. Economic activity in Mongolia has traditionally been based on herding and agriculture, but development of extensive mineral deposits and attendant growth in mining-sector activities, has transformed the country's economy in recent years. Still, with a GDP (PPP) of US\$5,400 per capita (Central Intelligence Agency, 2013), Mongolia is ranked by the World Bank (2012) as a lower-middle-income economy. The majority of the country's citizens are of Mongol ethnicity (94.9%), and the official language, Khalkha Mongol, is spoken by 90% of the population. Roughly 30% of the population are nomadic or semi-nomadic. Half of the population is under 27 years, and children under the age of 15 constitute 26.9% of the population (Central Intelligence Agency, 2013).

Mongolia has an infant mortality rate of 31 and about 16% of children below five years are moderately or severely stunted (UNESCO, 2014). The government has exerted much effort in enhancing early childhood development and education in recent years and services are gradually improving. Kindergartens, which make up of about 90% of early childhood education establishments, are all publicly subsidised (UNESCO International Bureau of Education, 2011). The National Policy on Integrated Early Childhood Development (IECD) has been adopted since 2005 and aims at improving and strengthening inter-sectoral collaboration and coordination in early childhood development, with specific focus on disadvantaged groups, remote rural children, and children with disabilities (UNESCO Office Beijing, 2008). The Mongolia Education Master Plan for 2006-2015 aims to achieve a gross enrolment ratio of 99 for early childhood education by 2015, and addresses the issue of quality with a number of initiatives including plans to combat the deterioration of facilities and teacher quality by building new schools and adequately training teachers (Government of Mongolia, 2006). In 2010, official expenditures in early childhood education accounted for 22.2% of total educational expenditures.

The GER for pre-primary education (three to five years) was 82 in 2011 and the total GER in pre-primary education and other early childhood care and education was 106 (UNESCO, 2014). About 69% of entrants to Primary 1 in 2011 had some form of Early Childhood Education and Care (ECCE) experience. Despite these relatively high rates, the coverage of early childhood services across the country is uneven, with the highest rates found in major cities and the lowest in the western most province of Bayan-Ölgii. Children of nomadic families, in particular, account for only 15% of the total enrolment. Alternative early childhood services, such as mobile kindergartens, short-term preschool summer courses and home training, are available to some, but the quality of such programmes is often poor and the duration is short. Moreover,

there is neither a standardised methodology nor a standard curriculum for these alternative services, and systematic training of teachers has been weak (UNESCO International Bureau of Education, 2011). Such disparities have resulted in unequal development opportunities for young children and have consequential impact on basic educational attainment at later stages (UNESCO Office Beijing, 2008).

EAP-ECDS FINDINGS

SAMPLE

The ideal sample size was determined as 1200 and children were drawn from five provinces (Dundgovi, Khentii, Khovd, Khuvsgul, and Ulaanbaatar) and 14 districts (Bayanzurkh, Binder, Darvi, Erdenedalai, Erdenetsagaan, Jargalant, Kherlen, Kherlen sum, Murun, Saintsagaan, Sukhbaatar, Takhilgat, Tarialan, and Undurkhssn). The sample included urban and rural areas. The sampling strategy was determined in conjunction with the Statistical Department and the sample was stratified by region, urbanicity, child's age and gender. In addition to the child, one parent or caregiver of the child was interviewed, in an individual session. The final sample included 624 boys and 624 girls. Among these 1248 children, 626 lived in urban areas and 622 resided in rural areas. We only focused on children aged three to five in the analyses on Scale validation and child development in each domain ($n = 1247$). Data from all 1248 children were included in the analyses related to parental interviews. About 67.5% of the respondents were mothers, 15.4% were fathers, and 17.1% were other family members. Most of them (98.8%) were Khalkha and only 1.2% were from ethnic minority groups. Detailed sample information can be found from Table 6.1.

Table 6.1

Sample distribution in terms of Age, Gender, and Urbanicity in Mongolia

Age	Rural			Urban			Urbanicity Missing			Total
	Girls	Boys	Gender Missing	Girls	Boys	Gender Missing	Girls	Boys	Gender Missing	
3Y	103	102	0	104	105	0	0	0	0	414
4Y	104	105	0	104	105	0	0	0	0	418
5Y	104	104	0	105	102	0	0	0	0	415
6Y	0	0	0	0	1	0	0	0	0	1
NA	0	0	0	0	0	0	0	0	0	0
Total	311	311	0	313	313	0	0	0	0	1248

RELIABILITY AND VALIDITY

Our results indicated that items within the same domain have satisfactory reliability with alpha ranging from 0.75 to 0.93. Among the seven domains, Motor Development, Health, Hygiene and Safety as well as Approaches to Learning appeared to be relatively slightly weaker in

overall internal consistency. Table 6.2 shows the average Cronbach's alpha for each domain.

Table 6.2

Internal consistency for each domain (Mongolia Scale)

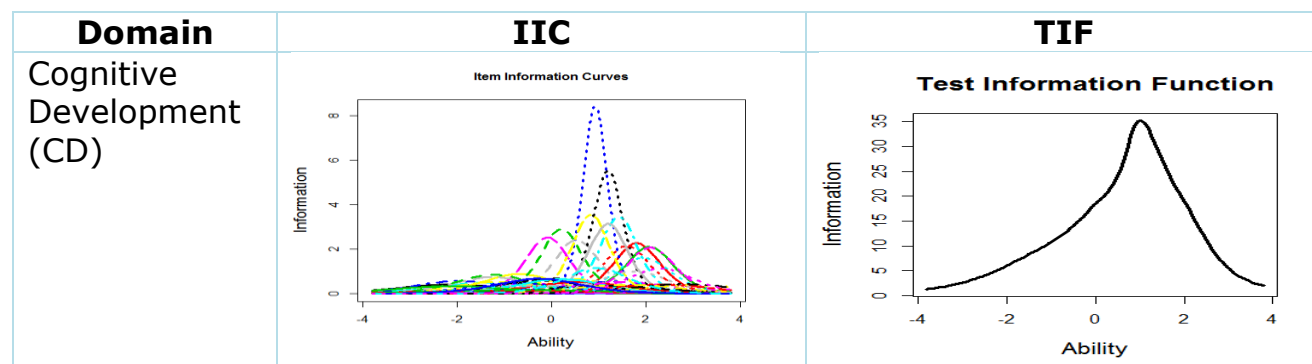
Domain	Cronbach's alpha (all items)
Cognitive development	0.93
Socio-emotional Development	0.92
Motor Development	0.75
Language and Emergent Literacy	0.92
Health, Hygiene, and Safety	0.87
Cultural Knowledge and Participation	0.91
Approaches to Learning	0.88

ITEM ANALYSIS

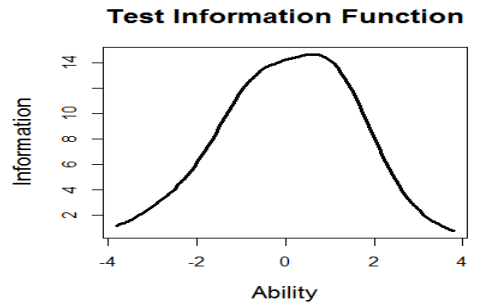
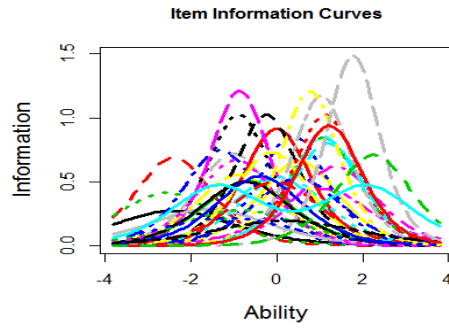
Figure 6.2 shows the item information curves (IIC) and test information function (TIF) for each domain. These graphs indicate the latent ability level at which the assessments offer the most information. It is worthy to note that information tended to concentrate on mid-high level of ability for Cognitive Development, Socio-Emotional Development, Language and Emergent Literacy, and Cultural Knowledge and Participation. For Health, Hygiene and Safety as well as Approaches to Learning, information tended to concentrate on both lower and higher ability levels. As for Motor Development, most information was represented at the lower ability level.

Figure 6.2

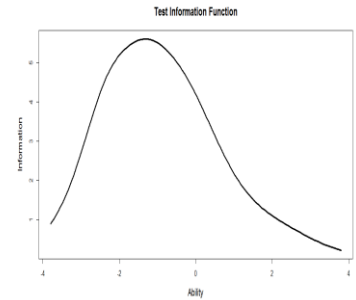
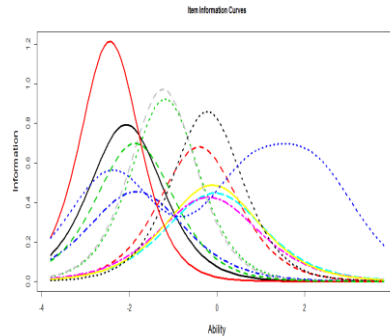
Item information curves (IIC) and test information function (TIF) for each domain (Mongolia Scale)



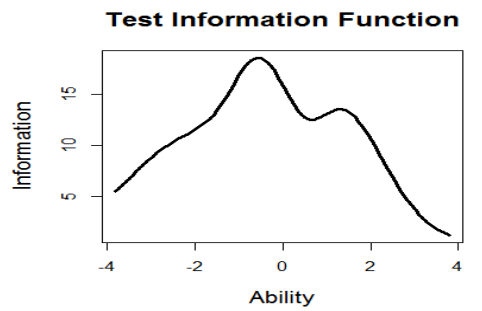
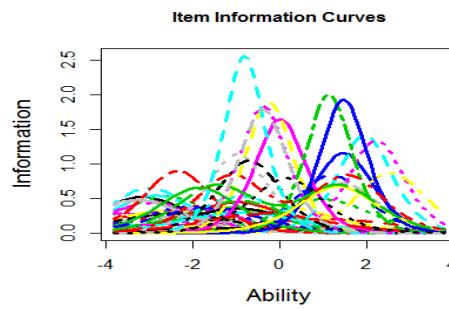
Socio-emotional Development (SED)



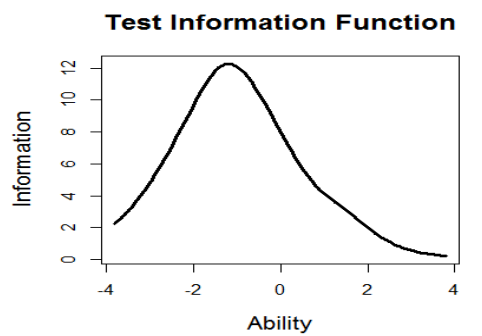
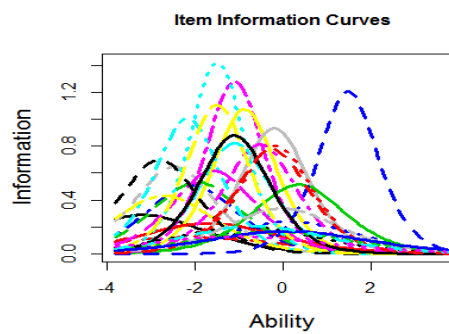
Motor Development (MD)



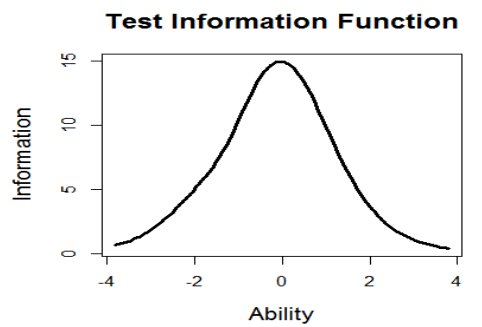
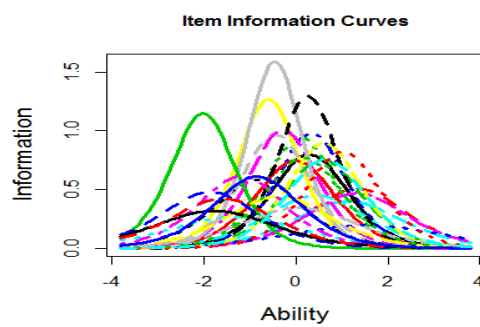
Language and Emergent Literacy (LEL)



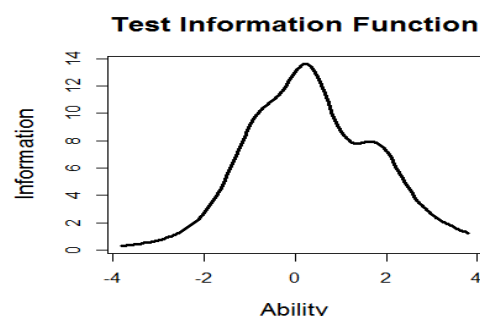
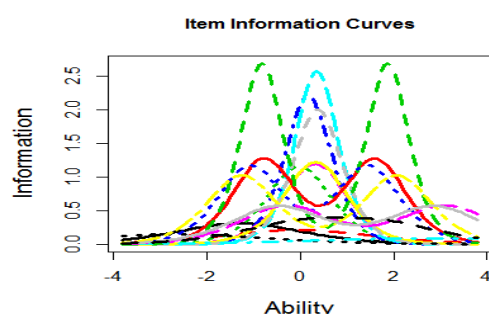
Health, Hygiene, and Safety (HHS)



Cultural Knowledge and Participation (CKP)



Approaches to Learning (ATL)



EASIEST AND MOST DIFFICULT ITEMS IN EACH DOMAIN

Item analysis results also indicated items which maybe too easy or too difficult and potentially lack sufficient power to discriminate across ability level. For example: in the Cognitive Development domain, the item which asked children to bring a block to the assessor (item 9.1) appeared to be too easy for children, while the item which required children to do simple subtraction (item 6.6) was the most difficult. Few children, even those with relatively high overall ability, were able to provide the correct response. As for the Socio-emotional Development domain, the easiest item was to given mother's given and family name (item 23.1) and the most difficult item was to provide a second reason for queuing up (item 34.6). With respect to Motor Development, the easiest item was to string large beads (item 43.1) and the most difficult item was to hit the target using a ball in two out of three attempts (item 40). As for Language and Emergent Literacy, the easiest item was to orally identify a picture of hands being washed (item 46.1). The most difficult item was to identify 11 to 13 letters (item 52.4). With regard to Health, Hygiene and Safety, the easiest item was identifying teeth (item 66.3) and the most difficult item was to describe the function of an elbow (item 66.6). For Cultural Knowledge and Participation, the easiest item was to sing one line of a verse (item 75.1) and the most difficult item was naming a second component of the place where they live (item 69.2). The easiest items and most difficult items for the different domains are shown below. With regard to Approaches to Learning, the easiest item was to show the ability to delay gratification (item 81) while the most difficult one was to let go of the engaging assessment materials (item 83.2).

Table 6.3

Easiest and most difficult Items in Each Domain (Mongolia Scale)

Item No.	Item Description	Passing Rate (%)
Cognitive Development		
<i>3 easiest items</i>		
9.1	Brought the block/toy to assessor	94.5
9.2	Sat on the chair	93.5
2.1	Compare quantities: 3 vs. 9	89.3

<i>3 most difficult Items</i>		
6.6	Subtraction: $10-7=3$	4.1
6.3	Addition: $8 \text{ plus } 3 = 11$	4.3
21.3	Named at least 7 to 8 simple geometric shapes	4.3
Socio-emotional Development		
<i>3 easiest items</i>		
23.1	Gave mother's given and family names	94.5
23.2	Gave father's given and family names	93.2
22	Knew own age	89.0
<i>3 most difficult Items</i>		
34.6	Gave another reason for why queuing up is appropriate	5.9
34.3	Gave another reason for why it is wrong to point at parents	7.4
29.4	Gave 1 more answer on what makes the child angry	17.4
Motor Development		
<i>3 easiest items</i>		
43.1	Strung large beads	97.1
43.2	Strung small beads	
37.1	Poured water to designated line in cup	93.0
<i>3 most difficult Items</i>		
40	Hit the target on three out of three attempts	7.3
41	Caught the ball three times	29.6
42.2	Following instructions to fold a piece of paper (steps 4-7)	56.3
Language and Emergent Literacy		
<i>3 easiest items</i>		
46.1	Identified picture of washing hands	97.4
46.4	Identified action of kicking a ball	97.4
44.1	Identified action of combing hair	97.2
<i>3 most difficult Items</i>		
52.4	Named 11 to 13 letters/characters	3.3
52.3	Named 8 to 10 letters/characters	3.9
52.2	Identified 5-7 letters	5.9
Health, Hygiene, and Safety		
<i>3 easiest items</i>		
66.3	Identified teeth	97.1
62.5	Took the vest off independently	95.0
60.1	Showed how to clean their face and hands	94.8
<i>3 most difficult Items</i>		
66.6	Described the function of an elbow	12.3
66.5	Identified the elbow	40.3
64.2	Gave an acceptable reason for not following a stranger	46.0
Cultural Knowledge and Participation		

<i>3 easiest items</i>		
75.1	Sang 1 line of the verse	93.7
75.2	Sang 1 more line of the verse	87.7
77	Identified national flag of their own country	83.5
<i>3 most difficult Items</i>		
69.2	Named at least 1 more component of the community	19.6
70.4	Described functions of named item for cooking	20.6
74.3	Provided another relevant detail of the celebration	23.3
Approaches to Learning		
<i>3 easiest items</i>		
81	Showed ability to delay gratification	86.0
79.1	Said 1 item he/she could do well	76.3
83.4	Showed spontaneous positive interaction with assessor	6.2
<i>3 most difficult Items</i>		
83.2	Did not want to let go of materials	0.5
80.6	Assessor tapped twice, child tapped once	37.7
80.3	Assessor tapped twice, child tapped once	38.1

COMPARISONS ACROSS DIFFERENT DOMAINS AND GROUPS

A 3 (Age) × 2 (Gender) × 2 (Urbanicity) MANOVA was performed with children's scores in each domain as dependent variables. The omnibus analysis yielded significant effects of Age, $F(14, 2460) = 87.47$, $p < .001$, $\eta_p^2 = .33$, Gender, $F(7, 1229) = 8.73$, $p < .001$, $\eta_p^2 = .05$ and Urbanicity, $F(7, 1229) = 9.17$, $p < .001$, $\eta_p^2 = .05$. There was also a significant Age × Urbanicity effect, $F(14, 2460) = 1.88$, $p < .05$, $\eta_p^2 = .01$. Follow-up univariate tests were further conducted and results are presented in Table 6.4 by domain. Post-hoc comparisons were performed using the Tukey's HSD test with p set at .05 for examinations of interaction effects. No multiple effects were detected.

Table 6.4
Age, Gender and Urbanicity differences in domain scores (Mongolia)

Domain	Age		Gender		Urbanicity		Age × Gender		Age × Urbanicity		Gender × Urbanicity	
	$F(2, 1235)$	η_p^2	$F(2, 1235)$	η_p^2	$F(2, 1235)$	η_p^2	$F(2, 1235)$	η_p^2	$F(2, 1235)$	η_p^2	$F(2, 1235)$	η_p^2
CD	566.48***	.48	7.32**	.01	7.38**	.01	3.62*	.01	3.36*	.01	0.00	.00
SED	285.79***	.32	5.97*	.01	25.33***	.02	0.06	.00	4.58*	.01	0.02	.00
MD	219.48***	.26	1.21	.00	13.02***	.01	1.61	.00	2.52	.00	1.79	.00
LEL	528.22***	.46	38.83***	.03	21.10***	.02	0.72	.00	0.38	.00	0.01	.00
HHS	330.72***	.35	22.25***	.02	6.67*	.01	0.02	.00	1.76	.00	1.64	.00
CKP	310.13***	.33	11.24**	.01	6.36*	.01	0.29	.00	4.66*	.01	1.92	.00
ATL	310.88***	.34	12.18***	.01	15.99***	.01	3.04*	.01	0.71	.00	0.26	.00

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

DOMAIN 1: COGNITIVE DEVELOPMENT

As shown in Table 6.4, there were significant effects of Age, Gender, and Urbanicity and the Age × Gender and Age × Urbanicity interactions were also significant. Figures 6.3, 6.4, and 6.5 show the differences in performance in Cognitive Development across age, gender and Urbanicity. Although the overall Age X Gender interaction was significant, girls tended to make more gains than boys with increasing age but these differences were not statistically significant at the three different age groups. On the other hand, 5-year-old urban children performed significantly better than the 5-year-olds from the rural areas ($p < .01$).

Figure 6.3
Age and Gender differences in Cognitive Development (Mongolia)

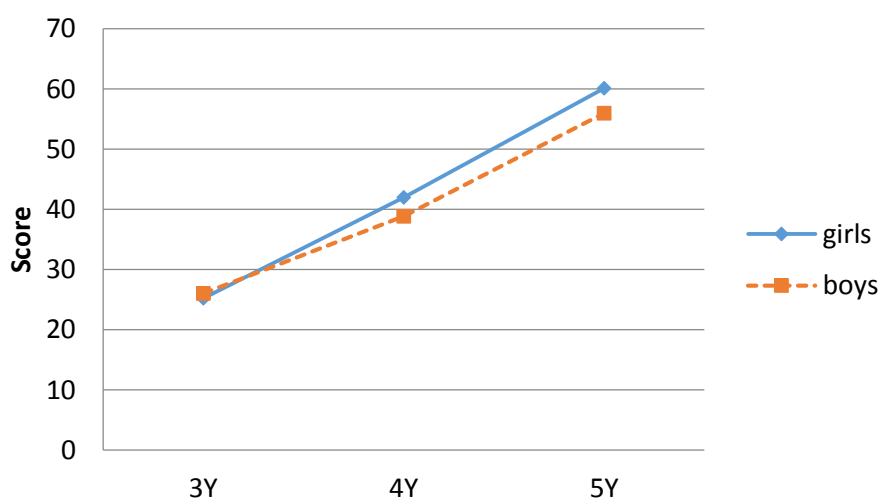


Figure 6.4
Age differences in Cognitive Development in children living in rural and urban areas (Mongolia)

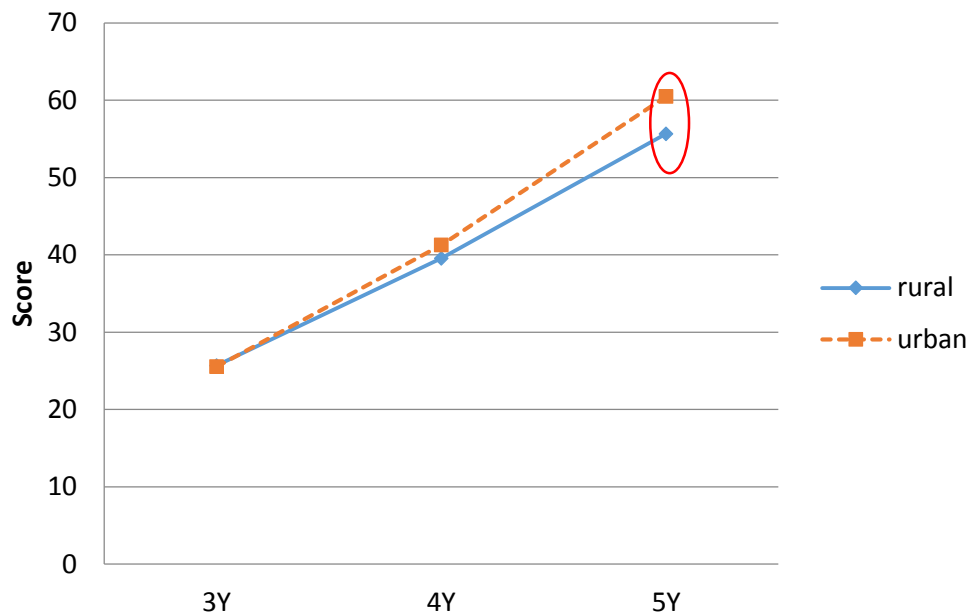
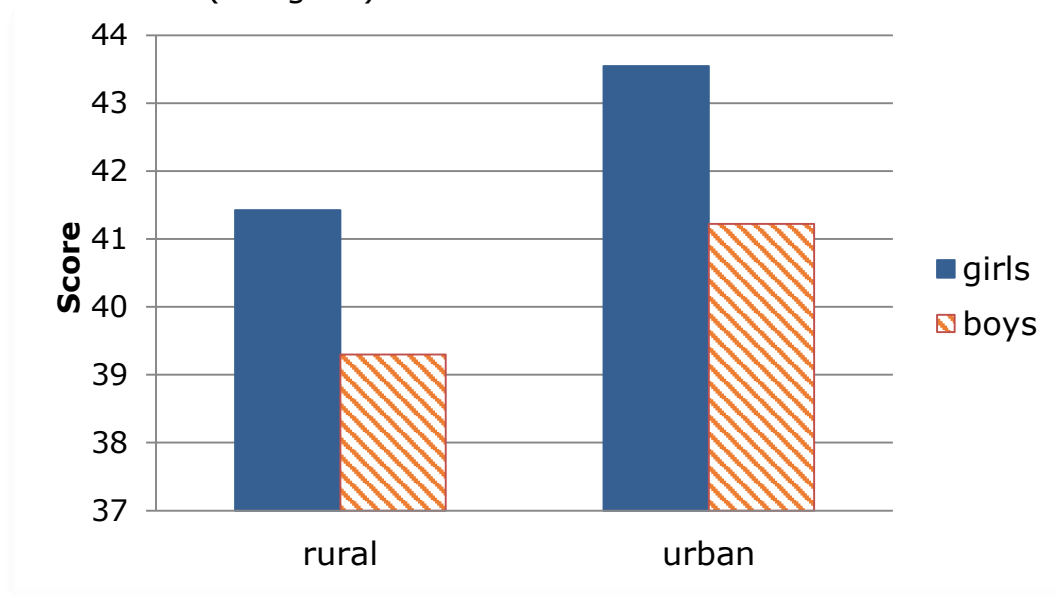


Figure 6.5

Gender differences in Cognitive Development in children living in rural and urban areas (Mongolia)



DOMAIN 2: SOCIO-EMOTIONAL DEVELOPMENT

There were significant effects of Age, Gender and Urbanicity for children's performance in the domain of Socio-emotional Development (see Table 6.4). The Age \times Urbanicity interaction was also significant. There were no significant differences between urban and rural 3- and 4-year-olds, but urban 5-year-olds did significantly better than their rural peers. Girls ($M_{adjusted} = 51.13$, $SD = 21.15$, $SE = 0.70$) showed significantly higher performance than boys ($M_{adjusted} = 48.70$, $SD = 21.56$, $SE = 0.70$).

Figure 6.6
Age and Gender differences in Socio-emotional Development (Mongolia)

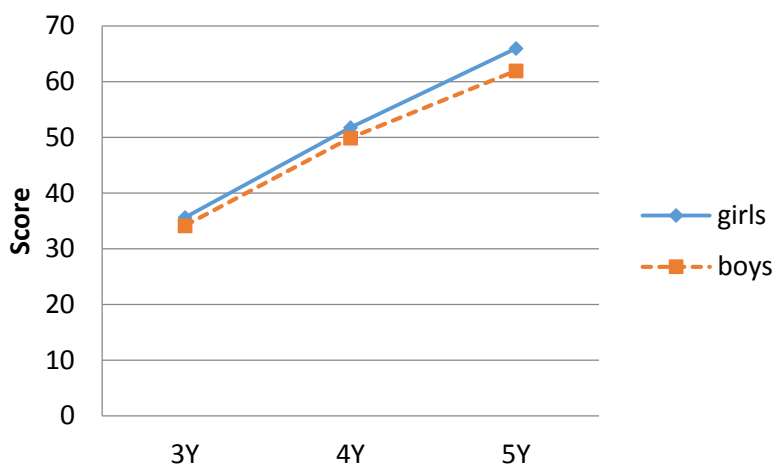


Figure 6.7
Age differences in Socio-emotional Development in children living in rural and urban areas (Mongolia)

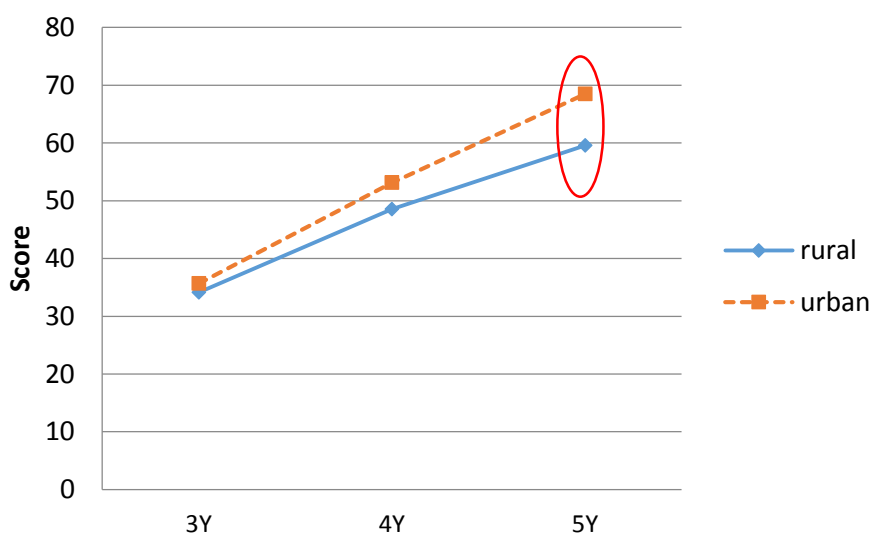
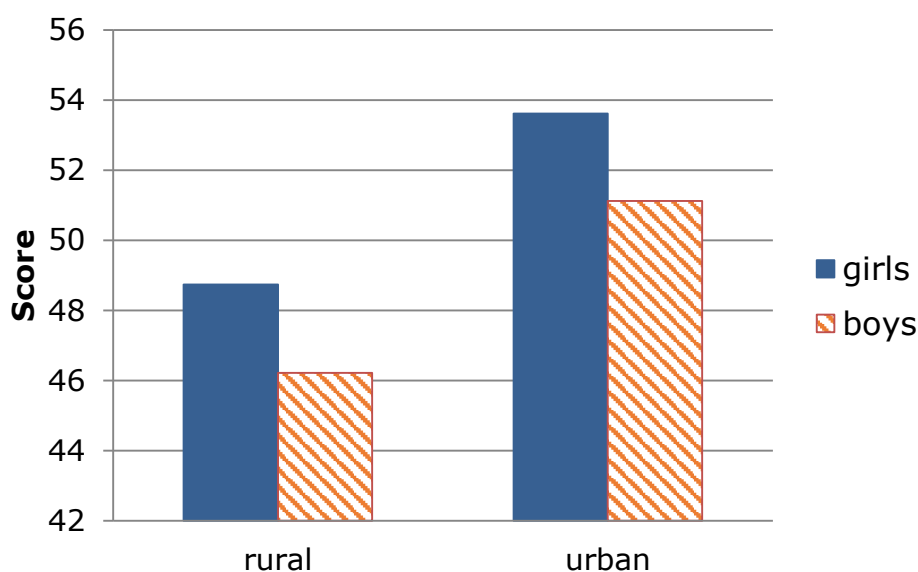


Figure 6.8
Gender differences in Socio-emotional Development in children living in rural and urban areas (Mongolia)



DOMAIN 3: MOTOR DEVELOPMENT

There were significant effects of Age and Urbanicity in children's Motor Development (see Table 6.4). Five-year-olds ($M_{adjusted} = 75.03$, $SD = 14.28$, $SE = 0.84$) did significantly better than the 4-year-olds ($M_{adjusted} = 65.09$, $SD = 17.34$, $SE = 0.83$), and the 4-year-olds did significantly better than the 3-year-olds ($M_{adjusted} = 50.40$, $SD = 19.43$, $SE = 0.84$). Children from the rural areas ($M_{adjusted} = 65.24$, $SD = 20.52$, $SE = 0.68$) showed significantly higher performance in Motor Development than those from the urban areas ($M_{adjusted} = 61.77$, $SD = 19.10$, $SE = 0.68$). This was the only domain in which children from rural areas performed better than those from urban areas.

Figure 6.9
Age and Gender differences in Motor Development (Mongolia)

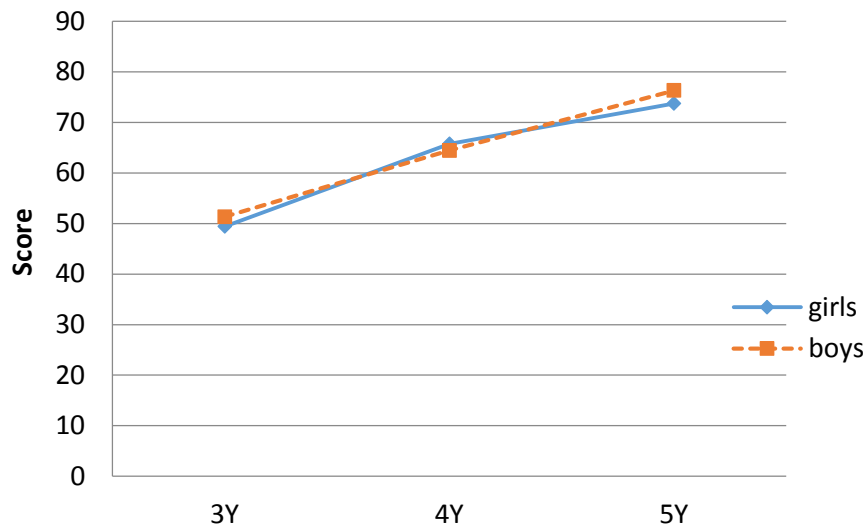


Figure 6.10
Age differences in Motor Development in children living in rural and urban areas (Mongolia)

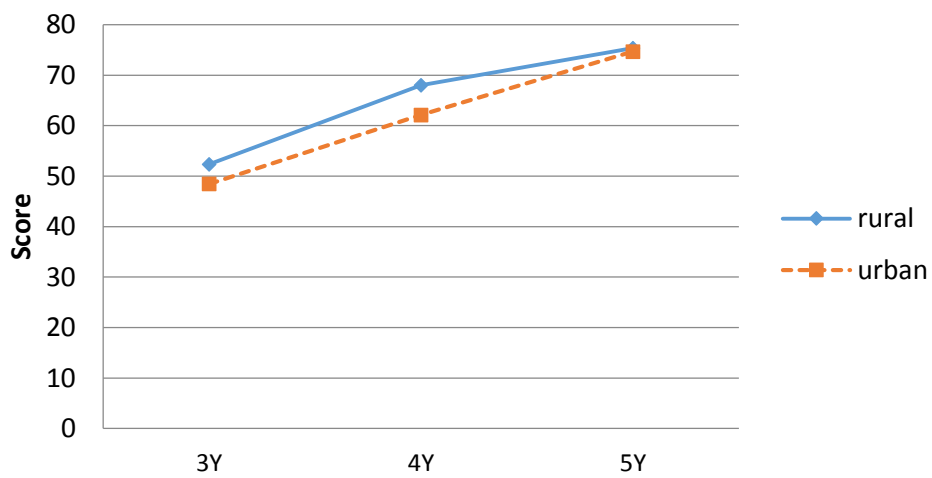
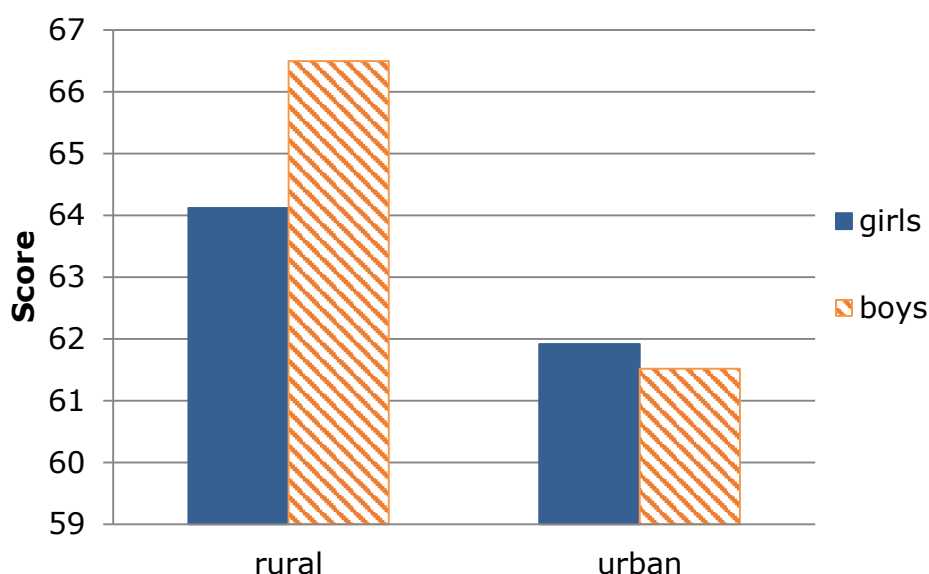


Figure 6.11
Gender differences in Motor development in children living in rural and urban areas (Mongolia)



DOMAIN 4: LANGUAGE AND EMERGENT LITERACY

There were significant effects of Age, Gender, and Urbanicity in Language and Emergent Literacy as shown in Table 6.4. Five-year-olds ($M_{adjusted} = 73.69$, $SD = 11.33$, $SE = 0.57$) showed significantly higher performance than 4-year-olds ($M_{adjusted} = 63.11$, $SD = 12.21$, $SE = 0.57$), and 4-year-olds did significantly better than 3-year-olds ($M_{adjusted} = 47.66$, $SD = 11.98$, $SE = 0.57$). Urban children ($M_{adjusted} = 63.00$, $SD = 15.62$, $SE = 0.46$) did significantly better than rural children ($M_{adjusted} = 59.98$, $SD = 16.13$, $SE = 0.47$). Girls ($M_{adjusted} = 63.53$, $SD = 15.30$, $SE = 0.46$) showed significantly better performance than boys ($M_{adjusted} = 59.44$, $SD = 16.30$, $SE = 0.47$).

Figure 6.12
Age and Gender differences in Language and Emergent Literacy
(Mongolia)

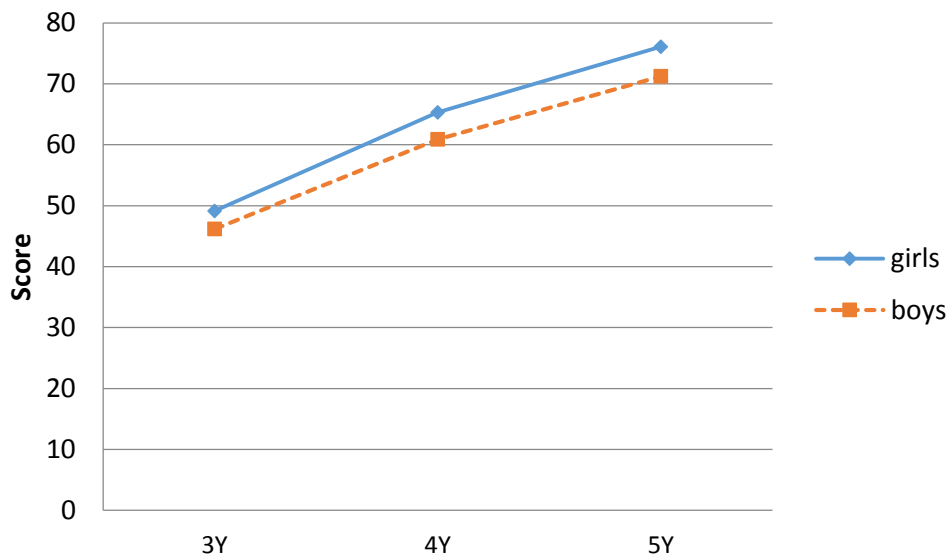


Figure 6.13
Age differences in Language and Emergent Literacy in children living in
rural and urban areas (Mongolia)

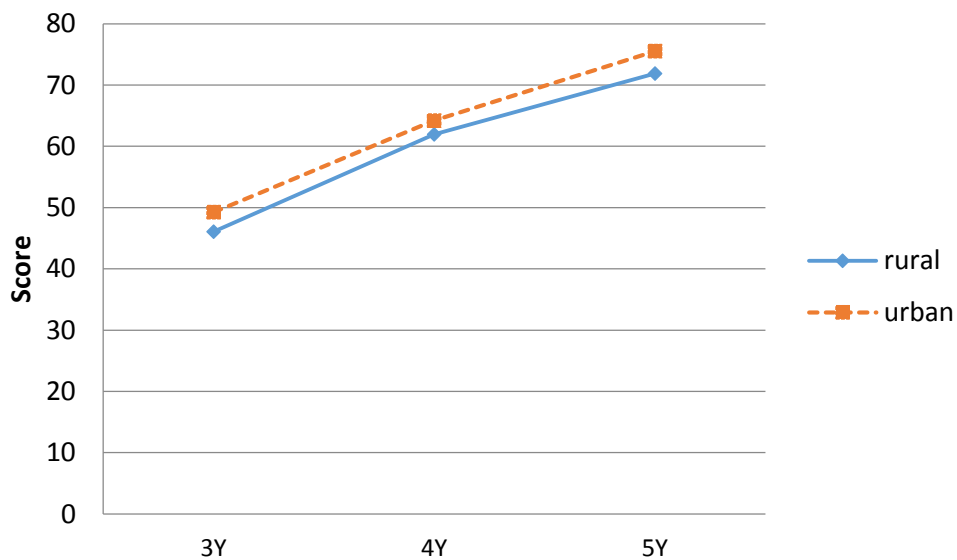
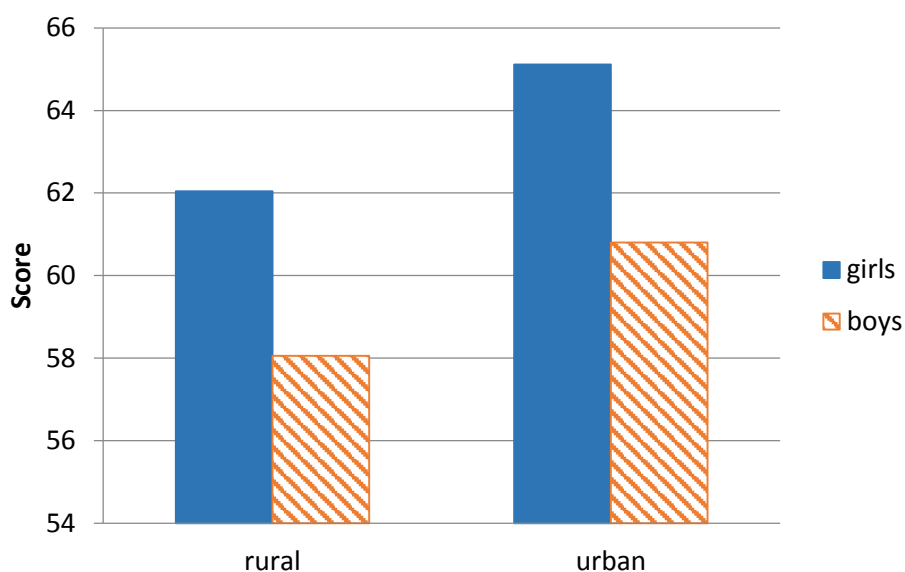


Figure 6.14
Gender differences in Language and Emergent Literacy in children living in rural and urban areas (Mongolia)



DOMAIN 5: HEALTH, HYGIENE, AND SAFETY

There were significant effects of Age, Gender, and Urbanicity in Health Hygiene and Safety. Again, 5-year-olds ($M_{adjusted} = 82.71$, $SD = 13.38$, $SE = 0.74$) performed significantly better than the 4-year-olds ($M_{adjusted} = 72.91$, $SD = 14.62$, $SE = 0.74$), and 4-year-olds performed significantly better than the 3-year-olds ($M_{adjusted} = 56.18$, $SD = 17.28$, $SE = 0.74$). Girls ($M_{adjusted} = 72.61$, $SD = 17.65$, $SE = 0.60$) also did significantly better than the boys ($M_{adjusted} = 68.59$, $SD = 19.50$, $SE = 0.60$) in Health, Hygiene, and Safety. Urban children ($M_{adjusted} = 71.70$, $SD = 18.80$, $SE = 0.60$) did significantly better than the rural children ($M_{adjusted} = 69.50$, $SD = 18.56$, $SE = 0.60$) in Health, Hygiene, and Safety.

Figure 6.15
Age and Gender differences in Health, Hygiene and Safety (Mongolia)

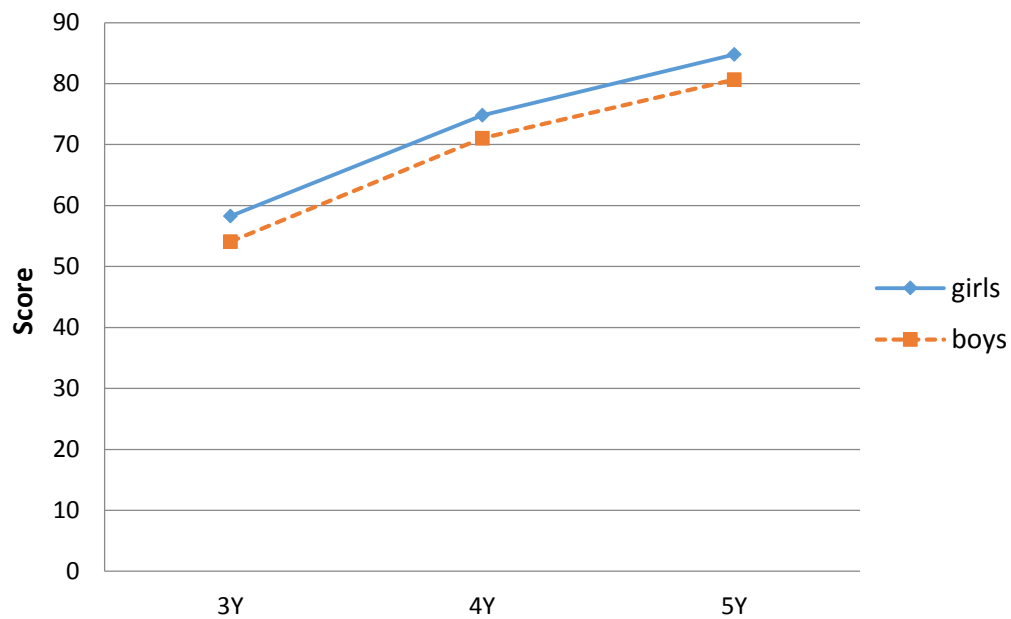


Figure 6.16
Age differences in Health, Hygiene and Safety in children living in rural and urban areas (Mongolia)

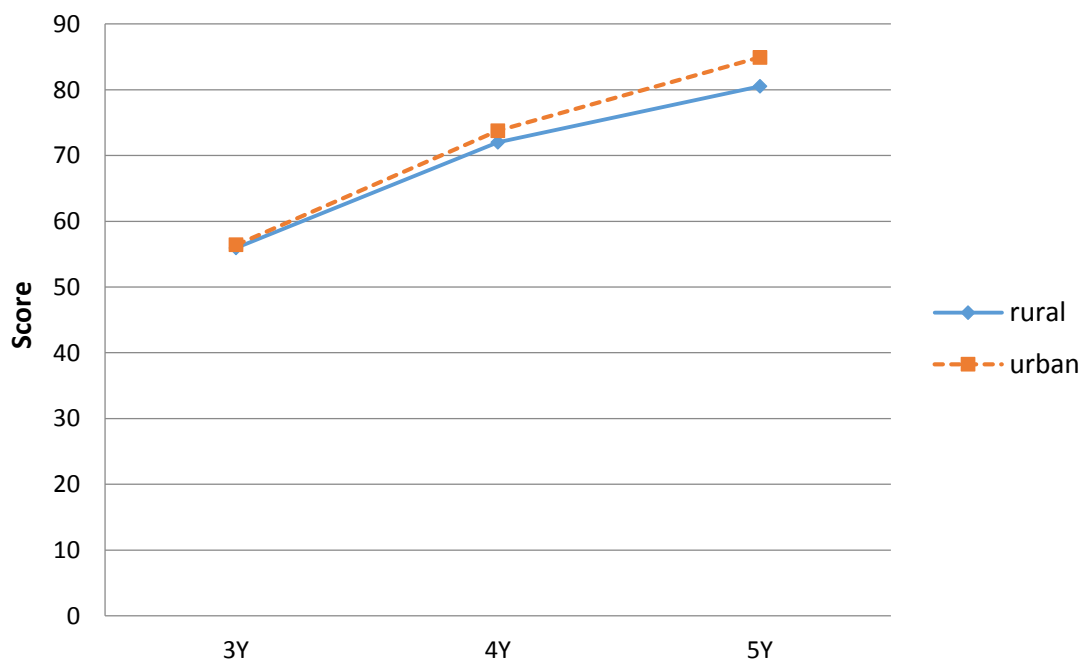
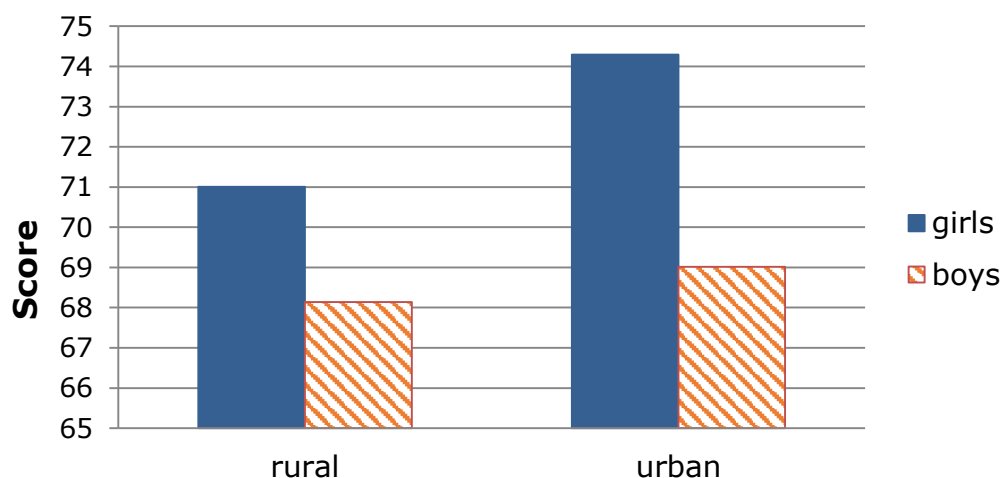


Figure 6.17
Gender differences in Health, Hygiene and Safety in children living in rural and urban areas (Mongolia)



DOMAIN 6: CULTURAL KNOWLEDGE AND PARTICIPATION

There were significant effects of Age, Gender, Urbanicity in Cultural Knowledge and Participation and Age \times Urbanicity interaction was significant (see Table 6.4). Girls ($M_{adjusted} = 54.80$, $SD = 23.28$, $SE = 0.78$) showed significantly higher performance in Cultural Knowledge and Participation than boys ($M_{adjusted} = 51.09$, $SD = 24.69$, $SE = 0.78$). As shown in Figure 6.19, no significant Urbanicity effects were found among the 3- and 4-year-olds, but the 5-year-old urban children did significantly better than those from the rural areas.

Figure 6.18
Age and Gender differences in Cultural Knowledge and Participation (Mongolia)

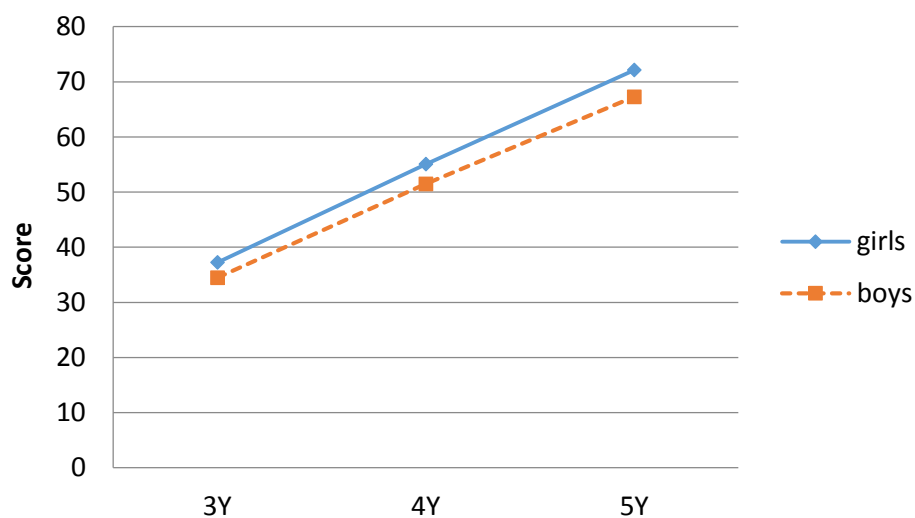


Figure 6.19
Age differences in Cultural Knowledge and Participation in children living in rural and urban areas (Mongolia)

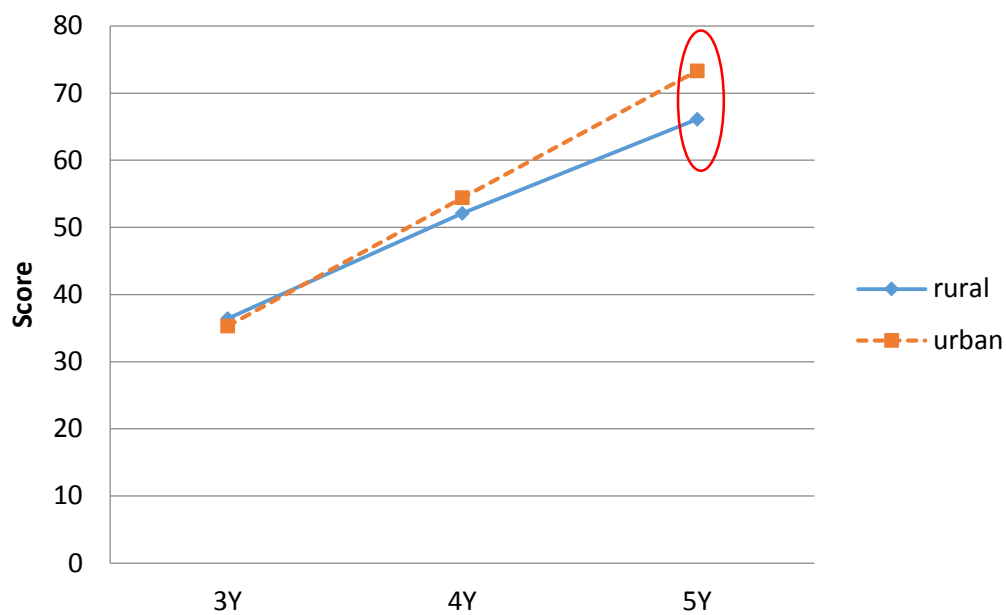
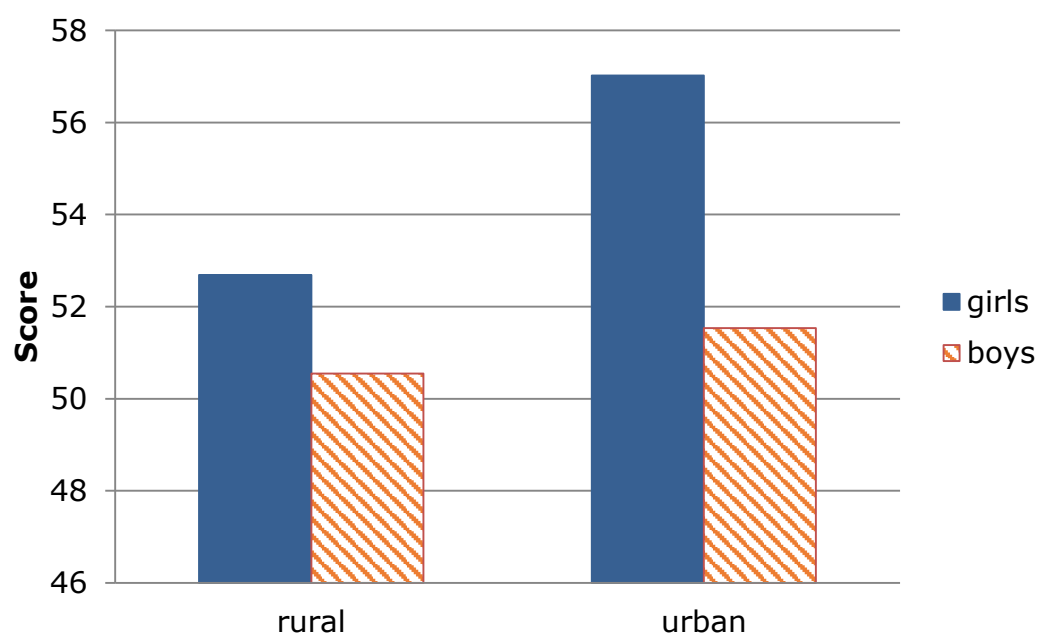


Figure 6.20
Gender differences in Cultural Knowledge and Participation in children living in rural and urban areas (Mongolia)



There were significant main effects of Age, Gender and Urbanicity on children's performance in Approaches to Learning. The Age \times Gender was also significant. The urban children ($M_{adjusted} = 42.79$, $SD = 20.39$, $SE = 0.67$) performed significantly better than the rural children ($M_{adjusted} = 39.22$, $SD = 20.91$, $SE = 0.67$) in Approaches to Learning. The gender differences were not significant for 3- and 4-year-olds, but the 5-year-old girls showed significantly higher performance than the 5-year-old boys in Approaches to Learning (see Figure 6.21).

Figure 6.21
Age and Gender differences in Approaches to Learning (Mongolia)

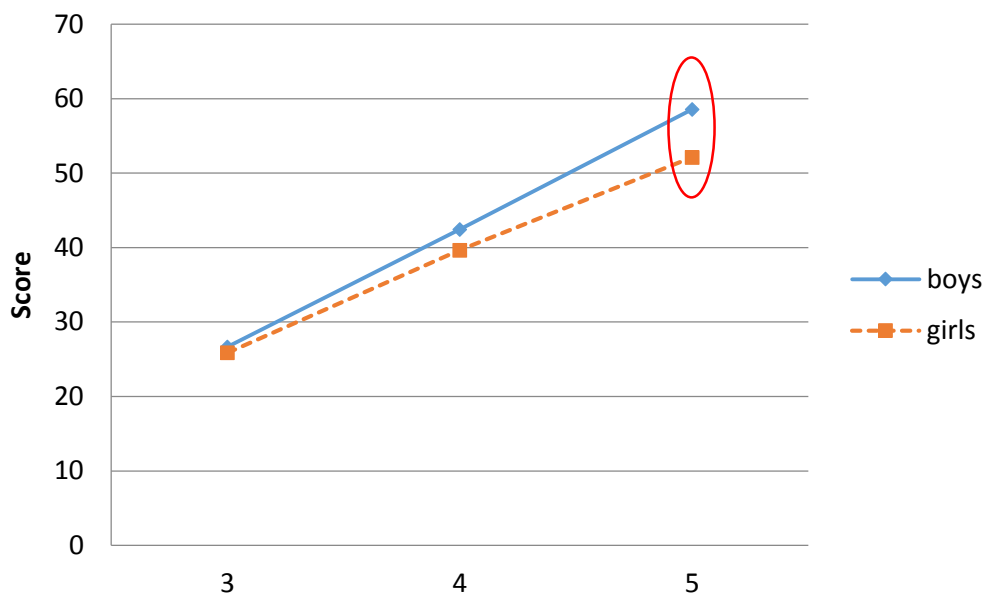


Figure 6.22
Age differences in Approaches to Learning in children living in rural and urban areas (Mongolia)

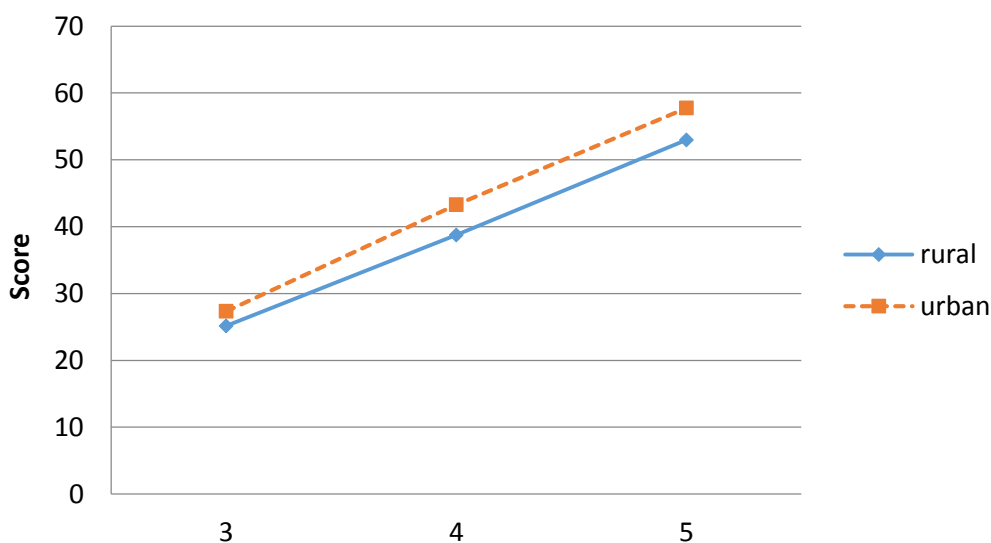
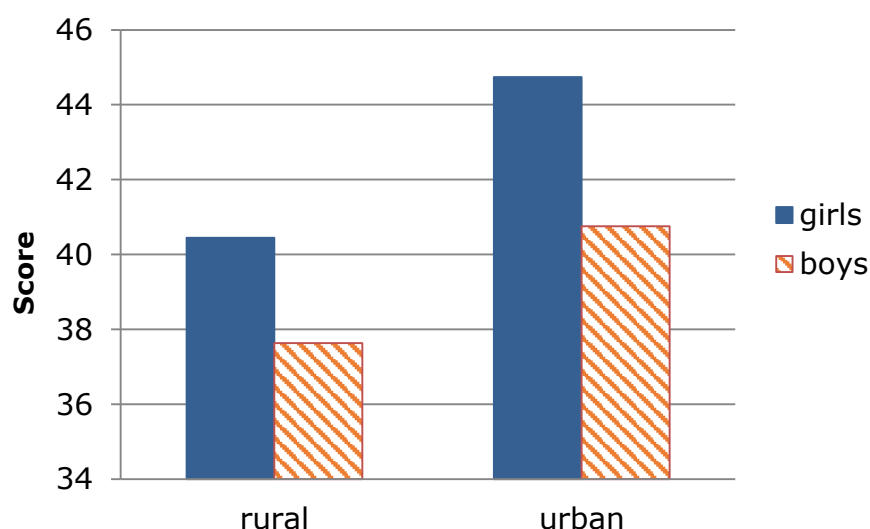


Figure 6.23
Gender differences in Approaches to Learning in children living in rural and urban areas (Mongolia)



EXAMINATION OF THE IMPACT OF PRE-SCHOOL ATTENDANCE ON CHILDREN DEVELOPMENT

There were a total of 626 children in preschool, as shown in Table 6.5. The coefficients of the multi-level model are presented in Table 6.6. Regression results indicated that children's performance improved significantly over age. Girls tend to perform slightly better than boys by an average of 2.77% points. A significant difference was found between children who attended preschool compared to those who had not attended preschool. Specifically, after controlling for children's age, gender and socio-economic factors such as household assets and mother's education, children who attended preschool on average scored 6.54% points higher than children without attended preschool ($p < 0.01$).

Table 6.5
Attendance in an early learning programme by Age and Gender (Mongolia)

Preschool Enrolment	Age			
	3Y	4Y	5Y	6Y
No	206	209	206	1
Yes	208	209	209	0
Total	214	418	415	1

Table 6.6
Regression coefficients from a multi-level model (Mongolia)

	Coefficients and 95% confidence intervals	P-values
Intercept	-13.30 (-18.24, -8.35)	0.143
Preschool attendance	6.54 ^A (3.80, 9.31)	<0.001
Household Asset	1.63 (0.76, 2.50)	<0.001
Mother's education	0.34 (0.12, 0.56)	<0.001
Sex (girl as reference)	-2.80 (-4.05, -1.56)	<0.001
Age	14.38 (13.61, 15.14)	<0.001

^A All coefficients for preschool attendance are from the multilevel model which included all six countries.

CONSISTENCY BETWEEN CHILDREN'S PERFORMANCE AND PARENTS' RATING

We conducted a correlational analysis to assess the consistency between children's performance and parents' rating of children's development. As shown in Table 6.7 parents' rating of children's abilities (Q48-52, Q54-56, and Q67-70 in the Parent Questionnaire) was positively correlated to the total score as well as the domain scores.

Table 6.7
Correlations between children's performance on the EAP-ECDS and parents' rating (Mongolia)

	Parents' rating	EAP-ECDS Total	CD	SED	MD	LEL	HHS	CKP	ATL
Parents' rating	1	.46***	.48***	.42***	.20***	.47***	.39***	.41***	.39***
EAP-ECDS Total		1	.88***	.87***	.68***	.89***	.87***	.91***	.84***
CD			1	.72***	.55***	.80***	.71***	.76***	.71***
SED				1	.41***	.76***	.74***	.81***	.67***
MD					1	.53***	.53***	.51***	.50***
LEL						1	.77***	.76***	.74***
HHS							1	.80***	.65***
CKP								1	.69***
ATL									1

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

INFORMATION ABOUT THE FAMILY

The mean age of mothers was 32.59 and the mean age of fathers was 37.38. Figure 6.24 shows the highest level of education attained by parents. Most (45.1%) of the mothers had upper secondary education and 35.9% obtained a Bachelor's degree. Similarly, a majority of the fathers (43.6%) had upper secondary education and around one third (29.3%) of the fathers had a bachelor's degree. Parents' occupation varied but most of the parents (73.4% of mothers, and 88.7% of fathers) had a job. Details about parents' occupation can be found in Figure 6.25.

Among the working mothers, only 20.1% were granted a paid maternity leave before the target child was born. The mean length of the maternity leave was 8.46 weeks with a wide range from 2 to 70 weeks. Around 35.3% of the mothers attended parenting class and most of them attended the class before the child was born (89.4%).

Figure 6.24
Highest level of education attained by parents (Mongolia)

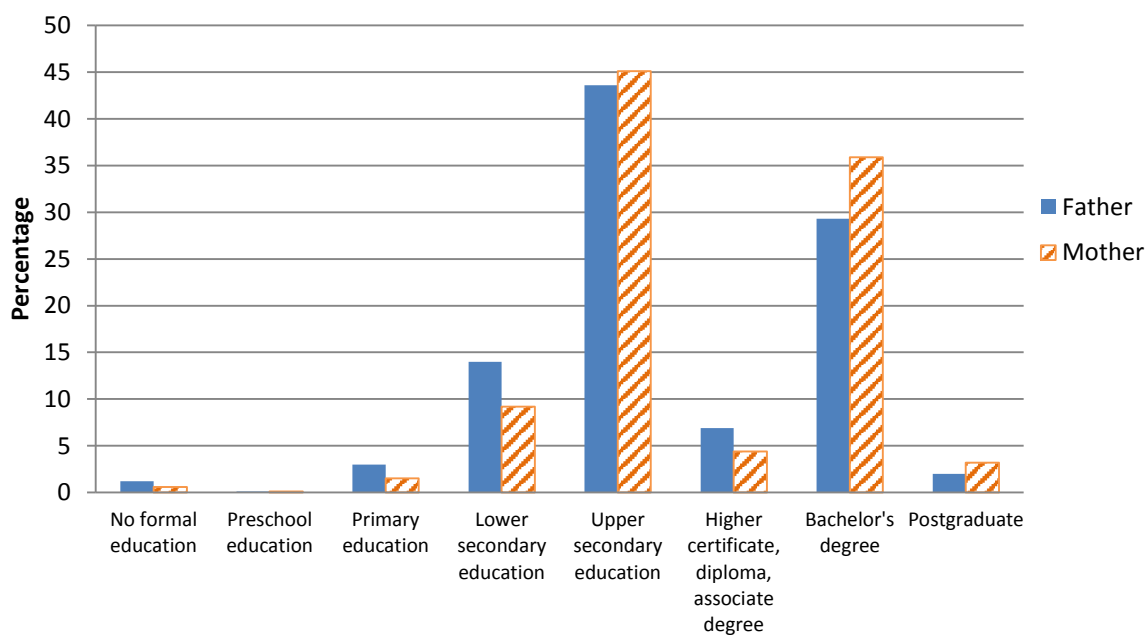
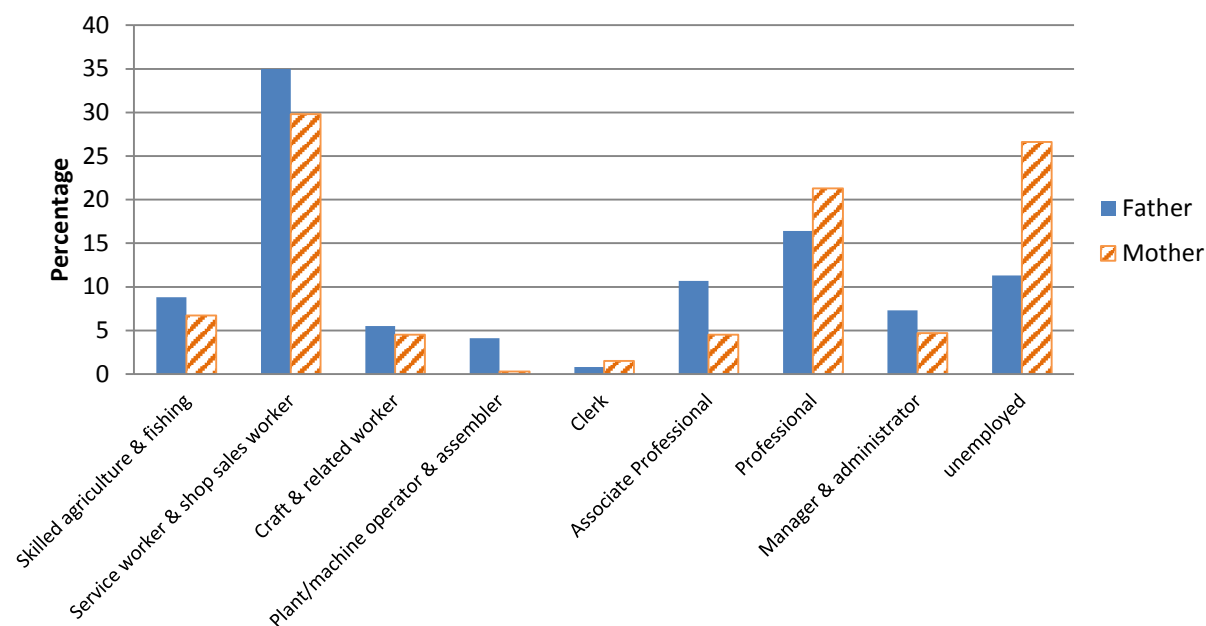


Figure 6.25
Parents' occupations (Mongolia)



The mean number of children in a family was 2.36 (range from 1 to 8) and the mean number of people living in a household was 4.41 (range from 2 to 10). Most of the families (89.9%) lived in a dwelling owned by them. Almost all of the families had electricity (97.6%), television (99.3%), and refrigerator (92%). It was common for the family members to have a watch (98.1%) or a mobile telephone (99.4%). Around half of the families reported that one or more family members had a bicycle (47.9%) or a car / truck (59.3%). But only a small part of the families had a radio (37.3%) or a fixed line telephone (13.6%). It was also rare for family members to have a motorcycle or scooter (18.3%), an animal-drawn cart (4.7%), or a boat with a motor (0.4%).

Only 6.7% of the families participating in this survey owned land that can be used for agriculture and the mean area of the land was 5.38 hectares, with a range from 0.04 to 99 hectares. About 18.3% of the families owned livestock, herds, other farm animals, or poultry. Most of the families (91.1%) in this survey had a bank account.

EARLY LEARNING AND DEVELOPMENT

About half of the children (50.2%) attended some type of organised learning or early childhood education programme and the GER for pre-primary education in Mongolia in 2011 was 82. The logistic multiple regression indicated that children's age, urban/rural residence, mother's education, and father's education significantly predicted the probability of participating in an early education programme. The children who were older, living in urban areas, or of better educated parents or older fathers

were more likely enrolled in an early learning programme than other children (see Table 6.8). The mean length of staying in an early learning programme was 22.47 months (range from one to 38 months) for those children who ever attended any early childhood education programme.

Table 6.8
Predictors of the probability of enrolment in an early learning programme (Mongolia)

Predictor	β	$SE \beta$	Wald's χ^2	p	e^β
Child's age	0.15	0.07	4.33	0.04	1.167
Child's gender	0.05	0.12	0.16	0.69	1.05
Urban or Rural	0.25	0.13	3.94	0.05	1.28
Mother's age	-0.03	0.02	2.14	0.14	0.97
Mother's education	0.30	0.06	23.44	0.00	1.35
Father's age	0.04	0.02	3.55	0.06	1.04
Father's education	0.23	0.06	15.05	0.00	1.26
Constant	-4.04	0.60	44.78	.00	0.02

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Among the 626 children who had attended an organized early learning programme, 88.8% attended such a programme within the seven days prior to when the survey was conducted. All of them participated in a kindergarten (rather than other types of early learning programmes) which was open five days a week. Almost all of the kindergartens (98.4%) were free of charge (We did not collect information on fees and other costs.). There were little variations in the length of time that children stayed in an early learning programme across different age groups with most children spending 20 to 40 hours a week in the programme. Figures 6.26 and 6.27 show the duration children had stayed in the current early learning programme and the hours they spent per week in that programme. Most of the parents reported that their children "always" (65%) or most of the time" (29.6 %) wanted to go to the kindergarten.

Figure 6.26
Duration of attendance in an early learning programme (Mongolia) (n = 626)

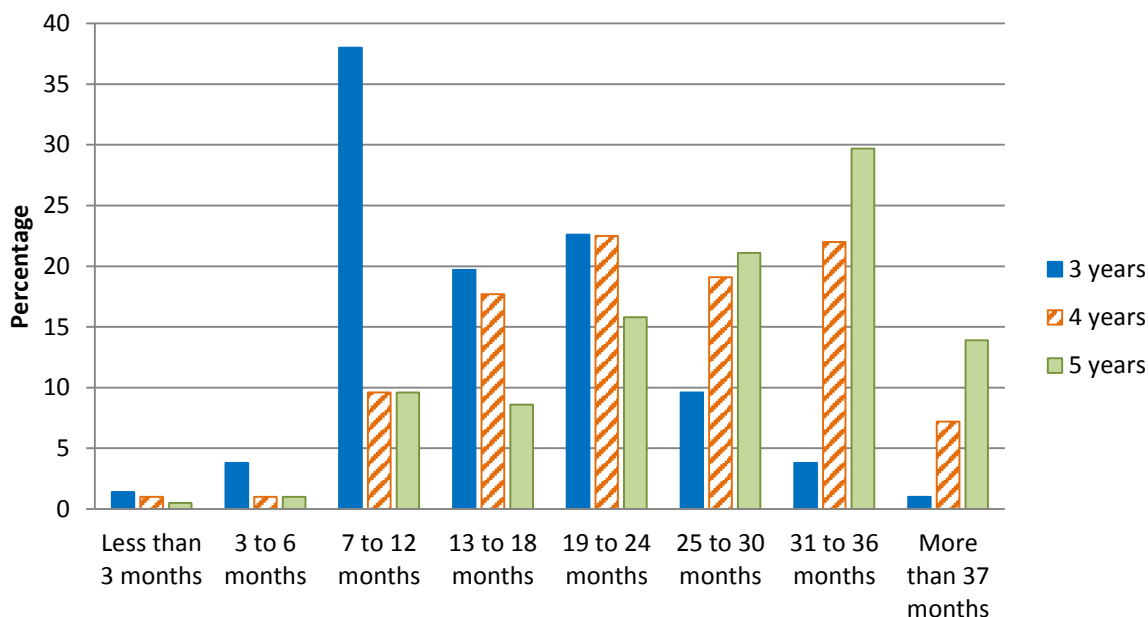
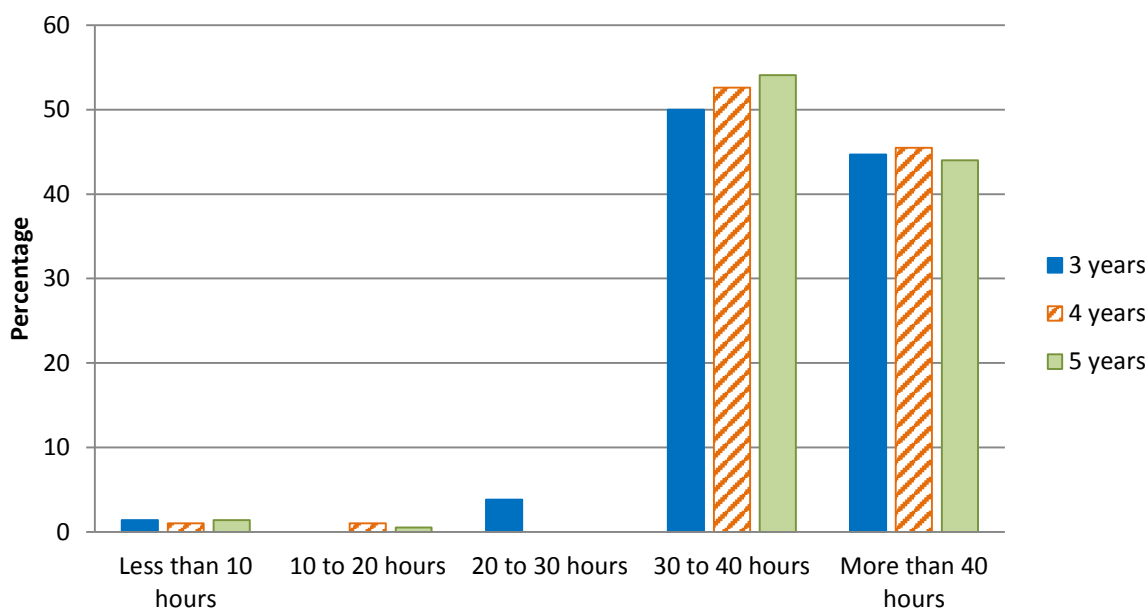


Figure 6.27
Number of hours of programme attendance per week (Mongolia) (n = 626)



Parents were asked to rate their children’s abilities in terms of cognitive, language, motor, and social skills as well as society knowledge. Most parents rated their child as “slightly above” compared to other children of a similar age in all domains, including their ability to concentrate on learning new tasks (63.1%), ability to learn new things and solve new problems (63.3%), participation in important community

events (57.2%), language skills (55.6%), ability to run and jump (51.4%), ability to hold chopsticks/spoons/pencils/pens (57.6%), practice healthy and hygienic habits (57.9%), follow safety rules (55.9%), and display social skills, such as show consideration of others and ability to manage emotions (59%). Varying numbers of parents rated their child as “much above” other children in domains of language skills (26.7%), ability to run and jump (43%), ability to hold chopsticks/spoons/pencils/pens (35.7%), practice healthy and hygienic habits (31.9%), follow safety rules (33.7%), and display social skills (25.2%).

Parents further evaluated their children’s more general social competencies and 48.1% of the parents believed that their child was able to do the simple tasks assigned independently most of the time and 24.1% believed their child always could do so; 47% of the parents reported their child got along well with other children of similar ages most of the time and 39.7% thought their child always did so; 64.3% of the parents believed their child never kicked, bit, or hit other children or adults and 22.4% reported their child rarely did; 45.9% of the parents recognized that their child “sometimes” got distracted easily and 30.2% said their child was “rarely” distracted easily.

Parents were then asked to report the level of early literacy of their child. They reported that a child can identify 3.43 graphemes on average (range from 0 to 35). Almost all parents (97.8%) believed that their child could not read at least four simple and popular words. And more than half of the parents (67.5%) reported that their child could identify all numbers from 1 to 10.

Finally, parents’ involvement in early learning-related activities at home was investigated. Parents were asked to report whether they or any other family members over 15 years engaged in six different early learning-related activities with the child in the past three days. Table 6.9 presents the percentages of mothers’, fathers’, and other family members’ involvement in those six common early learning-related activities at home with the target children. Although mothers engaged in these learning activities more frequently than others, only about one third of mothers reported relevant experience at home with their child.



Table 6.9
Adults' involvement in early learning-related activities at home (Mongolia)

Activities	Mothers (%)	Fathers (%)	Other Family Members (%)
Read books or looked at picture books with your child	34.9	14.3	23.1
Told stories to your child	31.0	12.3	19.3
Sang songs with your child	33.8	11.3	23.5
Took your child outside the home	33.7	26.6	19.7
Played games with your child	31.7	27.1	33.6
Spent time with your child in naming or counting things or drawing	32.8	16.7	26.2

We then summed up the scores of mothers', fathers' and other family members' involvement in each type of activities. Although the combined scores cannot represent the frequencies of children's participation in such activities, they showed the opportunities that children had to engage in specific activities at home with adults. As shown in Table 6.10, there were significant correlations among children's participation in those activities.

Table 6.10
Correlations among involvement in different early learning-related activities at home (Mongolia)

	i	ii	iii	iv	v	vi
i. Read books or looked at picture books with your child	1	.50***	.37***	.25***	.35***	.41***
ii. Told stories to your child		1	.34***	.21***	.28***	.30***
iii. Sang songs with your child			1	.22***	.37***	.34***
iv. Took your child outside the home place				1	.42***	.31***
v. Played games with your child					1	.38***
vi. Spent time with your child in naming things or counting things or drawing						1

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

To better understand mothers', fathers', and other family members' involvement in early learning-related activities at home, we created separate variables to represent mothers', fathers', and other family members' involvement in these six types of activities by summing up the scores each of the parties obtained in the six items mentioned above. Paired t-test showed that mothers ($M = 1.96$, $SD = 1.85$) were involved the most in early learning-related activities at home compared to other family members ($M = 1.44$, $SD = 1.84$) ($t(1212) = 5.89$, $p < .001$), and fathers ($M = 1.08$, $SD = 1.46$) ($t(1212) = 14.46$, $p < .001$). Other family members also had more such activities with children at home than fathers ($t(1212) = 4.98$, $p < .001$). Fathers were involved the least compared to mothers and other family members at home.

Separate multiple regression analyses were conducted on scores of mothers', fathers', and other family members' involvement in such activities at home predicted by child age, gender, urban/rural residence, mothers' age, and education, as well as fathers' age and education. As Table 6.11 shows, child gender, urban/rural residence, and mothers' education significantly contributed to the prediction of mothers' involvement. Mothers were more likely to be engaged in activities with girls than boys and children living in urban areas and with better-educated parents were more likely to have such activities with their parents at home than other children. Urban/rural residence was the only significant predictor detected for other family members' involvement in early learning-related activities at home. Children living in the urban areas were more likely to have early learning-related activities with other family members than those who lived in the rural areas.

Table 6.11
Predictors of family involvement in early learning-related activities at home (Mongolia)

Variables	Mother				Father				Other			
	B	SE B	β	p	B	SE B	β	p	B	SE B	β	p
Constant	1.21	0.47		.011	-0.05	0.37		.902	0.81	0.48		.093
Child's age	-0.06	0.06	-.03	.335	-0.05	0.05	-.03	.344	-0.05	0.07	-.02	.428
Child's gender	-0.27	0.10	-.07	.010	0.14	0.08	.05	.077	0.05	0.11	.01	.663
Urban or Rural	0.43	0.11	.12	.000	0.38	0.08	.13	.000	0.36	0.11	.10	.001
Mother's age	-0.01	0.02	-.03	.556	-0.00	0.01	-.01	.786	0.00	0.02	.00	.965
Mother's education	0.25	0.04	.17	.000	0.21	0.04	.17	.000	0.03	0.05	.02	.558
Father's age	-0.01	0.02	-.04	.727	0.00	0.01	.04	.773	0.02	0.02	.12	.323
Father's education	0.00	0.01	.02	.837	-0.01	0.01	-.16	.173	-0.01	0.01	-.09	.447
R^2	.06				.08				.01			
F	10.592***				14.42***				2.12*			

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

CHILD'S HEALTH AND HABITS

Questions in the last section were mainly about the family's health-related practices, children's health condition, and hygiene habit formation. Parents were requested to report basic health practices at home, children's health situation in general and in the past month, and whether the child had good health habits.

Almost all (98.7%) target children in this study had all vaccinations, but only less than half (47.2%) of the families took the child for a regular health check-up to the clinic or hospital. Only 32.9% of the target children had their vision checked by professionals, 35.5% of the children had their hearing checked by professionals, and 29.2% had their speech checked by professionals. A total score of families' health facilitation practices were created by summing up the scores of the above-mentioned items. The multiple regression analyses (see Table 6.12) indicated that families with older children were more likely to have better health facilitation practices.

Table 6.12
Predictors of health facilitation practices (Mongolia)

Variables	B	SE B	β	<i>p</i>
Constant	1.52	0.42		<.001
Child's age	0.11	0.06	.06	.042
Child's gender	0.12	0.09	.04	.180
Urban or Rural	-0.05	0.09	-.02	.559
Mother's age	0.01	0.02	.04	.482
Mother's education	0.01	0.05	.01	.789
Father's age	-0.01	0.01	-.04	.505
Father's education	0.06	0.04	0.05	.173
<i>R</i> ²				.01
<i>F</i>				1.42

Note. **p* < .05. ***p* < . 01. ****p* < . 001

The percentage of children who had the habit of brushing teeth every day was 89.9%. Among them, 45.3% did this at both morning and night, 43.0% brushed teeth only in the morning, and 11.8% only did so at night. In addition, parents were asked whether their child had three basic health-related habits. Without adults' directions, only 9.2% of the children were considered as being able to always wash their hands after using the toilet and 23.3% could do so most of the time. In addition, there were only a small number of children (10.5%) who always washed their hands before meals without adults' directions and 23.4% could do so most of the time. As to eating vegetables, 40.0% of the parents reported their child could always do so without adults' directions and 22.2% could do so most of the time. Similarly, a total score of children's health-related habits were created by summing up the scores of these four items. A multiple regression was conducted on the score of children's habits formation with the predictors of child age, gender, urban/rural residence, mothers' age, and education, as well as fathers' age and education. As shown in Table 6.13, none of the variables significantly contributed to prediction of children's health and hygiene habits and the whole model was not significant.

Table 6.13
Predictors of children's health and hygiene habits (Mongolia)

Variables	B	SE B	β	<i>p</i>
Constant	4.94	1.91		.011
Child's age	0.07	0.29	.02	.798
Child's gender	0.65	0.46	.13	.159
Urban or Rural	-0.06	0.51	-.01	.909
Mother's age	-0.02	0.07	-.05	.793
Mother's education	-0.16	0.18	-.09	.381
Father's age	0.00	0.07	.03	.947
Father's education	0.02	0.05	.15	.708
<i>R</i> ²				.07
<i>F</i>				1.17

Note. **p* < .05. ***p* < .01. ****p* < .001

About 5.9% of the parents reported that their child had a medical condition or a chronic illness, and 12.8% reported that their child had some type of allergy. About one third of the children (35%) had stayed in hospital for more than 3 days and the most common reason was pneumonia (12.7% among the reported cases). We further asked parents to report whether their child had some specific health problems in the past month. Only 3.7% reported to have wheezing attacks, 15.4% had snoring, 0.4% had seizures, 1.5% had dizziness, 5.4% had persistent cough, 4.3% had joints problems, 6.0% had vomiting, 3.9% had diarrhoea, 9.9% had constipation or hard stools for 2 weeks, 6.3% had skin rash with red swelling, 1.4% had numbness or weakness in limbs, 2.2% had trouble with eyes, 3.0% had trouble with ears, and 12.7% had trouble with teeth, mouth or gums. The relatively common health problems were common cold or influenza-like illness and trouble with nose and sinuses. Around one third of the target children had these (33.1% for the cold or influenza-like illness and 28.6% for the trouble with nose and sinuses) in the past month. A total score representing children's basic health situation was created by summing up the scores in these items. A higher score represented more health problems. The multiple regression analyses showed that urban/rural residence significantly predicted children's health situation (see Table 6.14): those living in the urban areas were more likely to have health problems reported than those living in the rural areas.

Table 6.14
Predictors of children's health situation (Mongolia)

Variables	B	SE B	β	<i>p</i>
Constant	0.92	0.42		.028
Child's age	-0.00	0.54	-.00	.935
Child's gender	-0.07	0.09	-.02	.427
Urban or Rural	0.21	0.09	.07	.027
Mother's age	0.00	0.02	.01	.868
Mother's education	0.03	0.05	.02	.557
Father's age	-0.00	0.01	-.02	.766
Father's education	0.07	0.04	.6	.101
R^2	.01			
<i>F</i>	2.29*			

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

SUMMARY AND DISCUSSION OF FINDINGS

EAP-ECDS

1. There were significant developmental differences in the EAP-ECDS. Older children performed better than younger children in all the following seven domains of the Scales: Cognitive Development; Socio-emotional Development; Motor Development; Language and Emergent Literacy; Health Hygiene and Safety; Cultural Knowledge and Participation; and Approaches to Learning. This finding is not unexpected as the EAP-ECDS is a developmental scale with adequate validity and reliability.
2. There were significant gender differences on the EAP-ECDS. Girls did better than boys in all the following domains: Cognitive Development; Socio-emotional Development; Language and Emergent Literacy; Health Hygiene and Safety; Cultural Knowledge and Participation and Approaches to Learning. The differences between boys and girls in Approaches to Learning increased as children grew older. Given that this domain is considered an important component of school readiness, this finding is a cause for concern. The only domain in which girls did not do better than boys was in Motor Development. This is not unexpected and is in keep with other findings reported in the literature.
3. Urban children did better than rural children in the following domains: Cognitive Development; Socio-emotional Development; Language and Emergent Literacy; Health Hygiene and Safety; Cultural Knowledge and Participation and Approaches to Learning. Further, differences between urban and rural children were more pronounced among 5-year-old than younger children in Cognitive Development, Social-emotional Development and Cultural Knowledge and Participation. This suggests that the achievement gap between urban and rural children in domains which are particularly important for academic achievement increases as children mature and is also a cause for concern. However, rural children

did better than urban children in the motor domain – the only domain in which they outperformed urban children. Rural children may have more opportunities for physical activity than urban children.

EARLY LEARNING AND DEVELOPMENT

4. About half of the participating children attended early education programmes. While the GER for pre-primary education (three to five years) was 82 in 2011 there are disparities within the country with relatively low coverage rates amongst the nomadic population. The children who were older or of better-educated parents were more likely enrolled in an early learning programme than other children. Almost all the children who attended an early childhood programme went to kindergartens and spent 20 to 40 hours a week in the kindergarten. Not surprisingly, older children had spent a longer time in early childhood programmes than younger children.
5. Mongolian parents reported having limited involvement in early learning-related activities at home. However, mothers were more involved in early learning activities than other family members. Educated mothers and fathers from urban areas were more likely to support early learning at home than other parents.

CHILD'S HEALTH AND HABITS

6. In terms of health, almost all children had had their vaccinations. Child's age was the best predictor of health facilitation practices. Parents reported on basic health-related habits such as always washing hands after using the toilet and before meals without adults' directions and eating vegetables without adults' directions.
7. Urban parents were more likely to report that their children had health problems than those living in the rural areas. It is not clear whether urban children suffer poorer health or whether urban parents are more aware of children health issues and are more likely to report health concerns.

CHAPTER 7 PAPUA NEW GUINEA



Figure 7.1

Map of Papua New Guinea

Source: Central Intelligence Agency. (2014). The World Fact Book.

Source: Central Intelligence Agency. (2014). The World Fact Book.

<https://www.cia.gov/library/publications/the-world-factbook/geos/pp.html>

GENERAL INFORMATION

Located in Oceania, east of Indonesia, Papua New Guinea consists of 20 provinces, one autonomous region and the national capital district. The majority of the population of 6.55 million are Papuan, while the rest are made up of Melanesian, Negrito and other ethnic groups (Central Intelligence Agency, 2013). Papua New Guinea has a large share of youth with 40% of the population under 15 years of age and 14% below 5 years of age (UNICEF, 2012). The economy significantly relies on agriculture - which provides a subsistence livelihood for 85% of the population - as well as the export of natural resources (Central Intelligence Agency, 2013). Despite the economic growth in recent years, many people still have a low standard of living. Gross domestic product (GDP) per capita adjusted for purchasing power parity (PPP) is US\$2900, one of the lowest in Asia. Around 40% of the population lived under the national poverty line in Papua New Guinea (World Bank, 2009). Papua New Guinea has a high infant mortality rate (44 per thousand) and 44% of children less than 5 years are stunted (UNICEF, 2014).

Preschool education is not compulsory in Papua New Guinea. The provision of preschool education was left to the private sector until a three-year elementary school programme was introduced into the public school system in 1993 by the Department of Education (UNESCO, 2000). With the amendment of the Education Act in 1995, the three-year elementary education programme became part of the national education system. The National Education Plan 2005-2014 specifies that all children shall begin their basic education in an elementary school in a language that they speak when they are 6 years old (UNESCO International Bureau of Education, 2011). The full-time elementary school programme involves one Preparatory year followed by 2 years of Elementary education. Children should be 6 years to enrol in the Preparatory year and 7 years to enrol in Elementary Year 1 (UNESCO International Bureau of Education, 2011).

The local community is very involved in Elementary schools and selects teachers and the language of instruction. In 2006/2007 there were 2,851 government elementary schools with a total enrolment of 175,439 children as well as an additional 2,622 elementary schools with 155,274 children enrolled that were administered by churches (UNESCO International Bureau of Education, 2011). Pre-primary education in Papua New Guinea covers 6-year-olds which is much later than most other countries in the region. Six-year-olds represented 14.9% of the total enrolment in preparatory year (7.7% for 5-year-olds, 23.1% for 7-year-olds, 19.9% for 8-year-olds, 14.3% for 9-year-olds, and 20.1% for 10-year-olds and above) (UNESCO International Bureau of Education, 2011).

EAP-ECDS FINDINGS

SAMPLE

A total of 1800 children and their parents/caregivers from 15 provinces in Papua New Guinea participated in the study. The sample included urban and rural areas. The sampling strategy was determined in conjunction with the National Statistical Department and the sample was stratified by region, urbanicity, child's age and gender. In addition to the child assessment, one parent or caregiver of the child was interviewed, in an individual session. Details of the final sample can be found in Table 7.1. The analyses of scale validation and child development were based on children aged three to five and with identified gender and urbanicity information ($n = 1744$) while the analyses of parental interview were based on data from all children ($n = 1800$).

Table 7.1

Sample distribution in terms of Age, Gender, and Urbanicity in Papua New Guinea

Age	Rural			Urban			Urbanicity Missing			Total
	Girls	Boys	Gender Missing	Girls	Boys	Gender Missing	Girls	Boys	Gender Missing	
3Y	173	170	0	99	95	0	8	6	0	551
4Y	181	188	0	114	79	0	6	8	0	576
5Y	226	213	0	98	108	0	4	19	0	668
NA	3	2	0	0	0	0	0	0	0	5
Total	583	573	0	311	282	0	18	33	0	1800

RELIABILITY AND VALIDITY

Our results indicated that items within the same domain have satisfactory reliability and Cronbach's alpha ranged from 0.77 to 0.93. Among the 7 domains, Motor Development and Approaches to Learning appeared to be slightly lower in overall internal consistency. Table 7.2 shows the average Cronbach's alpha for each domain.

Table 7.2

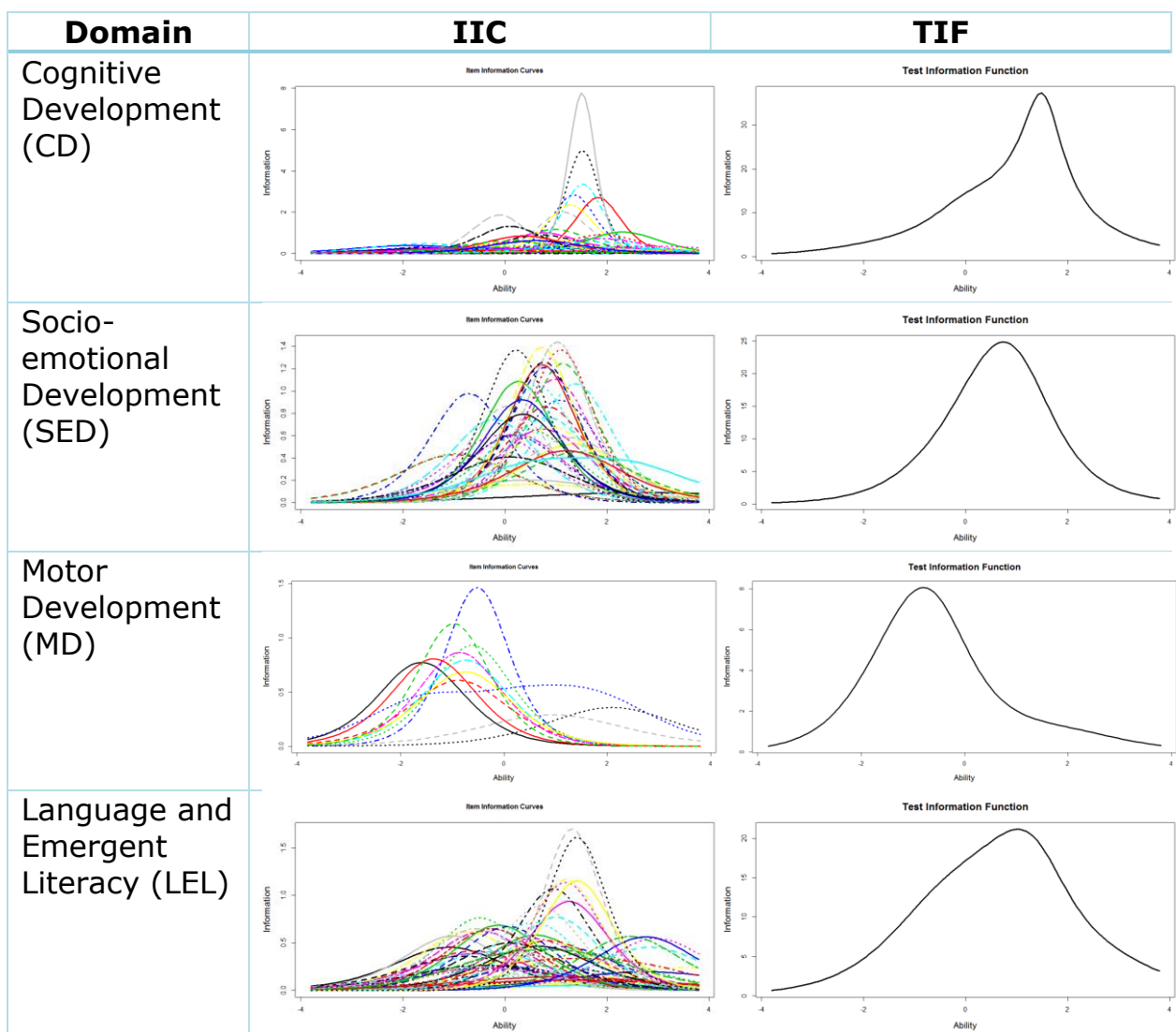
Internal consistency for each domain (Papua New Guinea Scale)

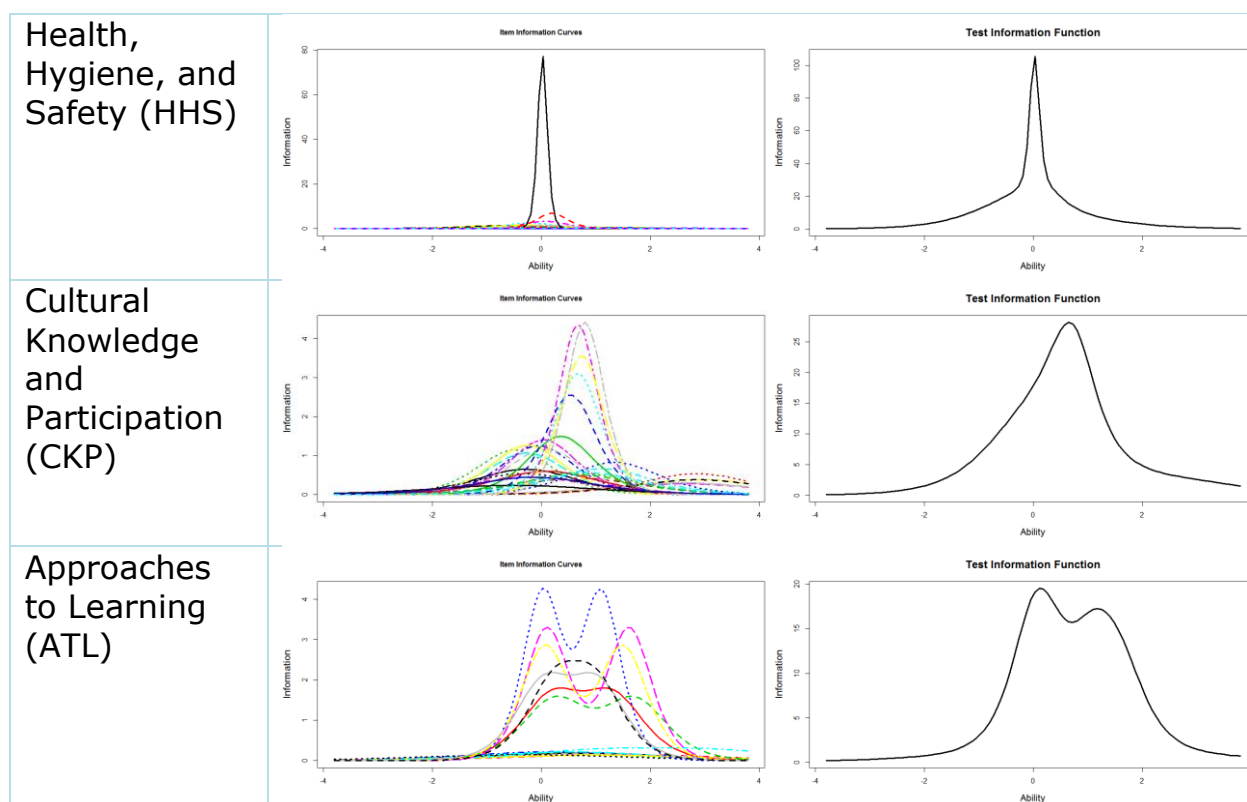
Domain	Cronbach's alpha (all items)
Cognitive development	0.91
Socio-emotional Development	0.93
Motor Development	0.77
Language and Emergent Literacy	0.93
Health, Hygiene, and Safety	0.93
Cultural Knowledge and Participation	0.92
Approaches to Learning	0.88

ITEM ANALYSIS

Figure 7.2 shows the item information curves (IIC) and test information function (TIF) for each domain. These graphs indicate the latent ability level at which the assessment offers the most information. It is worthy to note that information tended to concentrate on mid-high level of ability for cognitive development, socio-emotional development, language and emergent literacy, and cultural knowledge and participation. As for motor skills, most information were represented at the lower ability level.

Figure 7.2
Item information curves (IIC) and test information function (TIF) for each domain (Papua New Guinea Scale)





Easiest and most difficult Items in Each Domain

We determined the three easiest and the three most difficult items in each domain to enable us to allow comparisons of item difficulty across countries. In the Cognitive Development domain, the item that asked children to bring the block/toy to the assessor (item 9.1) appeared to be too easy for children. On the other hand, the item which asked children to name 7 to 8 shapes (item 21.3) was the most difficult. Few children were able to provide the correct response. As for the Socio-emotional Development domain, the easiest item was to give the mother's given and family name (item 23.1) and the most difficult item was to state things to do when lost (item 26.5). In the Motor Development domain, the easiest item was to pour water to a designated line in a cup (item 37.1) while the most difficult item was to follow steps 4 to 7 when folding a piece of paper into an airplane (item 42.2). For the domain of Language and Emergent Literacy, the easiest item was to orally identify the picture of hair being combed (item 44.1) and the most difficult item was to identify 8 to 10 letters (item 52.3). With regard to Health, Hygiene and Safety, the easiest item was to identify the eye (item 66.1) and the most difficult item was to describe the function of an elbow (item 66.6). For Cultural Knowledge and Participation, the easiest item was to name one item used at night for sleeping (item 70.1) while the most difficult item was naming another relevant detail of a celebration (item 74.3). The easiest and most difficult items for the different domains are shown below.

Table 7.3
Easiest and most difficult Items in Each Domain (Papua New Guinea Scale)

Item No.	Item Description	Passing Rate (%)
Cognitive Development		
<i>3 easiest items</i>		
9.1	Brought the block/toy to assessor	85.6
9.2	Sat on the chair	83.4
1.1	Put 1 block outside the box	74.0
<i>3 most difficult Items</i>		
21.3	Named at least 7 to 8 simple geometric shapes	4.3
15.3	Arranged all 5 pictures in correct order	4.8
5.3	Counted up to 30 correctly	4.8
Socio-emotional Development		
<i>3 easiest items</i>		
23.1	Gave mother's given and family names	72.2
23.2	Gave father's given and family names	71.7
24.1	Gave 1-2 names of children that child played with	70.8
<i>3 most difficult Items</i>		
26.5	Knew second kind of help in the losing mummy situation	14.4
22	Knew own age	17.6
26.3	Knew second kind of help in the finger cutting situation	18.2
Motor Development		
<i>3 easiest items</i>		
37.1	Poured water to designated line in cup	87.0
43.1	Strung larger bead	83.8
43.2	Strung smaller bead	78.3
<i>3 most difficult Items</i>		
42.2	Following instructions to fold a piece of paper (steps 4-7)	11.2
42.1	Following instructions to fold a piece of paper (steps 1-3)	11.5
40	Hit the target on three out of three attempts	14.2
Language and Emergent Literacy		
<i>3 easiest items</i>		
44.1	Identified action of combing hair	76.3
46.4	Identified action of kicking a ball	76.3
44.2	Identified action of washing face	66.6
<i>3 most difficult Items</i>		
52.3	Named 8 to 10 letters/characters	3.1

56.3	Wrote first or family name in full without model	3.8
52.4	Named 11 to 13 letters/characters	4.2
Health, Hygiene, and Safety		
<i>3 easiest items</i>		
66.1	Identified eyes	74.4
60.1	Showed how to clean their face and hands	73.2
66.3	Identified teeth	71.7
<i>3 most difficult Items</i>		
66.6	Described function of an elbow	16.6
62.4	Fastened and unfastened the small button	22.6
62.3	Fastened and unfastened the medium button	24.8
Cultural Knowledge and Participation		
<i>3 easiest items</i>		
70.1	Named 1 item used at night for sleeping	66.5
70.5	Named 1 item for cleaning the house	60.4
77	Identified national flag of their own country	59.8
<i>3 most difficult Items</i>		
74.3	Provided another relevant detail of the celebration	3.7
73.2	Named 1 more festival	5.0
74.2	Provided 1 more relevant detail of the celebration	5.2
Approaches to Learning		
<i>3 easiest items</i>		
81	Showed ability to delay gratification	56.5
82.1	Showed persistence in items 2-6	14.8
82.2	Showed persistence in items 80-81	8.4
<i>3 most difficult Items</i>		
83.2	Did not want to let go of materials	6.2
79.2	Said another item he/she could do well	28.0
80.5	Assessor tapped once, child tapped twice	34.1

COMPARISONS ACROSS DIFFERENT DOMAINS AND GROUPS

A 3 (Age) × 2 (Gender) × 2 (Urbanicity) MANOVA was performed with children's scores in each domain as dependent variables. The omnibus analysis yielded significant effects of Age, $F(14, 3452) = 33.83$, $p < .001$, $\eta_p^2 = .12$, and Urbanicity, $F(7, 1726) = 42.43$, $p < .001$, $\eta_p^2 = .15$. Follow-up univariate tests were further conducted and results are presented in Table 7.4 by domain. Post-hoc comparisons were performed using the Tukey's HSD test with p set at .05 for examinations of interaction effects. No multiple effects were detected.

Table 7.4
Age, Gender and Urbanicity differences in domain scores (Papua New Guinea)

Domain	Age		Gender		Urbanicity		Age × Gender		Age × Urbanicity		Gender × Urbanicity	
	<i>F</i> (2, 1732)	η_p^2	<i>F</i> (1, 1732)	η_p^2	<i>F</i> (1, 1732)	η_p^2	<i>F</i> (2, 1732)	η_p^2	<i>F</i> (2, 1732)	η_p^2	<i>F</i> (1, 1732)	η_p^2
CD	164.91***	.16	4.52*	.00	90.22***	.05	0.35	.00	0.17	.00	0.39	.00
SED	86.90***	.09	1.75	.00	5.89*	.00	0.24	.00	0.18	.00	0.16	.00
MD	169.17***	.16	8.51	.01	94.52***	.05	1.12	.00	0.84	.00	1.48	.00
LEL	140.69***	.14	1.67	.00	0.52	.00	0.91	.00	1.56	.00	0.54	.00
HHS	143.21***	.14	2.20	.00	57.34***	.03	0.32	.00	0.02	.00	0.16	.00
CKP	123.47***	.13	0.88	.00	14.60***	.01	0.06	.00	1.89	.00	1.76	.00
ATL	93.59***	.10	1.10	.00	4.36*	.00	0.85	.00	2.26	.00	0.50	.00

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

DOMAIN 1: COGNITIVE DEVELOPMENT

As shown in Table 7.4, there were significant effects of Age, Gender, and Urbanicity on the performance of children in the domain of Cognitive Development. Five-year-olds ($M_{adjusted} = 36.76$, $SD = 16.58$, $SE = 0.62$) did significantly better than 4-year-olds ($M_{adjusted} = 26.88$, $SD = 14.47$, $SE = 0.65$), and the 4-year-olds did significantly better than the 3-year-olds ($M_{adjusted} = 20.65$, $SD = 13.57$, $SE = 0.65$). Boys ($M_{adjusted} = 28.88$, $SD = 16.30$, $SE = 0.53$) showed significantly higher performance than girls ($M_{adjusted} = 27.31$, $SD = 16.48$, $SE = 0.51$). Unlike other countries, rural children ($M_{adjusted} = 31.61$, $SD = 16.56$, $SE = 0.43$) did significantly better than urban children ($M_{adjusted} = 24.58$, $SD = 14.88$, $SE = 0.70$).

Figure 7.3
Age and Gender differences in Cognitive Development (Papua New Guinea)

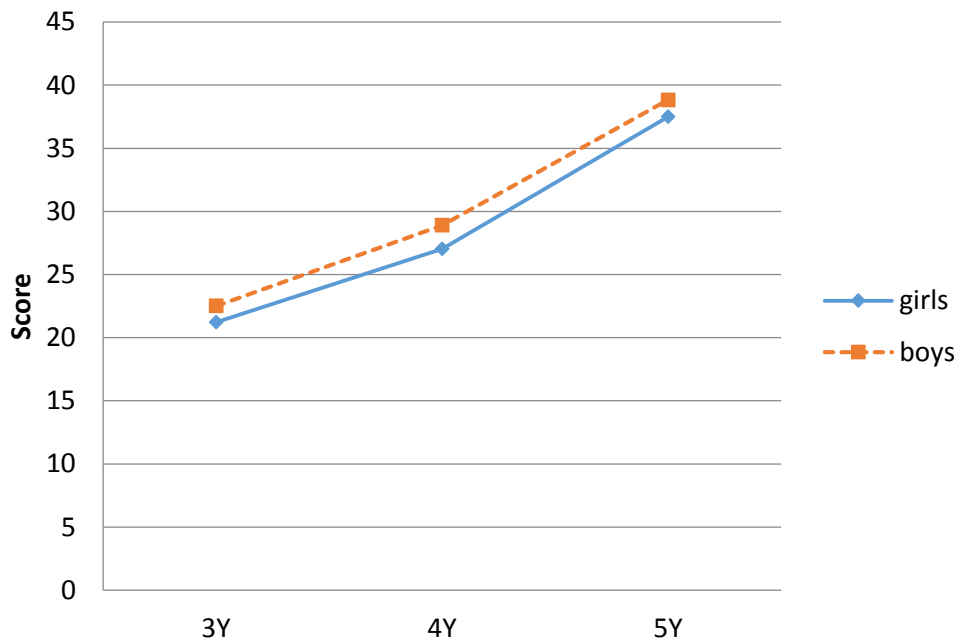


Figure 7.4
Age differences in Cognitive Development in children living in rural and urban areas (Papua New Guinea)

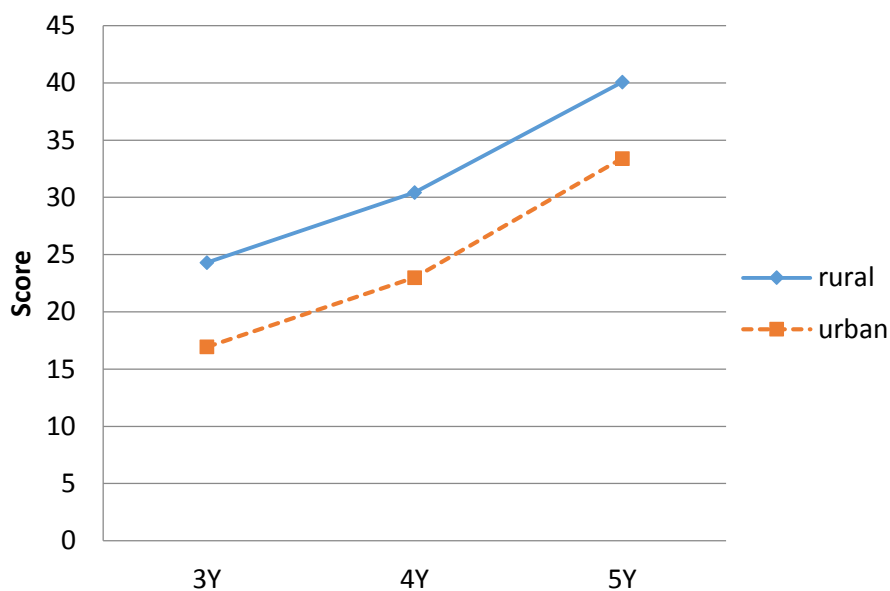
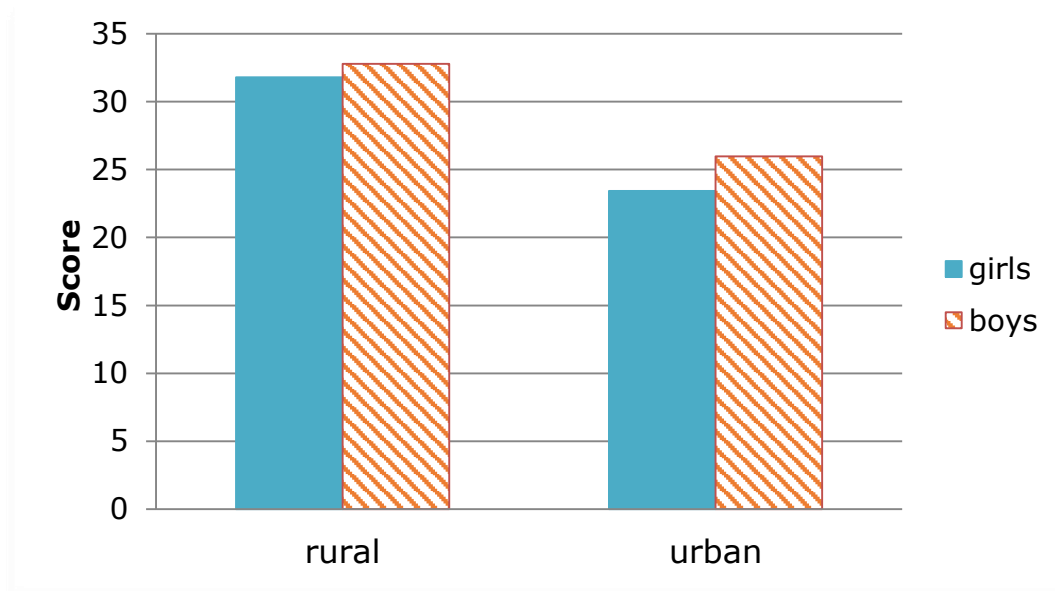


Figure 7.5
Gender differences in Cognitive Development in children living in rural and urban areas (Papua New Guinea)



DOMAIN 2: SOCIO-EMOTIONAL DEVELOPMENT

There were significant effects of Age and Urbanicity on children's performance in the domain of Socio-emotional Development (see Table 7.4). Five-year-olds ($M_{adjusted} = 43.50$, $SD = 22.81$, $SE = 0.95$) did significantly better than 4-year-olds ($M_{adjusted} = 31.89$, $SD = 22.15$, $SE = 1.10$), and 4-year-olds did significantly better than 3-year-olds ($M_{adjusted} = 25.61$, $SD = 22.46$, $SE = 1.01$). Rural children ($M_{adjusted} = 35.05$, $SD = 25.13$, $SE = 0.67$) did significantly better than urban children ($M_{adjusted} = 32.28$, $SD = 20.40$, $SE = 0.93$).

Figure 7.6
Age and Gender differences in Socio-emotional Development (Papua New Guinea)

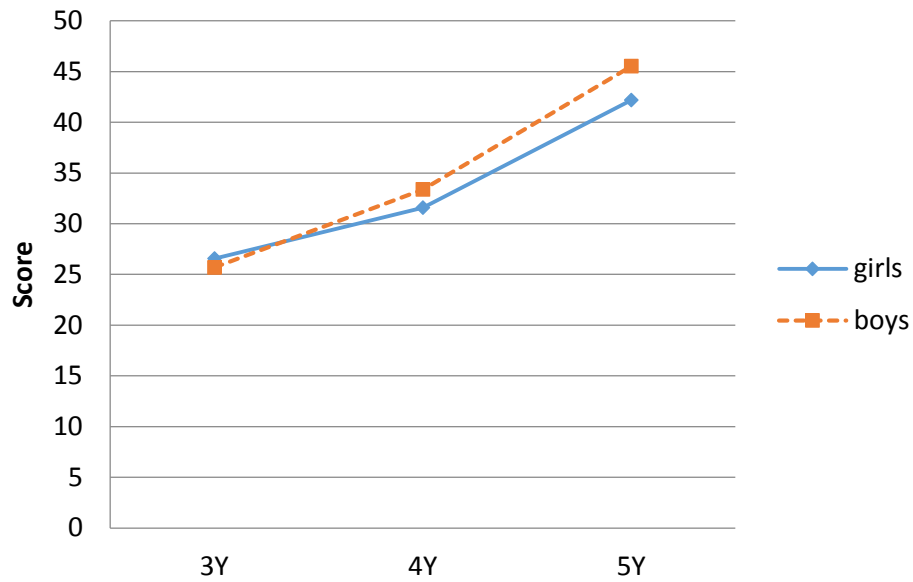


Figure 7.7
Age differences in Socio-emotional development in children living in rural and urban areas (Papua New Guinea)

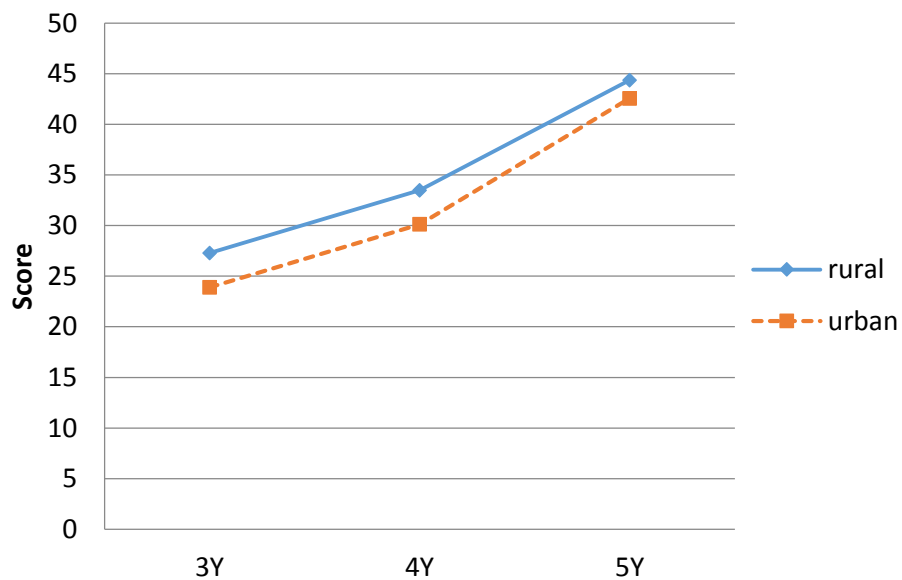
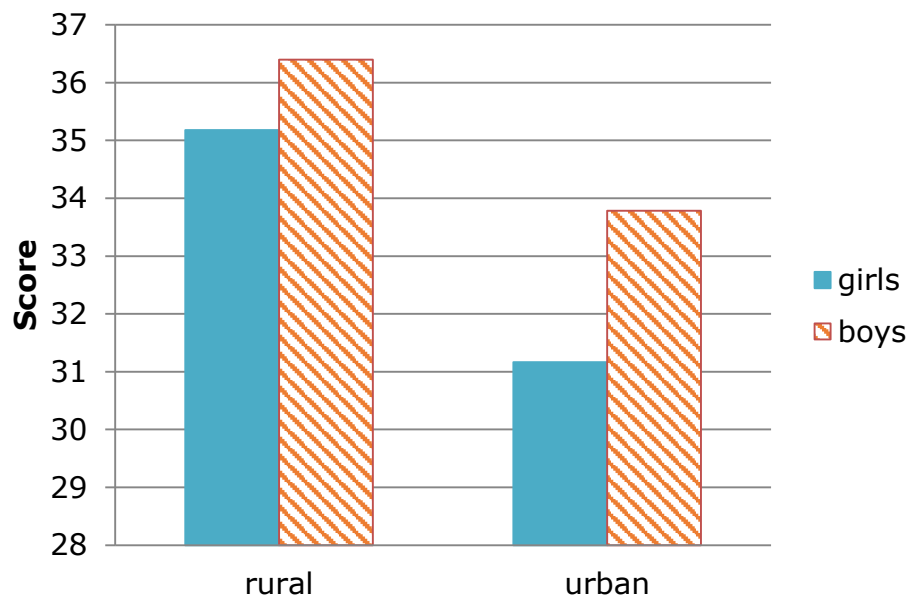


Figure 7.8
Gender differences in Socio-emotional development in children living in rural and urban areas (Papua New Guinea)



DOMAIN 3: MOTOR DEVELOPMENT

There were significant effects of Age and Urbanicity on children's Motor Development (see Table 7.4). Five-year-olds ($M_{adjusted} = 67.35$, $SD = 19.44$, $SE = 0.87$) did significantly better than 4-year-olds ($M_{adjusted} = 57.67$, $SD = 20.70$, $SE = 0.92$), and 4-year-olds did significantly better than 3-year-olds ($M_{adjusted} = 44.08$, $SD = 23.43$, $SE = 0.92$). Children from rural areas ($M_{adjusted} = 61.45$, $SD = 23.00$, $SE = 0.61$) showed significantly higher performance in Motor Development than those from urban areas ($M_{adjusted} = 51.28$, $SD = 21.94$, $SE = 0.68$).

Figure 7.9
Age and Gender differences in Motor Development (Papua New Guinea)

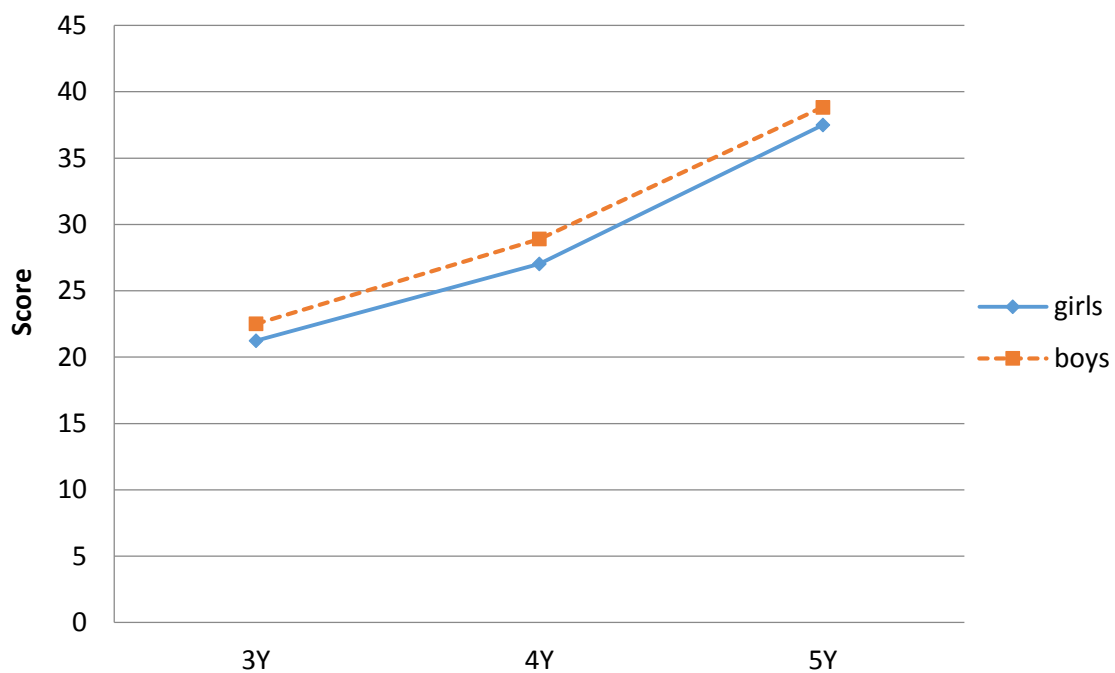


Figure 7.10
Age differences in Motor development in children living in rural and urban areas (Papua New Guinea)

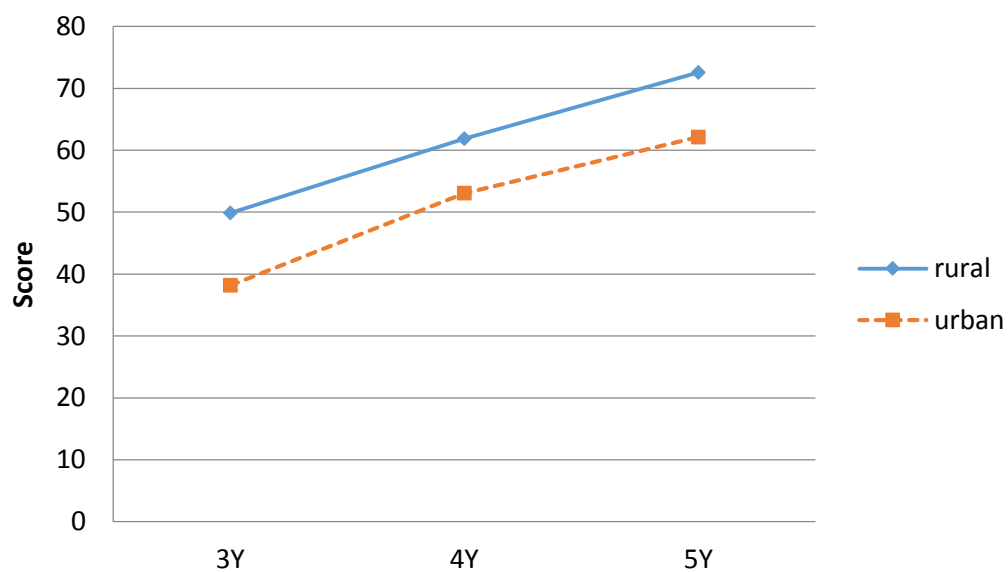
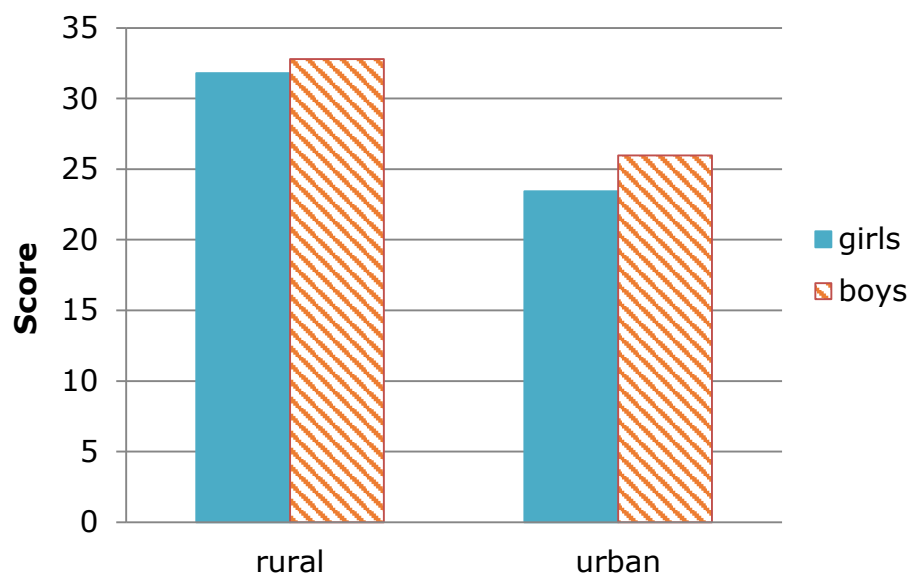


Figure 7.11
Gender differences in Motor development in children living in rural and urban areas (Papua New Guinea)



DOMAIN 4: LANGUAGE AND EMERGENT LITERACY

There was a significant effect of Age on children's performance in the domain of Language and Emergent Literacy as shown in Table 7.4. Five-year-olds ($M_{adjusted} = 46.71$, $SD = 18.28$, $SE = 0.75$) showed significantly higher performance than the 4-year-olds ($M_{adjusted} = 37.10$, $SD = 17.32$, $SE = 0.80$), and 4-year-olds did significantly better than the 3-year-olds ($M_{adjusted} = 28.43$, $SD = 17.39$, $SE = 0.80$).

Figure 7.12
Age and Gender differences in Language and Emergent Literacy (Papua New Guinea)

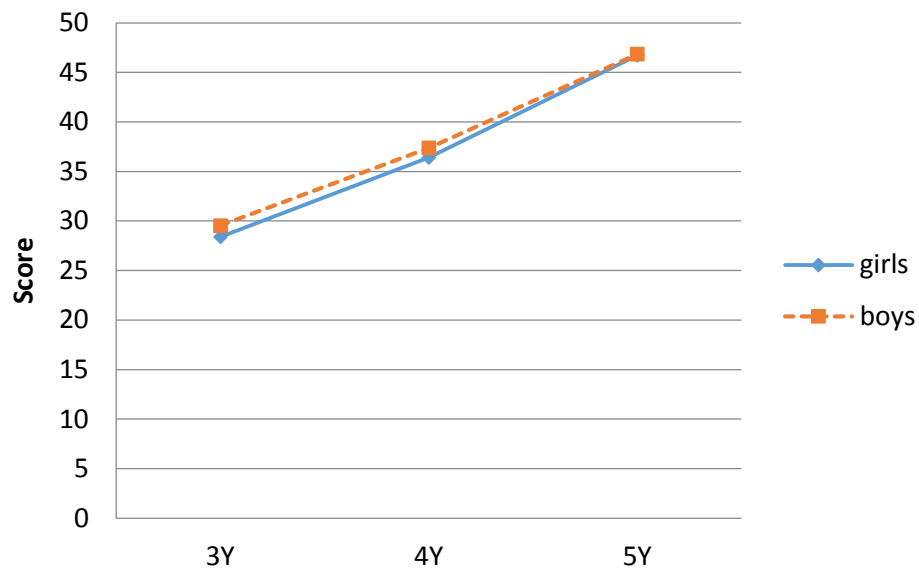


Figure 7.13
Age differences in Language and Emergent Literacy in children living in rural and urban areas (Papua New Guinea)

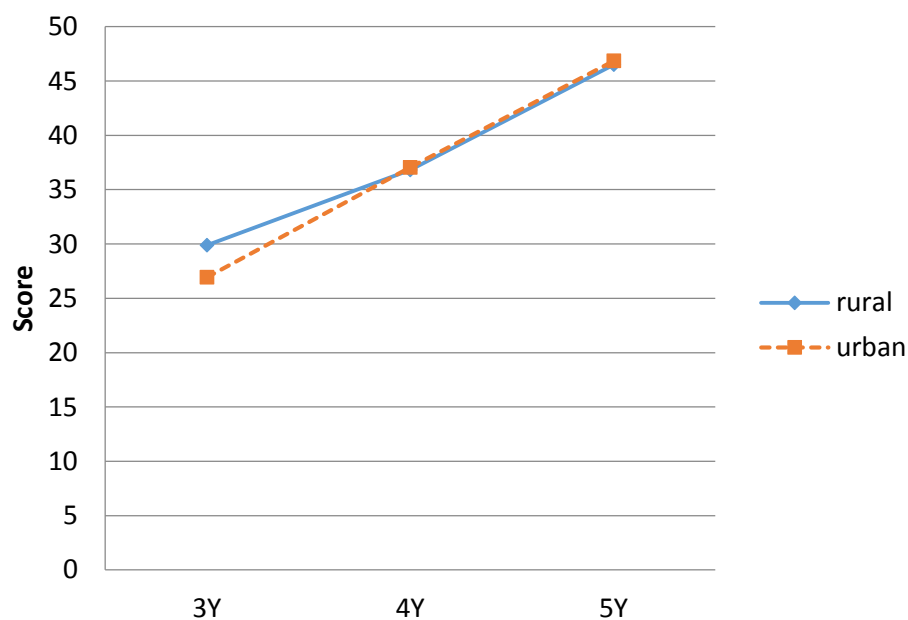
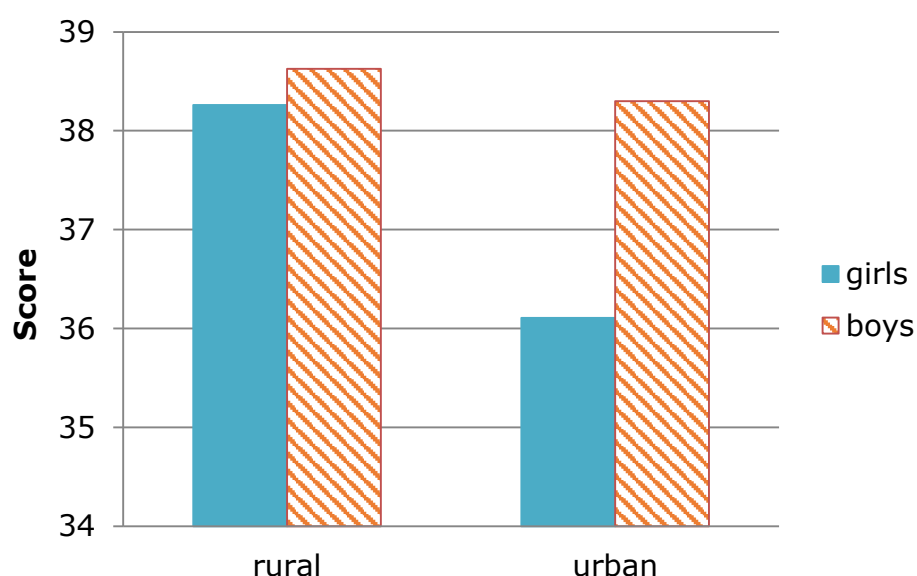


Figure 7.14
Gender differences in Language and Emergent Literacy in children living in rural and urban areas (Papua New Guinea)



DOMAIN 5: HEALTH, HYGIENE, AND SAFETY

There were significant effects of Age and Urbanicity in Health Hygiene and Safety on the performance of children in the domain of Health, Hygiene and Safety. Again, 5-year-olds ($M_{adjusted} = 57.60$, $SD = 25.20$, $SE = 1.05$) performed significantly better than the 4-year-olds ($M_{adjusted} = 43.18$, $SD = 25.77$, $SE = 1.12$), and 4-year-olds performed significantly better than the 3-year-olds ($M_{adjusted} = 31.80$, $SD = 24.67$, $SE = 1.12$). The performance of rural children ($M_{adjusted} = 48.98$, $SD = 28.25$, $SE = 0.74$) was significantly better than urban children ($M_{adjusted} = 39.41$, $SD = 24.35$, $SE = 1.03$).

Figure 7.15
Age and Gender differences in Health, Hygiene and Safety (Papua New Guinea)

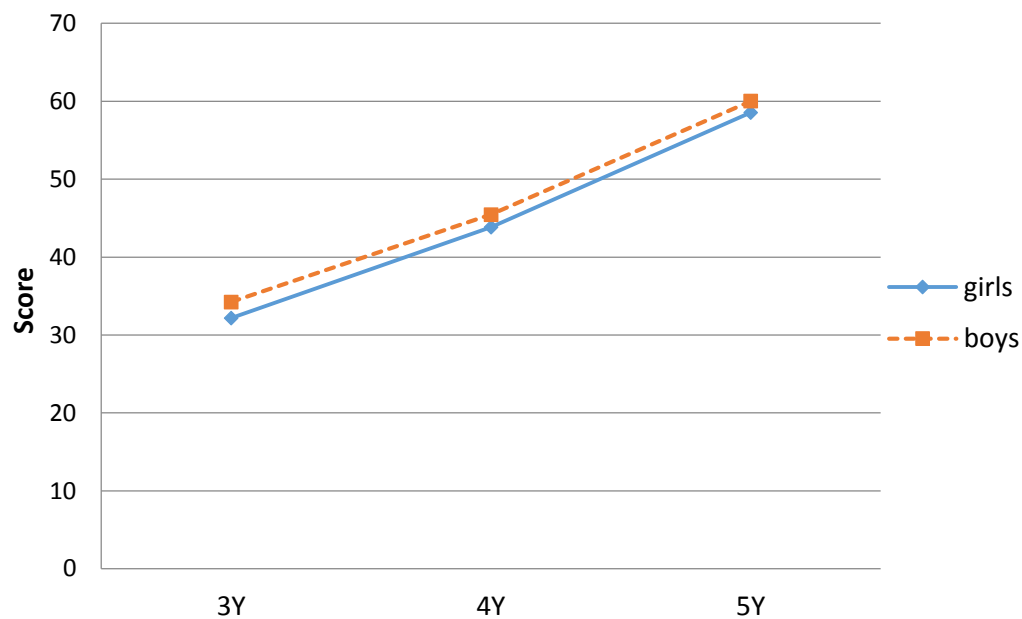


Figure 7.16
Age differences in Health, Hygiene and Safety in children living in rural and urban areas (Papua New Guinea)

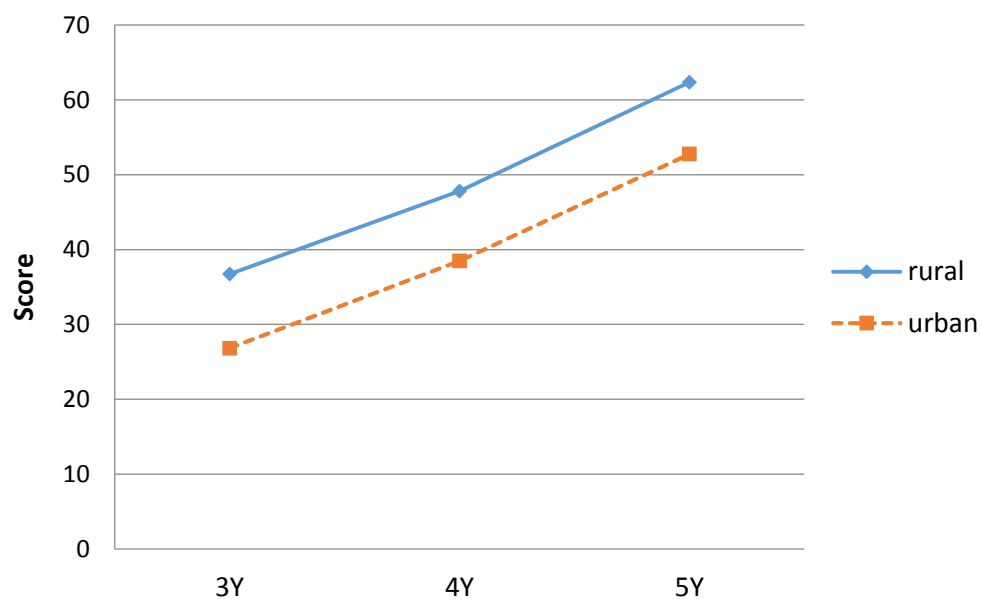
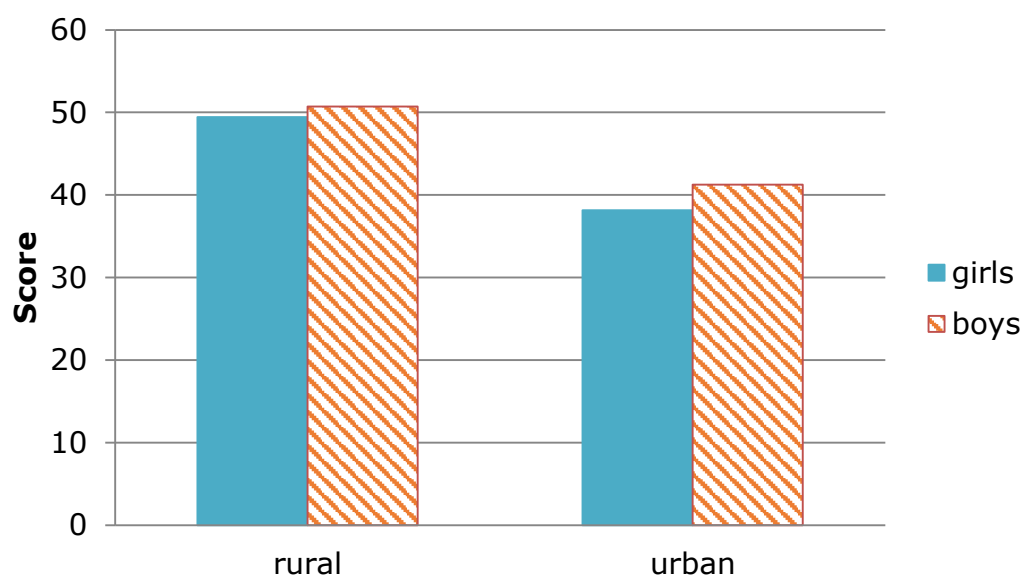


Figure 7.17
Gender differences in Health, Hygiene and Safety in children living in rural and urban areas (Papua New Guinea)



DOMAIN 6: CULTURAL KNOWLEDGE AND PARTICIPATION

There were significant effects of Age and Urbanicity of children's performance on the domain of Cultural Knowledge and Participation (see Table 7.4). 5-year-olds ($M_{adjusted} = 46.75$, $SD = 23.25$, $SE = 0.97$) performed significantly better than the 4-year-olds ($M_{adjusted} = 35.35$, $SD = 23.11$, $SE = 1.03$), and 4-year-olds performed significantly better than the 3-year-olds ($M_{adjusted} = 24.65$, $SD = 22.40$, $SE = 1.03$). The performance of rural children ($M_{adjusted} = 37.80$, $SD = 25.26$, $SE = 0.68$) was significantly better than that of urban children ($M_{adjusted} = 33.37$, $SD = 23.01$, $SE = 0.94$).

Figure 7.18
Age and Gender differences in Cultural Knowledge and Participation
(Papua New Guinea)

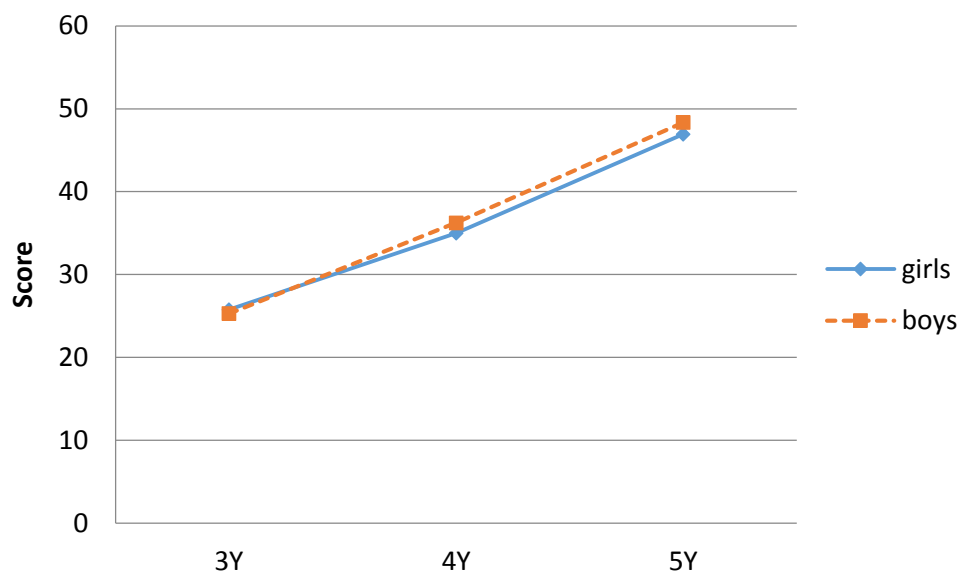


Figure 7.19
Age differences in Cultural Knowledge and Participation in children living
in rural and urban areas (Papua New Guinea)

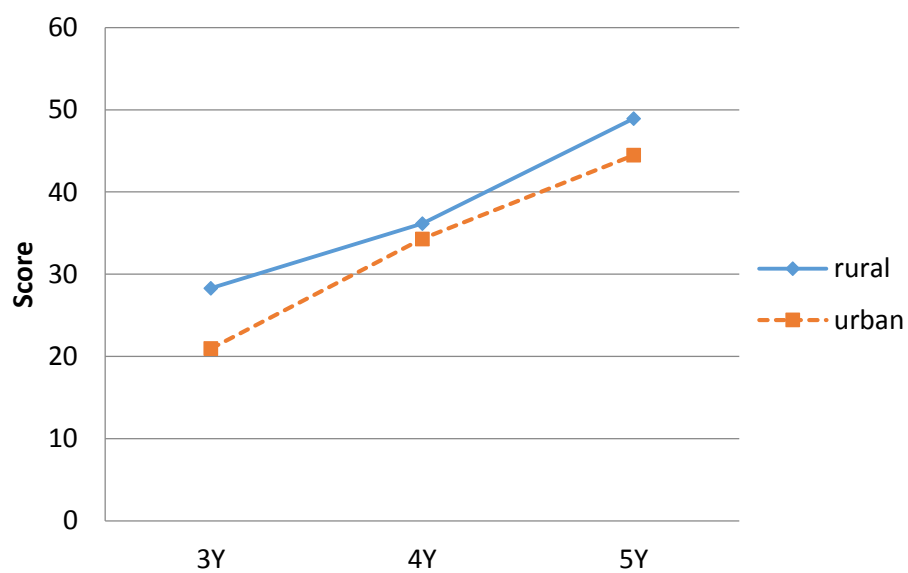
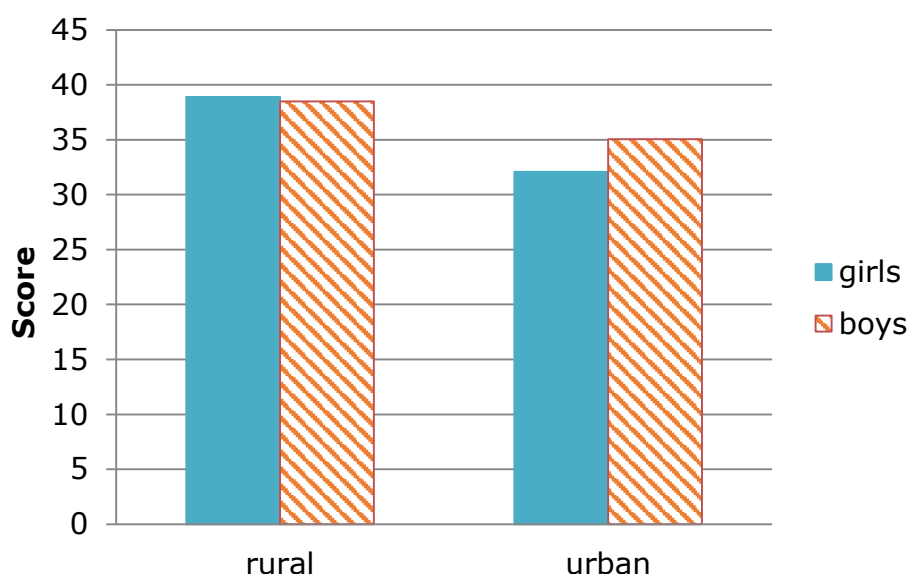


Figure 7.20
Gender differences in Cultural Knowledge and Participation in children living in rural and urban areas (Papua New Guinea)



DOMAIN 7: APPROACHES TO LEARNING

There were significant main effects of Age and Urbanicity on children's performance in Approaches to Learning (see Table 7.4). Five-year-olds ($M_{adjusted} = 43.54$, $SD = 23.29$, $SE = 0.95$) performed significantly better than the 4-year-olds ($M_{adjusted} = 32.63$, $SD = 23.08$, $SE = 1.01$), and 4-year-olds performed significantly better than the 3-year-olds ($M_{adjusted} = 24.73$, $SD = 20.87$, $SE = 1.01$). Urban children ($M_{adjusted} = 34.83$, $SD = 23.97$, $SE = 0.93$) performed significantly better than rural children ($M_{adjusted} = 32.44$, $SD = 23.49$, $SE = 0.67$). Among the seven domains of the EAP-ECDS, this was the only domain in which children from urban areas performed better than those from rural areas.

Figure 7.21
Age and Gender differences in Approaches to Learning (Papua New Guinea)

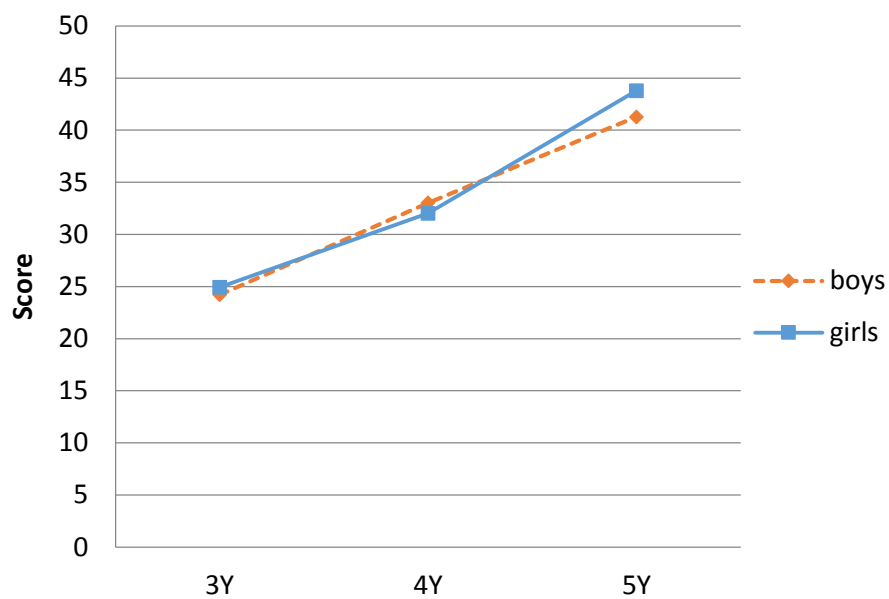


Figure 7.22
Age differences in Approaches to Learning in children living in rural and urban areas (Papua New Guinea)

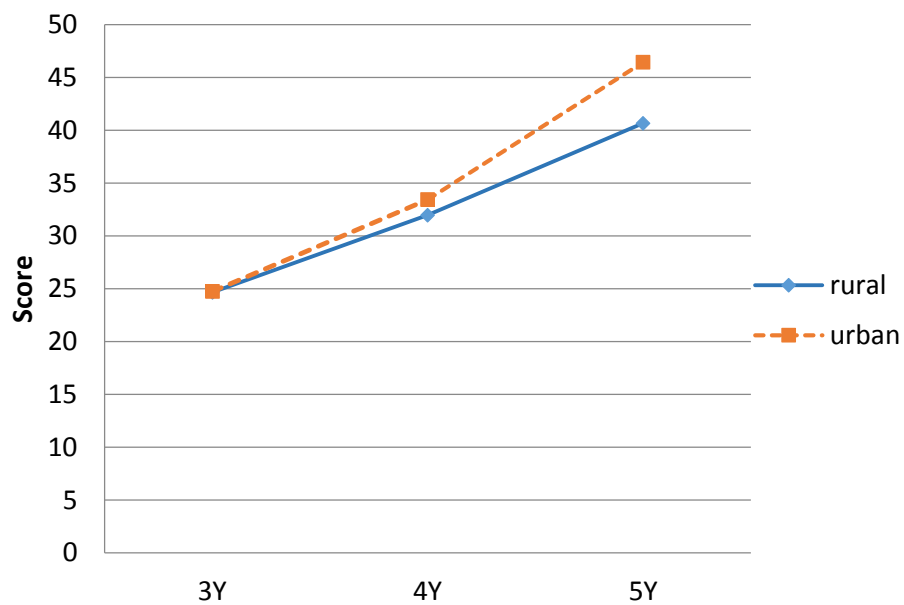
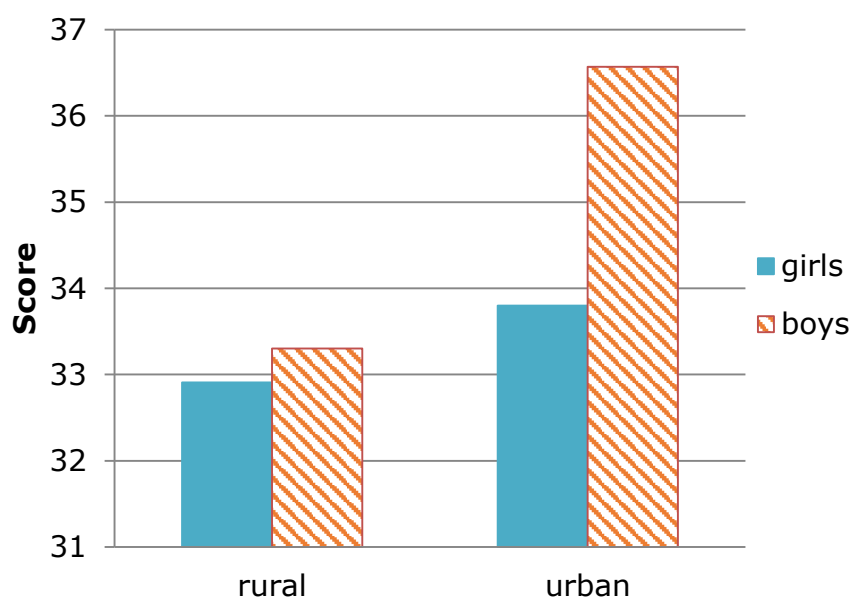


Figure 7.23
Gender differences in Approaches to Learning in children living in rural and urban areas (Papua New Guinea)



EXAMINATION OF THE IMPACT OF PRE-SCHOOL ATTENDANCE ON CHILDREN DEVELOPMENT

There were a total of 49 children attending preschool in the study, as shown in Table 7.5. The coefficients of the multi-level model are presented in Table 7.6. After taking into account various socio-demographic factors including household assets, mother's education, and children's age and gender, a significant difference was found between children who attended an early learning programme and those that did not. Specifically, children who attended preschool scored 6.91% points higher on average than children that had not attended preschool ($p < 0.001$).

TABLE 7.5
ATTENDANCE IN AN EARLY LEARNING PROGRAMME BY AGE AND GENDER (PAPUA NEW GUINEA)

PRESCHOOL ENROLMENT	3Y	4Y	5Y
No	524	553	618
YES	13	9	27
TOTAL	537	562	645

TABLE 7.6
REGRESSION COEFFICIENTS FROM A MULTI-LEVEL MODEL (PAPUA NEW GUINEA)

	COEFFICIENTS AND 95% CONFIDENCE INTERVALS	P-VALUES
INTERCEPT	-9.74 (-15.59, -3.88)	0.001
PRESCHOOL ATTENDANCE	6.91 ^Δ (3.39, 10.30)	<0.001
HOUSEHOLD ASSET	0.63 (0.04, 1.21)	0.04
MOTHER'S EDUCATION	1.56 (0.94, 2.40)	<0.001
SEX (GIRL AS REFERENCE)	1.07 (-0.27, 2.4)	0.12
AGE	10.02 (9.20, 10.83)	<0.001

^Δ ALL COEFFICIENTS FOR PRESCHOOL ATTENDANCE ARE FROM THE MULTILEVEL MODEL WHICH INCLUDED ALL SIX COUNTRIES.

CONSISTENCY BETWEEN CHILDREN'S PERFORMANCE AND PARENTS' RATING

WE CONDUCTED A CORRELATIONAL ANALYSIS TO ASSESS THE CONSISTENCY BETWEEN CHILDREN'S PERFORMANCE AND PARENTS' RATING OF CHILDREN'S DEVELOPMENT. AS SHOWN IN TABLE 7.7, PARENTS' RATING OF CHILDREN'S ABILITIES (Q48-52, Q54-56, AND Q67-70 IN THE PARENT QUESTIONNAIRE) WAS POSITIVELY CORRELATED TO THE TOTAL SCORE AS WELL AS THE DOMAIN SCORES.

TABLE 7.7
CORRELATIONS BETWEEN CHILDREN'S PERFORMANCE ON THE EAP-ECDS AND PARENTS' RATING (PAPUA NEW GUINEA)

	PARENTS' RATING	EAP- ECDS TOTAL	CD	SED	MD	LEL	HHS	CKP	ATL
PARENTS' RATING	1	.23***	.21***	.21***	.14***	.23***	.17***	.22***	.17***
EAP-ECDS TOTAL		1	.81***	.85***	.74***	.88***	.90***	.88***	.77***
CD			1	.64***	.58***	.71***	.73***	.65***	.52***
SED				1	.51***	.74***	.72***	.75***	.57***
MD					1	.57***	.61***	.58***	.46***
LEL						1	.77***	.72***	.67***
HHS							1	.77***	.62***
CKP								1	.60***
ATL									1

NOTE. * $P < .05$. ** $P < .01$. *** $P < .001$.

INFORMATION ABOUT THE FAMILY

A total of 1800 families (66.1% from urban and 33.9% from rural areas) participated in the study in Papua New Guinea. About 73.1% of the respondents were mothers 23.4% were fathers, and the remaining 3.5% were other family members. About 1% of the participants were from ethnic minority groups.

The mean age of mothers was 32.49 and the mean age of fathers was 37.19. Figure 7.24 shows the distribution of parents' highest education attained. About 50.2% of the mothers participating in the study had received primary education, 23% obtained lower secondary education and 15.8% had no formal education. None of the parents had received university education. On the other hand, 45.2% of the fathers had received primary education, 27.1% received lower secondary education, 11.9% had upper secondary education and only 9.7% had no formal education. The majority of the mothers (75%) worked in skilled agriculture and fishing. Similarly, most of the fathers also worked in skilled agriculture and fishing (54%). 92.3% of mothers and 93.1% of fathers participating in the survey had a job. Details about parents' occupation can be found in Figure 7.25.

Figure 7.24
Highest level of education attained by parents (Papua New Guinea)

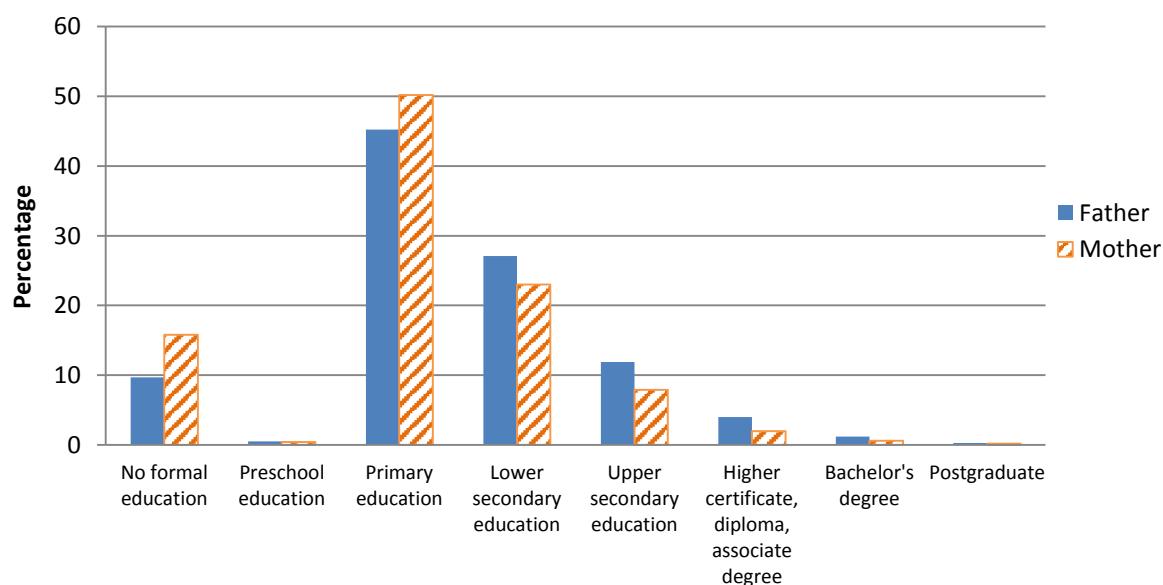
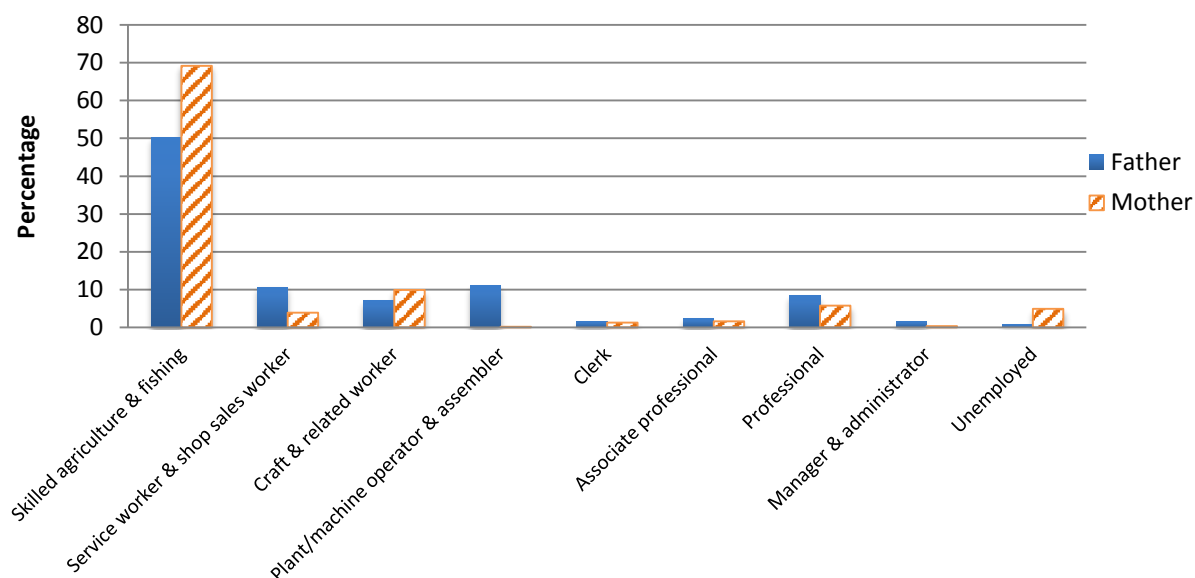


Figure 7.25
Parents' occupations (Papua New Guinea)



Among the working mothers, only 10.5% were granted paid maternity leave before the target child was born. The mean length of the maternity leave was 6.98 weeks with a wide range from 1 to 32 weeks. About 15.8% of the mothers attended a parenting class, a majority of them attended the class before the child was born (75.3%), and 13.5% attended when the infant was 1 to 6 months old.

About half of the families had a radio (49.5%) and over one third of them had electricity (35.3%). It was common for the family members to have a mobile phone (80.2%). About 25.9% of the families had a television and 18.9% of them had a refrigerator. More than one fifth of the families reported that one or more family members had a watch (28.2%) and a bicycle (23.1%). About 15.9% of the family members had an animal-drawn cart. It was uncommon for the families to have a fixed line telephone (9.2%). It was also uncommon for the family members to possess a motorcycle or scooter (3.2%), a car or truck (9.8%) and a boat with motor (5.5%).

More than half of the families (63.3%) participating in this survey owned land that can be used for agriculture and the mean area of the land was 4.84 hectares, with a range from 0.5 to 200 hectares. Around one third of the families (32.8%) owned livestock, herds, other farm animals, or poultry. 62.5% of the families in this survey had a bank account.

EARLY LEARNING AND DEVELOPMENT

Only 2.8% of the children attended some type of organized learning or early childhood education programme. The logistic multiple regression

indicated that children living in rural areas or with better educated parents were more likely to be enrolled in an early learning programme (see Table 7.8). The mean length of enrolment in an early learning programme was 10.84 months (ranged from 2 to 24 months) for those children who had attended any early childhood education programme.

Table 7.8

Predictors of the probability of enrolment in an early learning programme (Papua New Guinea)

Predictor	β	$SE \beta$	Wald's χ^2	p	e^β
Child's age	0.24	0.19	1.56	.212	1.27
Child's gender	-0.28	0.31	0.81	.367	0.75
Urban or Rural	-0.85	0.33	6.67	.010	0.43
Mother's age	0.02	0.03	0.37	.542	1.02
Mother's education	0.40	0.15	7.67	.006	1.50
Father's age	-0.01	0.03	0.14	.708	0.99
Father's education	0.36	0.14	6.81	.009	1.44
Constant	-7.21	1.34	28.93	<.001	0.00

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Among the 49 children who participated in an organized early learning programme, 86% attended such a programme within the seven days prior to the survey. Half of them participated in a kindergarten (50%), 13% of them participated in community or drop-in centres and 37% of them participated in other types of early learning programmes. Almost all of the programmes opened five days a week (98%). Only 26% of the programmes were free of charge.

Among these 49 children, most of the children had attended such programmes for less than 10 hours a week (83%). Figure 7.26 and Figure 7.27 show the duration children had stayed in the current early learning programme and the hours they spent per week in that programme. About 42.9% of the parents reported that their children always wanted to attend the programme and 10.2% of them said their children rarely wanted to do so.

Figure 7.26
Duration of attendance in an early learning programme (Papua New Guinea)

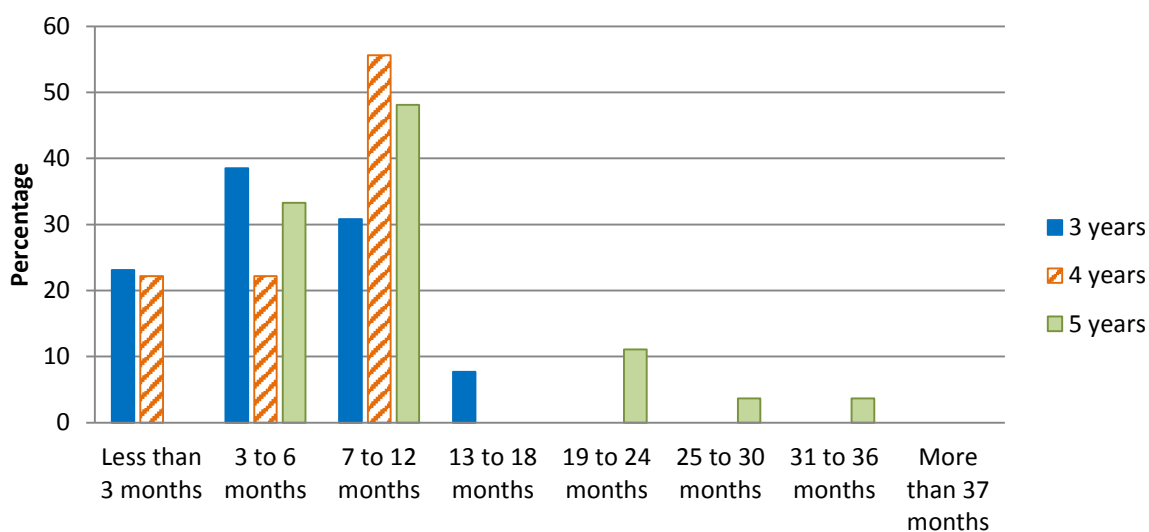
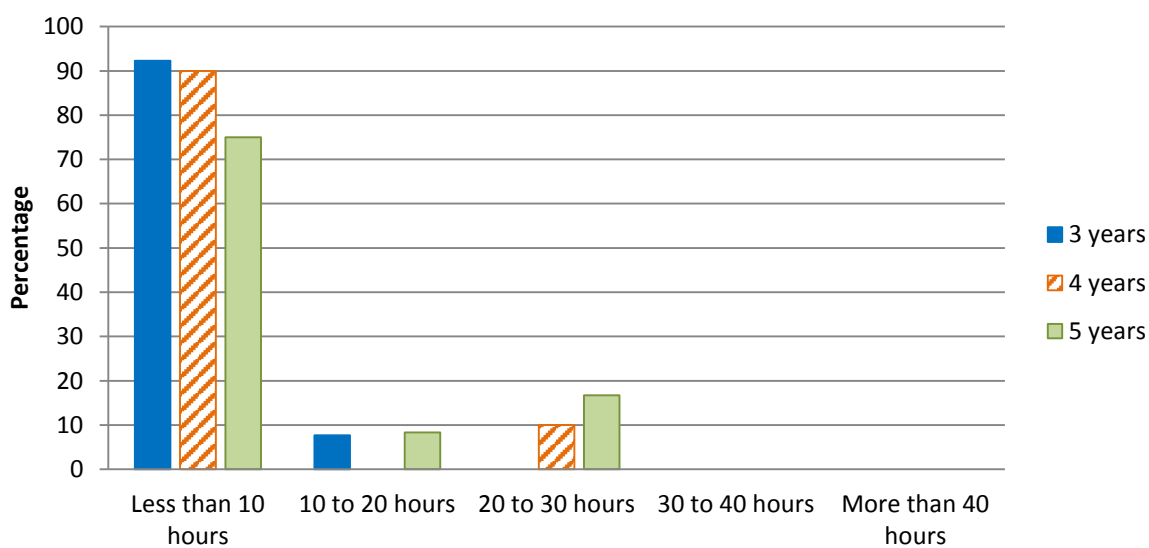


Figure 7.27
Number of hours of programme attendance per week (Papua New Guinea)



Parents were also asked to rate their children's abilities in terms of cognitive, language, motor, and social skills as well as knowledge about society. Parents often gave high evaluations with many rating their child as "much above" compared to other children of a similar age in the following aspects: ability to concentrate on learning new tasks (28.7%), participation in important community events (including festivals), (26.2%), language skills (55%), ability to run and jump (71.6%), ability to hold chopsticks/spoons/pencils/pens (66.3%), practice healthy and hygienic habits (29%), follow safety rules (40.5%) and display social skills, such as show consideration to others, and ability to manage emotions (28.5%). In the aspect of ability to learn new things and solve new problems, 27.5% of parents rated their child as "about average" and 22.3% of them rated their child as "much above".

Parents further evaluated their children's more general social competencies. Most parents gave fair evaluations to their children in the following 4 aspects: 39.9% of the parents believed that their child was able to do the simple tasks assigned independently sometimes and 27.3% believed their child could always do so; 35.6% of the parents reported their child always got along well with other children of similar ages and 29.5% thought their child did so most of the time; 55.8% of the parents believed their child sometimes kicked, bit, or hit other children or adults and 16.7% reported their child rarely did so; 44.1% of the parents said their child sometimes get distracted easily and 19.4% said their child get distracted easily most of the time.

Parents were then asked to report the level of early literacy of their child. They reported that a child could identify 5.29 graphemes on average (range from 0 to 26). Only 13.1% of the parents believed that their child could read at least four simple and popular words. Around one third of the parents (30.6%) reported that their child could identify all numbers from 1 to 10.

Finally, parents' involvement in early learning-related activities at home was investigated. Parents were asked to report whether they or any other family members over 15 had engaged in six different early learning-related activities with the child in the past three days. Table 7.9 presents the percentages of mothers', fathers', and other family members' involvement in those six common early learning-related activities at home with the target children. Although mothers were the ones who were engaged in these learning activities most frequently less than half of them engaged in each activity.

Table 7.9
Adults' involvement in early learning-related activities at home (Papua New Guinea)

Activities	Mothers (%)	Fathers (%)	Other Family Members (%)
Read books or looked at picture books with your child	33.3	17.6	19.2
Told stories to your child	49.4	22.8	20.0
Sang songs with your child	47.5	18.8	25.7
Took your child outside the home place	48.0	21.8	14.8
Played games with your child	31.9	20.3	38.3
Spent time with your child in naming things or counting things or drawing	36.6	21.1	20.2

We then summed up the scores of mothers', fathers' and other family members' involvement in each type of activities. Although the combined scores cannot represent the frequencies of children's participation in such activities, they showed the opportunities that children had to engage in specific activities at home with adults. As shown in Table 7.10, there were significant correlations among children's participation in those activities, which indicated that those children who were likely to engage in some activities with adults were also likely to engage in other activities with adults at home.

Table 7.10
Correlations among involvement in different early learning-related activities at home (Papua New Guinea)

	i	ii	iii	iv	v	vi
i. Read books or looked at picture books with your child	1	.43***	.42***	.34***	.35***	.41***
ii. Told stories to your child		1	.68***	.51***	.52***	.47***
iii. Sang songs with your child			1	.56***	.54***	.50***
iv. Took your child outside the home place				1	.52***	.45***
v. Played games with your child					1	.55***
vi. Spent time with your child in naming things or counting things or drawing						1

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

To better understand mothers', fathers', and other family members' involvement in early learning-related activities at home, we created separate variables to represent mothers', fathers', and other family members' involvement in these six types of activities by summing the scores each of the parties get in the six items mentioned above. Paired t-test showed that mothers ($M = 2.90$, $SD = 2.04$) were involved the most in early learning-related activities at home compared with other family members ($M = 1.62$, $SD = 1.85$) ($t(1703) = 16.99$, $p < .001$), and fathers ($M = 1.41$, $SD = 1.77$) ($t(1703) = 22.35$, $p < .001$). Other family members had more such activities with children at home than fathers ($t(1703) = -3.35$, $p < .001$).

Multiple regression analyses shown in Table 7.11 indicated that mothers in urban areas and with more education were more likely to be engaged in activities with their children, at home. However, rural fathers and those with better education were more likely to be engaged in such activities with the target children at home. None of the variables in the model significantly predicted other family members' involvement in early learning-related activities at home.

Table 7.11
Predictors of family involvement in early learning-related activities at home (Papua New Guinea)

Variables	Mother				Father				Other			
	B	SE B	β	p	B	SE B	β	p	B	SE B	β	p
Constant	2.60	0.40		<.001	2.32	0.35		<.001	0.77	0.39		.047
Child's age	-0.03	0.06	-.01	.661	0.01	0.05	.01	.839	0.02	0.06	.01	.690
Child's gender	-0.00	0.10	-.00	.979	0.02	0.09	.01	.785	-0.01	0.09	+.00	.926
Urban or Rural	0.86***	0.11	.20	<.001	-0.73	0.10	-.20	<.001	-0.16	0.10	-.04	.132
Mother's age	-0.02	0.01	-.06	.095	-0.02	0.01	-.07	.056	0.01	0.01	.06	.118
Mother's education	0.28***	0.05	.17	<.001	-0.06	0.04	-.04	.133	0.02	0.05	.01	.687
Father's age	-0.01	0.01	-.03	.421	-0.01	0.01	-.07	.063	0.01	0.01	.04	.269
Father's education	-0.00	0.05	-.00	.973	0.15	0.04	.10	<.001	-0.01	0.04	-.01	.782
R^2	.10				.05				.01			
F	25.03***				12.91***				2.16*			

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

CHILD'S HEALTH AND HABITS

The majority (92.5%) of children in this study had received vaccinations according to schedules. About 34.6% of families took the child for a regular health check-up to a clinic or hospital. Most of the target children did not have their vision/hearing/speech checked, only 15.4% of the target children had their vision checked, 16.5% of the children had their hearing checked by professionals, and 8.5% had their speech checked by professionals. A total score of families' health facilitation practices were created by summing up the scores of the above-mentioned items. A multiple regression analyses showed that mother's education positively predicted families' health facilitation practices in Papua New Guinea (see Table 7.12).

Table 7.12
Predictors of health facilitation practices (Papua New Guinea)

Variables	B	SE B	β	<i>p</i>
Constant	1.58	0.24		<.001
Child's age	0.02	0.03	.48	.635
Child's gender	-0.03	0.06	-.02	.561
Urban or Rural	0.05	0.06	.02	.396
Mother's age	-0.00	0.01	-.01	.730
Mother's education	0.12***	0.03	.13	<.001
Father's age	-0.00	0.01	-.03	.477
Father's education	-0.04	0.03	-.05	.111
<i>R</i> ²				.02
<i>F</i>				3.87*

Note. **p* < .05. ***p* < .01. ****p* < .001

The percentage of children who had the habit of brushing teeth every day was 45.4%. Among them, 30.7% did this at both morning and night, 67.2% brushed teeth only in the morning, and 2.1% only did so at night. In addition, parents were asked whether their child had another three basic health-related habits. Without adults' directions, 46% of the children were considered as being able to wash their hands after using the toilet sometimes and 14.4% would always do so. In addition, 47.1% of the children sometimes washed their hands before meals without adults' directions and 15.3% would do so most of the time. As to eating vegetables, 34.5% of the parents reported their child would sometimes do so without adults' directions and 23.4% would do so most of the time. Similarly, a total score of children's health-related habits were created by summing up the scores of these four items. A multiple regression was conducted on the score of children's habits formation with the predictors of child age, gender, urban/rural residence, mothers' age, and education, as well as fathers' age and education. As Table 7.13 shows, older children, those living in urban areas, and of better-educated mothers were inclined to show better health and hygiene habits in Papua New Guinea.

Table 7.13
Predictors of children's health and hygiene habits (Papua New Guinea)

Variables	B	SE B	β	<i>p</i>
Constant	3.49	0.59		<.001
Child's age	0.41	0.09	.12	<.001
Child's gender	-0.22	0.14	-.04	.124
Urban or Rural	1.18	0.16	.19	<.001
Mother's age	-0.02	0.01	-.05	.121
Mother's education	0.41	0.07	.17	<.001
Father's age	0.01	0.01	.03	.394
Father's education	0.12	0.07	.05	.068
<i>R</i> ²	.07			
<i>F</i>	27.85***			

Note. **p* < .05. ***p* < .01. ****p* < .001

About 5.2% of the parents reported a medical condition or chronic illness of their children, and 11.7% reported that their child had an allergy. 5.2% of the children had stayed in hospital for more than 3 days. We further asked parents to report whether their child had some specific health problems in the past month. Only 5.8% reported to have wheezing attacks, 7.1% had snoring, 2.7% had seizures, 5.2% had dizziness, 13.4% had persistent cough, 5.4% had joints problems, 17.6% had vomiting, 2.6% had constipation or hard stools for 2 weeks, 3.8% had skin rash with red swelling, 1.3% had numbness or weakness in limbs, 3% had trouble with eyes, 3.5% had trouble with nose and sinuses, 3.9% had trouble with ears and 5.1% had trouble with teeth, mouth or gums. The most common health problems were common cold or influenza-like illness and diarrhoea. 24.7% of the target children had suffered from cold or influenza-like illness and 21.3% suffered from diarrhoea in the past month. A total score representing children's basic health situation was created by summing up the scores in these items. A higher score represented more health problems. The multiple regression analyses showed that younger mothers and mothers of urban children were more likely to have reported health problems in their children than other mothers in Papua New Guinea (see Table 7.14).

Table 7.14
Predictors of children's health situation (Papua New Guinea)

Variables	B	SE B	β	<i>p</i>
Constant	1.37	0.38		<.001
Child's age	0.05	0.06	.03	.346
Child's gender	-0.03	0.09	-.01	.721
Urban or Rural	0.43	0.10	.12	<.001
Mother's age	-0.02	0.01	-.10	.009
Mother's education	0.03	0.05	.03	.464
Father's age	0.01	0.01	.03	.397
Father's education	0.01	0.04	.00	.903
<i>R</i> ²	.02			
<i>F</i>	4.58***			

Note. **p* < .05. ***p* < .01. ****p* < .001

SUMMARY AND DISCUSSION OF FINDINGS

EAP-ECDS

1. There were significant developmental differences in the EAP-ECDS. Older children performed better than younger children in all the seven domains of the Scales: Cognitive Development; Socio-emotional Development; Motor Development; Language and Emergent Literacy; Health Hygiene and Safety; Cultural Knowledge and Participation; and Approaches to Learning. This finding is not unexpected as the EAP-ECDS is a developmental scale with adequate validity and reliability.
2. There were significant gender differences favouring boys on the EAP-ECDS in Cognitive Development. There were no significant gender differences in other domains. Nonetheless the patterns may be noteworthy.
3. Urban children did significantly better than rural children in only one domain, Approaches to Learning. Rural children did significantly better than urban children in the following five domains of the Scales: Cognitive Development; Socio-emotional Development; Motor Development; Health Hygiene and Safety; and Cultural Knowledge and Participation. No significant difference was found in the domain of Language and Emergent Literacy. The reasons for these findings are unclear and may be related to sampling issues and the effects of confounding variables.

EARLY LEARNING AND DEVELOPMENT

4. A small number (2.8%) of the participating children (aged 3 to 5 years) attended some form of early education programme. The children who lived in rural areas or of better-educated parents were more likely enrolled in an early learning programme than other children. Almost all the children who attended an early childhood programme went to kindergartens and most of them spent less than 10 hours a week in the kindergarten.
5. Mothers were more involved in early learning activities than other family members and urban educated mothers were more likely to support early learning at home than other mothers.

CHILD'S HEALTH AND HABITS

6. In terms of health, almost all children had received vaccinations according to schedule. Mothers' education was the best predictor of health facilitation practices. Parents reported on basic health-related habits such as brushing teeth, always washing hands after using the toilet and before meals without adults' directions and eating vegetables without adults' directions. Regression analyses showed that older children, those living in urban areas, and those with more educated mothers tended to have better health and hygiene habits than other children. However, urban parents were more likely to report that their children had health problems than those living in the rural areas. It is not clear whether urban children suffer poorer health or whether urban parents are more aware of children health issues and are more likely to report health concerns.

CHAPTER 8 TIMOR-LESTE



Figure 8.1

Map of Timor-Leste

Source: Central Intelligence Agency. (2014). The World Fact Book.

<https://www.cia.gov/library/publications/the-world-factbook/geos/tt.html>

GENERAL INFORMATION

Timor-Leste is located in Southeast Asia and borders Indonesia. It includes the eastern half of the island Timor, the Oecussi (Ambeno) region and the islands of Pulau Atauro and Pulau Jaco. The 1.2 million population consists primarily of 3 ethnic groups Austronesian (Malayo-Polynesian), Papuan and a small Chinese minority (Central Intelligence Agency, 2013). Almost half of the population (46%) is under the age of 14 and about 17% of the population are children below 5 years (UNESCO Institute of Statistics, 2012). Timor-Leste is one of the poorest countries in the world with nearly 50% of the Timorese living under the national poverty line which was estimated at US\$0.88 per capita per day (National Statistics Directorate, Ministry of Finance, and ICF Macro, 2010). Timor-Leste has a gross domestic product (GDP) per capita adjusted for purchasing power parity (PPP) of US\$1660 (UNESCO Institute of Statistics, 2012). Poverty has led to poor health conditions for children in Timor-Leste resulting in an infant mortality rate of 56 and an under-5 mortality rate of 76. Further, 58% of children under 5 suffer from moderate or severe stunting (UNESCO, 2014)

Preschool education is not common in Timor-Leste. In the school year 2010/2011, there were 180 preschools (141 standalone preschools, with the remaining incorporated into basic schools) attended by 10,159 children and staffed by 238 teachers (Timor-Leste Government, 2011). Only 10.2% of Timorese children between the ages of three and six currently attend preschool (UNICEF, 2008). There is also a disparity between rural and urban populations in enrolment in early childhood education services. Enrolment rates are much higher in urban areas than in rural regions (Timor-Leste Government, 2011). Standard basic curriculum and variable teaching standards are yet to be developed.

In 2011 the government of Timor-Leste introduced the 'Strategic Development plan 2011-2030'. Preschool education was expanded especially for the most vulnerable and disadvantaged children and it was estimated that by 2015 at least 253 new preschools with 758 classrooms will be built and at least one half of all Timorese children between three and five years will be enrolled in and receiving quality preschool education (Timor-Leste Government, 2011). A new national pre-primary school curriculum will be implemented and local languages will be employed as languages of teaching and learning in the first years of basic education (Timor-Leste Government, 2011).

EAP-ECDS FINDINGS

SAMPLE

The total sample size was 1188 children recruited from 9 provinces. The sample included urban and rural areas. The sampling strategy was determined in conjunction with the Statistical Department and the sample was stratified by region, urbanicity, child's age and gender. In addition to the child assessment, one parent or caregiver of the child was interviewed

in an individual session. Respondents were mothers (75.3%), fathers (20.8%) and other family members (3.9%). A detailed sample distribution can be found in Table 8.1.

Table 8.1
Sample distribution in terms of Age, Gender, and Urbanicity in Timor-Leste

Age	Rural			Urban			Urbanicity Missing			Total
	Girls	Boys	Gender Missing	Girls	Boys	Gender Missing	Girls	Boys	Gender Missing	
3Y	96	97	0	98	108	0	0	0	0	399
4Y	100	100	0	101	94	0	0	0	0	395
5Y	101	96	0	99	98	0	0	0	0	394
NA	0	0	0	0	0	0	0	0	0	0
Total	297	293	0	298	300	0	0	0	0	1188

RELIABILITY AND VALIDITY

Our results indicated that items within the same domain have satisfactory reliability with alpha ranging from 0.72 to 0.89. Among the seven domains, Motor Development, and Health, Hygiene and Safety, as well as Approaches to Learning appeared to be relatively slightly weaker in overall internal consistency. Table 8.2 shows the average Cronbach's alpha for each domain.

Table 8.2
Internal consistency for each domain (Timor-Leste Scale)

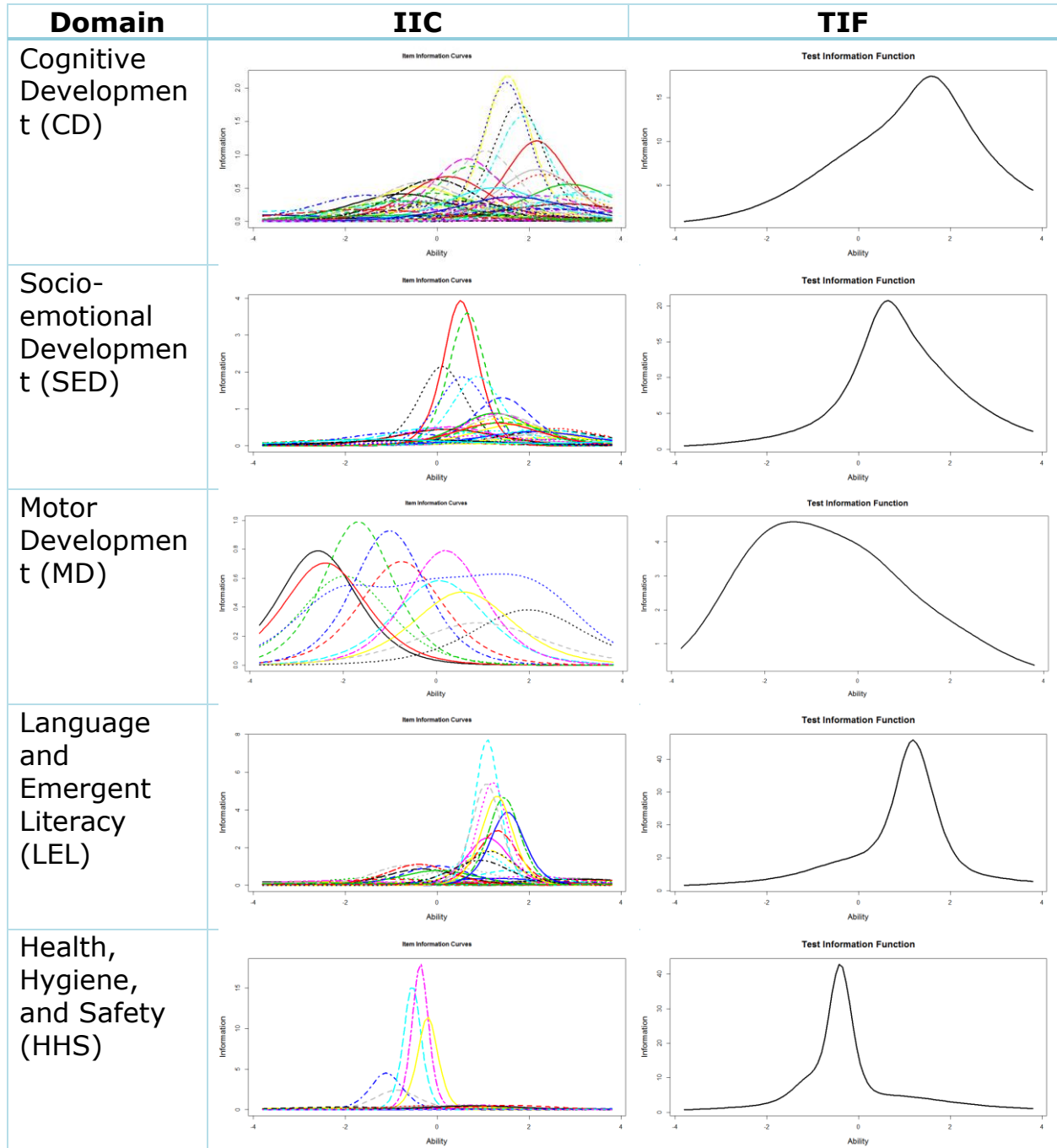
Domain	Cronbach's alpha (all items)
Cognitive development	0.88
Socio-emotional Development	0.89
Motor Development	0.72
Language and Emergent Literacy	0.89
Health, Hygiene, and Safety	0.87
Cultural Knowledge and Participation	0.89
Approaches to Learning	0.87

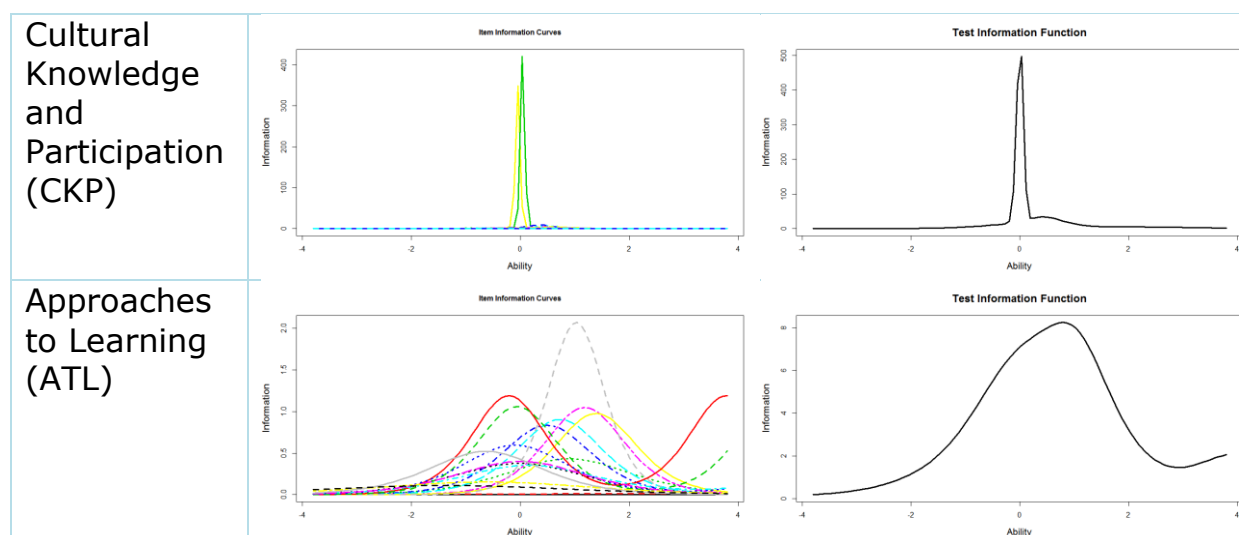
ITEM ANALYSIS

Figure 8.2 shows the item information curves (IIC) and test information function (TIF) for each domain. These graphs indicates the latent ability level at which the assessment offers the most information. It is worthy to note that information tended to concentrate on mid-high level of ability for Cognitive Development, Socio-emotional Development, Language and Emergent Literacy, and Cultural Knowledge and

Participation. As for Motor Development, most information was represented at the lower ability level.

Figure 8.2
Item information curves (IIC) and test information function (TIF) for each domain (Timor-Leste Scale)





EASIEST AND MOST DIFFICULT ITEMS IN EACH DOMAIN

We determined the three easiest and three most difficult items in each domain to enable us to easily compare item difficulty in different countries. In the Cognitive Development domain, the item that asked children to bring the block/toy to the assessor (item 9.1) appeared to be too easy for children. On the other hand, the item that asked children to name 7 to 8 shapes (item 21.3) was the most difficult. Few children, even those with relatively high overall ability, were able to provide the correct response. As for the Socio-emotional Development domain, the easiest item was to provide the mothers' given and family names (item 23.1). The most difficult item was to provide a second answer on how to make the girl (shown in a picture) stop crying (item 28.3). With respect to Motor Development the easiest item was to pour water to a designated line in a cup (item 37.1). The most difficult item was to follow more than three instructions to fold a piece of paper (item 42.2). As for Language and Emergent Literacy, the easiest item was to orally identify the action of hair being combed (item 44.1). The most difficult item was to provide a second logical reason for what happened in the story presented to them (item 50.2). With regard to Health, Hygiene and Safety, the easiest item was identifying the eye (item 66.1). The most difficult item was to describe the function of an elbow (item 66.6). For Cultural Knowledge and Participation, the easiest item was to identify their national flag (item 77) and the most difficult item was naming one more festival (item 73.2). With respect to Approaches to Learning, the easiest item was to show the ability to delay gratification (item 81) and the most difficult one was to state a second skill he/she could do well (item 70.2).

Table 8.3
Easiest and most difficult Items in Each Domain (Timor-Leste Scale)

Item No.	Item Description	Passing Rate (%)
Cognitive Development		
<i>3 easiest items</i>		
9.1	Brought the block/toy to assessor	91.8
9.2	Sat on the chair	89.6
2.1	Compare quantities: 3 vs. 9	81.6
<i>3 most difficult Items</i>		
21.3	Named at least 7 to 8 simple geometric shapes	1.3
21.2	Named at least 4-6 simple geometric shapes	2.8
6.2	Addition: 3 plus 4 =7	5.8
Socio-emotional Development		
<i>3 easiest items</i>		
23.1	Gave mother's given and family names	76.9
23.2	Gave father's given and family names	76.6
24.1	Gave 1-2 names of children that child played with	67.9
<i>3 most difficult Items</i>		
28.3	Gave 1 more answer on how to make the girl stop crying	5.7
28.2	Gave 1 answer on how to make the girl stop crying	6.7
33.2	Gave 1 more answer for action she is sorry or needs to make amends	7.8
Motor Development		
<i>3 easiest items</i>		
37.1	Poured water to designated line in cup	96.1
43.1	Strung large beads	94.3
38	Filled cup to the line from a pitcher without spilling	90.5
<i>3 most difficult Items</i>		
40	Hit the target on three out of three attempts	8.8
42.2	Following instructions to fold a piece of paper (steps 4-7)	12.5
42.1	Following instructions to fold a piece of paper (steps 1-3)	30.6
Language and Emergent Literacy		
<i>3 easiest items</i>		
44.1	Identified action of combing hair	92.8
46.4	Identified action of kicking a ball	89.6

44.6	Identified picture of brushing teeth	85.7
<i>3 most difficult Items</i>		
50.2	Provided another 1 or more realistic, logical and reasonable answer(s) to what happens in story after rain	3.5
51	Used at least two 5-word sentences with correct grammar	3.6
49.3	Mentioned another 1 or more events in sequence or in depth	4.0
Health, Hygiene, and Safety		
<i>3 easiest items</i>		
66.1	Identified eyes	87.8
66.3	Identified teeth	85.5
62.1	Put the vest on independently	82.7
<i>3 most difficult Items</i>		
66.6	Described the function of an elbow	7.6
67.6	Provided action to be done to vegetables	7.8
66.5	Identified the elbow	14.4
Cultural Knowledge and Participation		
<i>3 easiest items</i>		
77	Identified national flag of their own country	77.8
70.1	Named 1 item used at night for sleeping	62.4
70.5	Named 1 item for cleaning the house	58.2
<i>3 most difficult Items</i>		
73.2	Named one more festival	2.9
74.3	Provided another relevant detail of the celebration	4.2
74.2	Provided one more relevant detail of the celebration	4.5
Approaches to Learning		
<i>3 easiest items</i>		
81	Showed ability to delay gratification	59.4
85	Worked independently	1.0
83.4	Showed spontaneous positive interaction with assessor	0.2
<i>3 most difficult Items</i>		
79.2	Stated a second skill he/she could do well	18.5
80.5	Followed instructions about tapping a pencil (assessor taps once, child should tap twice)	18.9
80.4	Assessor tapped once, child tapped twice	24.1

COMPARISONS ACROSS DIFFERENT DOMAINS AND GROUPS

A 3 (Age) × 2 (Gender) × 2 (Urbanicity) MANOVA was performed with children's scores in each domain as dependent variables. The omnibus analysis yielded significant effects of Age, $F(14, 2340) = 43.97$, $p < .001$, $\eta_p^2 = .21$, and Urbanicity, $F(7, 1170) = 14.35$, $p < .001$, η_p^2

= .08. Follow-up univariate tests were further conducted and results are presented in Table 8.4 by domain. Post-hoc comparisons were performed using the Tukey's HSD test with p set at .05 for examinations of interaction effects. No multiple effects were detected.

Table 8.4
Age, Gender and Urbanicity differences in domain scores (Timor-Leste)

Domain	Age		Gender		Urbanicity		Age × Gender		Age × Urbanicity		Gender × Urbanicity	
	$F(2, 1176)$	η_p^2	$F(1, 1176)$	η_p^2	$F(1, 1176)$	η_p^2	$F(2, 1176)$	η_p^2	$F(2, 1176)$	η_p^2	$F(1, 1176)$	η_p^2
CD	224.25***	.28	0.00	.00	12.15**	.01	2.31	.00	0.29	.00	0.03	.00
SED	93.13***	.14	0.25	.00	0.05	.00	2.77	.01	0.08	.00	0.08	.00
MD	194.69***	.25	1.16	.00	10.38**	.01	0.89	.00	2.02	.00	0.03	.00
LEL	156.96***	.21	0.35	.00	22.77***	.02	1.00	.00	0.45	.00	0.44	.00
HHS	193.57***	.25	1.70	.00	2.64	.00	3.23*	.01	0.20	.00	1.17	.00
CKP	109.00***	.16	0.01	.00	11.26**	.01	0.65	.00	0.59	.00	0.96	.00
ATL	57.31***	.09	0.01	.00	5.02*	.00	0.22	.00	0.27	.00	0.12	.00

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

DOMAIN 1: COGNITIVE DEVELOPMENT

As shown in Table 8.4, there were significant effects of Age and Urbanicity. Five-year-olds ($M_{adjusted} = 41.17$, $SD = 13.36$, $SE = 0.64$) did significantly better than 4-year-olds ($M_{adjusted} = 31.21$, $SD = 12.91$, $SE = 0.64$), and the 4-year-olds did significantly better than the 3-year-olds ($M_{adjusted} = 22.19$, $SD = 11.66$, $SE = 0.63$). Urban children ($M_{adjusted} = 32.80$, $SD = 14.82$, $SE = 0.52$) did significantly better than rural children ($M_{adjusted} = 30.25$, $SD = 14.75$, $SE = 0.52$).

Figure 8.3
Age and Gender differences in Cognitive Development (Timor-Leste)

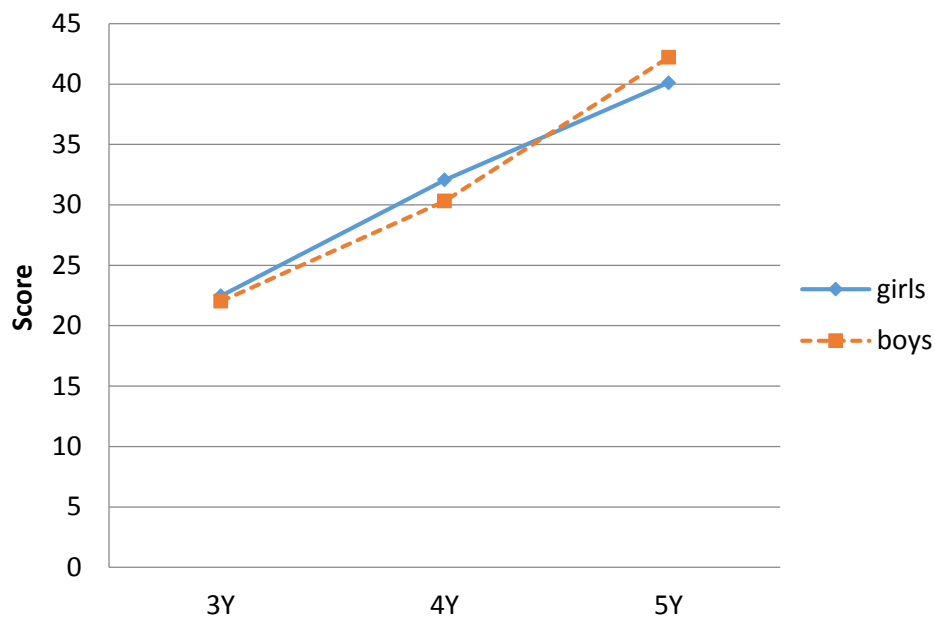


Figure 8.4
Age differences in Cognitive Development in children living in rural and urban areas (Timor-Leste)

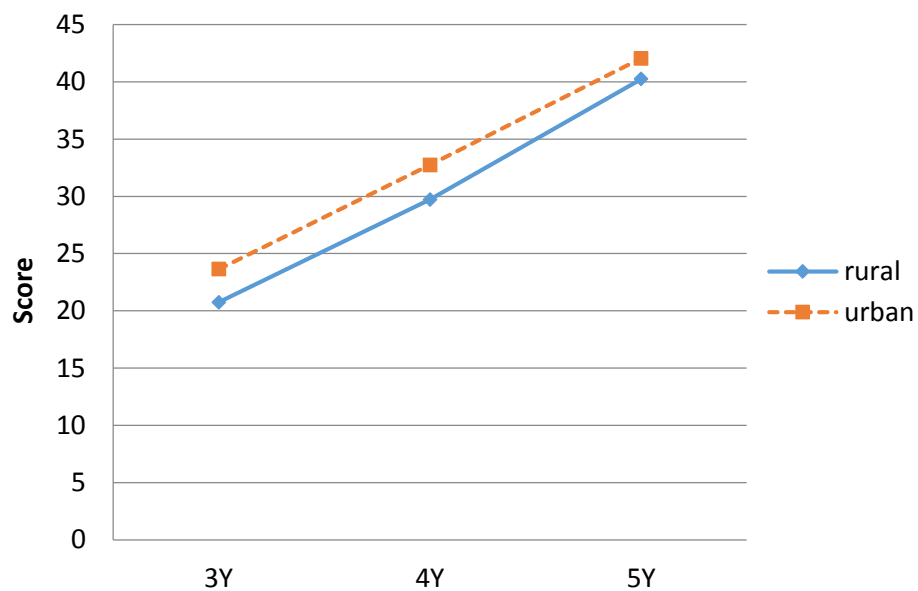
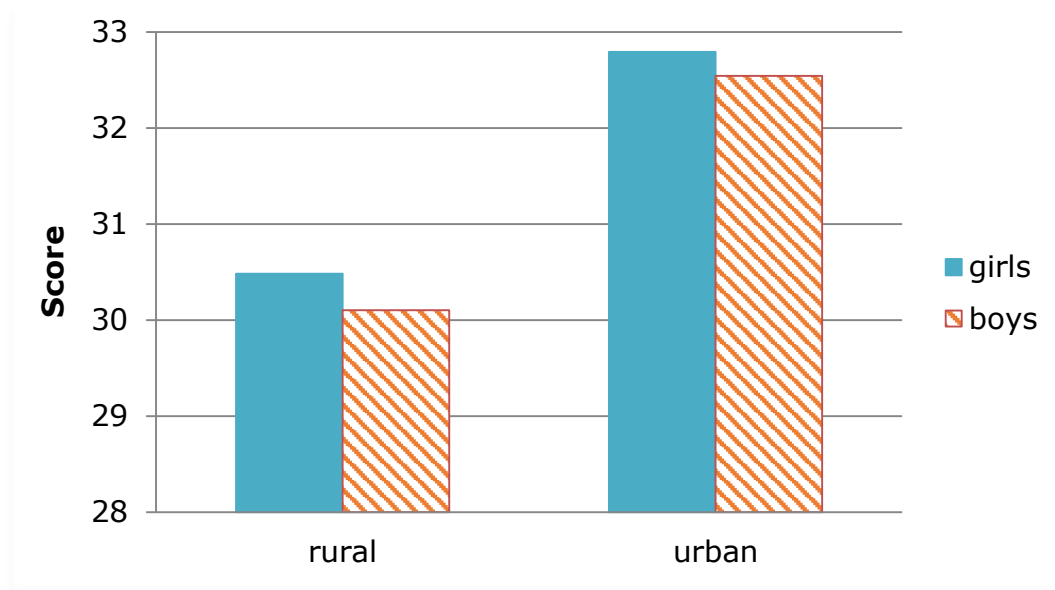


Figure 8.5
Gender differences in Cognitive Development in children living in rural and urban areas (Timor-Leste)



DOMAIN 2: SOCIO-EMOTIONAL DEVELOPMENT

There was a significant effect of age on children's performance in the domain of Socio-emotional Development (see Table 8.4). Five-year-olds ($M_{adjusted} = 36.68$, $SD = 17.96$, $SE = 0.84$) did significantly better than 4-year-olds ($M_{adjusted} = 29.39$, $SD = 16.97$, $SE = 0.84$), and 4-year-olds did significantly better than the 3-year-olds ($M_{adjusted} = 20.51$, $SD = 14.99$, $SE = 0.84$).

Figure 8.6
Age and Gender differences in Socio-emotional Development (Timor-Leste)

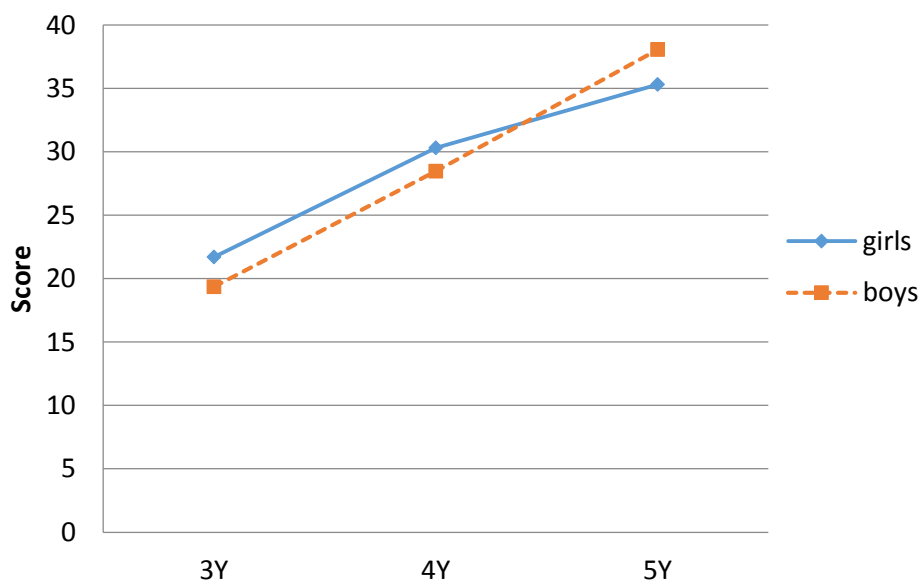




Figure 8.7

Age differences in Socio-emotional development in children living in rural and urban areas (Timor-Leste)

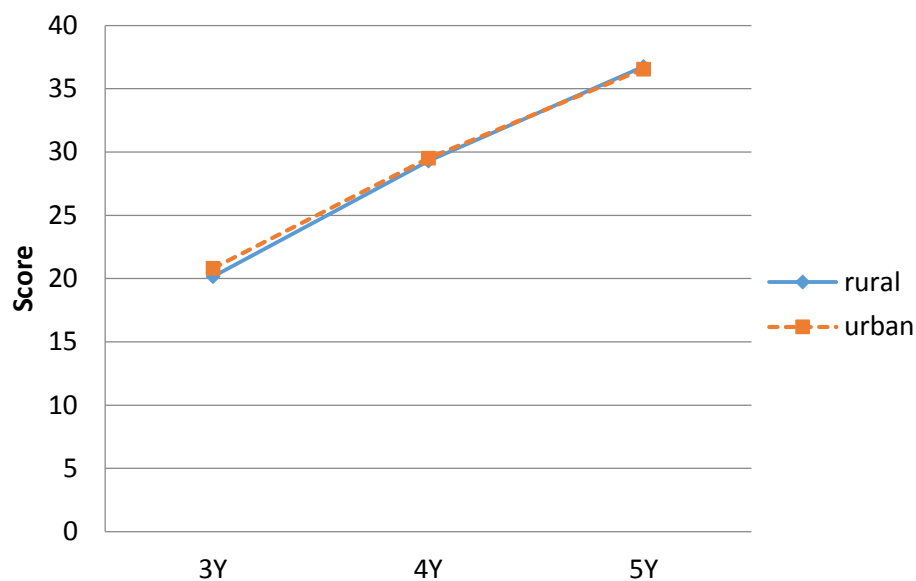
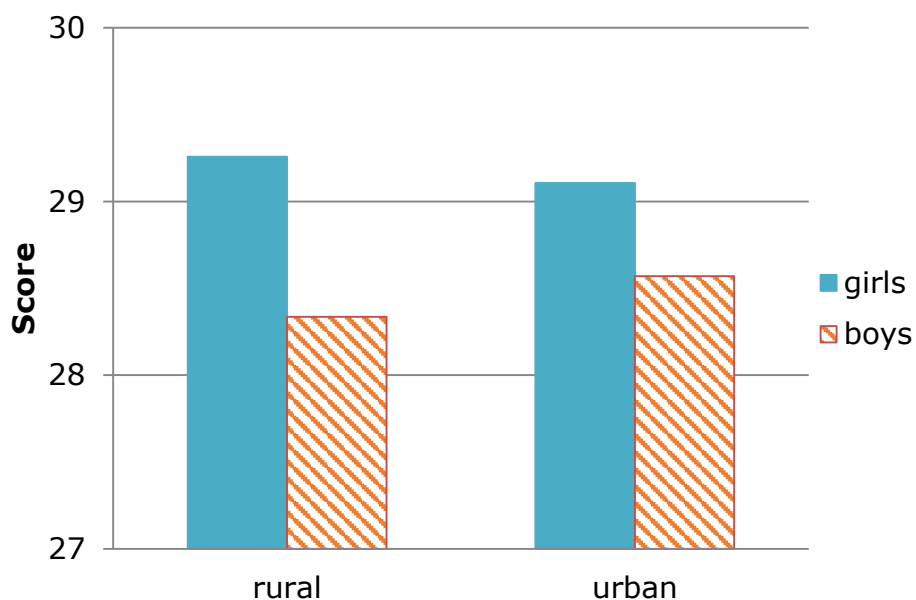


Figure 8.8

Gender differences in Socio-emotional development in children living in rural and urban areas (Timor-Leste)



DOMAIN 3: MOTOR DEVELOPMENT

There were significant effects of Age and Urbanicity in children's Motor Development (see Table 8.4). Five-year-olds ($M_{adjusted} = 67.98$, $SD = 16.83$, $SE = 0.86$) did significantly better than 4-year-olds ($M_{adjusted} = 59.85$, $SD = 17.33$, $SE = 0.86$), and 4-year-olds did significantly better than 3-year-olds ($M_{adjusted} = 44.42$, $SD = 17.25$, $SE = 0.86$). Children

from urban areas ($M_{adjusted} = 59.01, SD = 19.42, SE = 0.70$) showed significantly higher performance in Motor Development than those from rural areas ($M_{adjusted} = 55.82, SD = 19.93, SE = 0.70$).

Figure 8.9
Age and Gender differences in Motor Development (Timor-Leste)

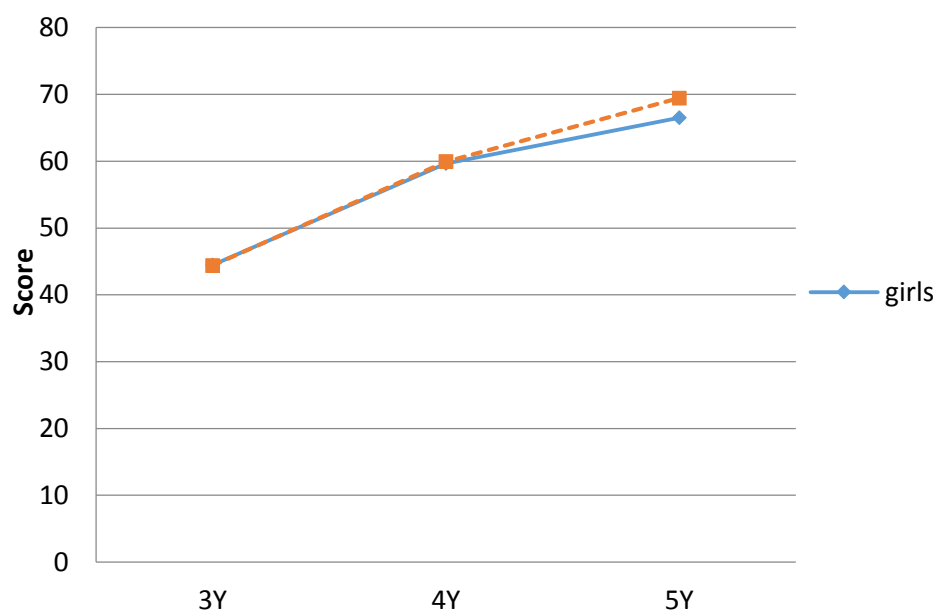


Figure 8.10
Age differences in Motor development in children living in rural and urban areas (Timor-Leste)

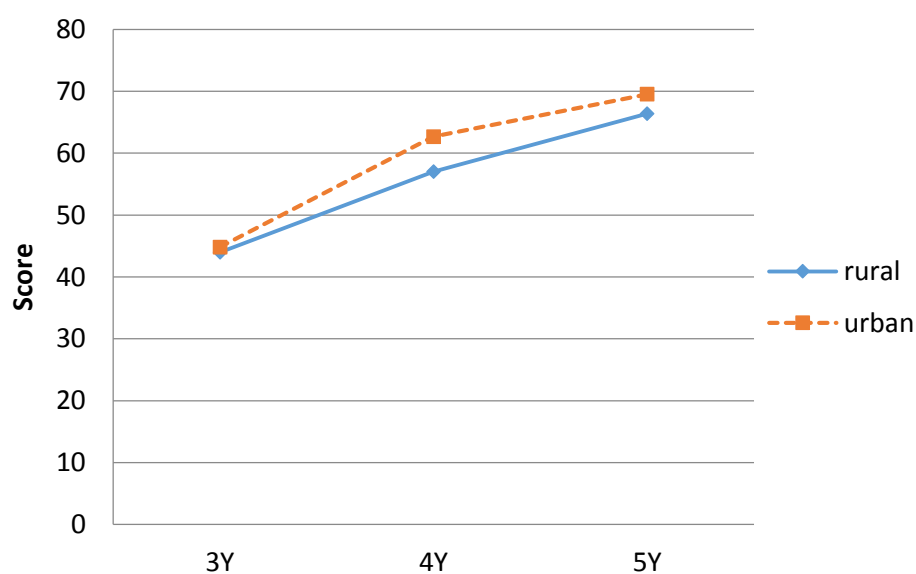
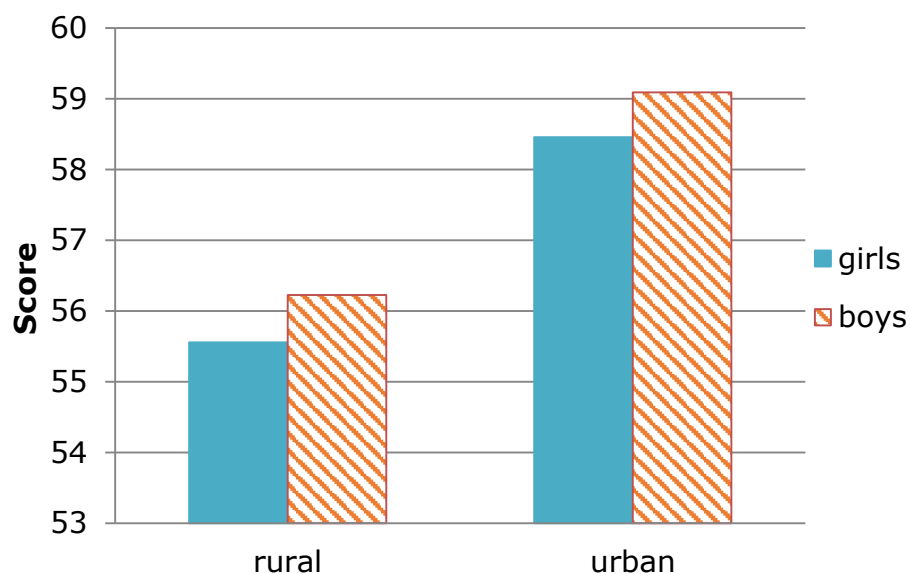


Figure 8.11
Gender differences in Motor development in children living in rural and urban areas (Timor-Leste)



DOMAIN 4: LANGUAGE AND EMERGENT LITERACY

Significant effects of Age and Urbanicity were detected in children's performance in Language and Emergent Literacy as shown in Table 8.4. Five-year-olds ($M_{adjusted} = 44.95$, $SD = 14.93$, $SE = 0.65$) showed significantly higher performance than 4-year-olds ($M_{adjusted} = 35.76$, $SD = 12.54$, $SE = 0.64$), and 4-year-olds did significantly better than 3-year-olds ($M_{adjusted} = 28.89$, $SD = 10.93$, $SE = 0.64$). Urban children ($M_{adjusted} = 38.31$, $SD = 14.61$, $SE = 0.52$) also showed significantly better Language and Emergent Literacy performance than rural children ($M_{adjusted} = 34.76$, $SD = 14.13$, $SE = 0.53$).

Figure 8.12
Age and Gender differences in Language and Emergent Literacy (Timor-Leste)

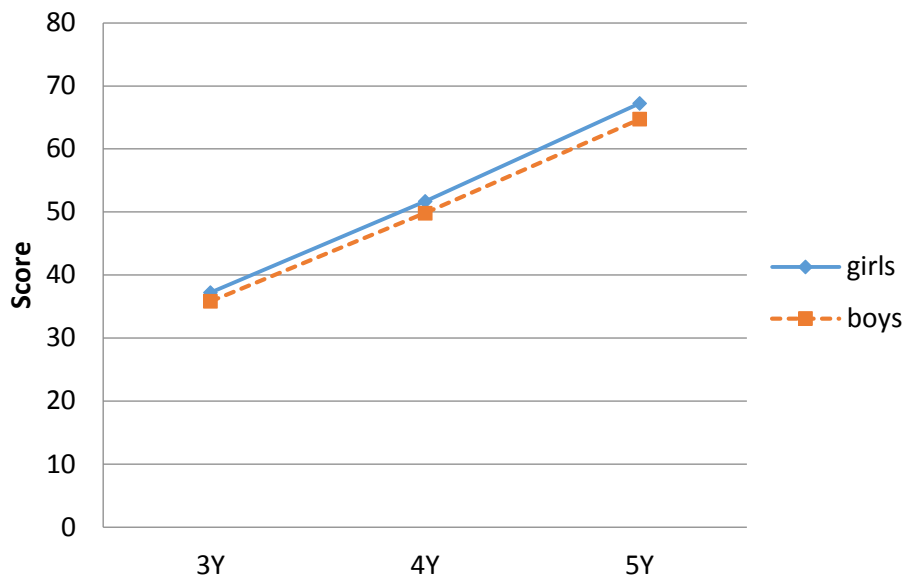


Figure 8.13
Age differences in Language and Emergent Literacy in children living in rural and urban areas (Timor-Leste)

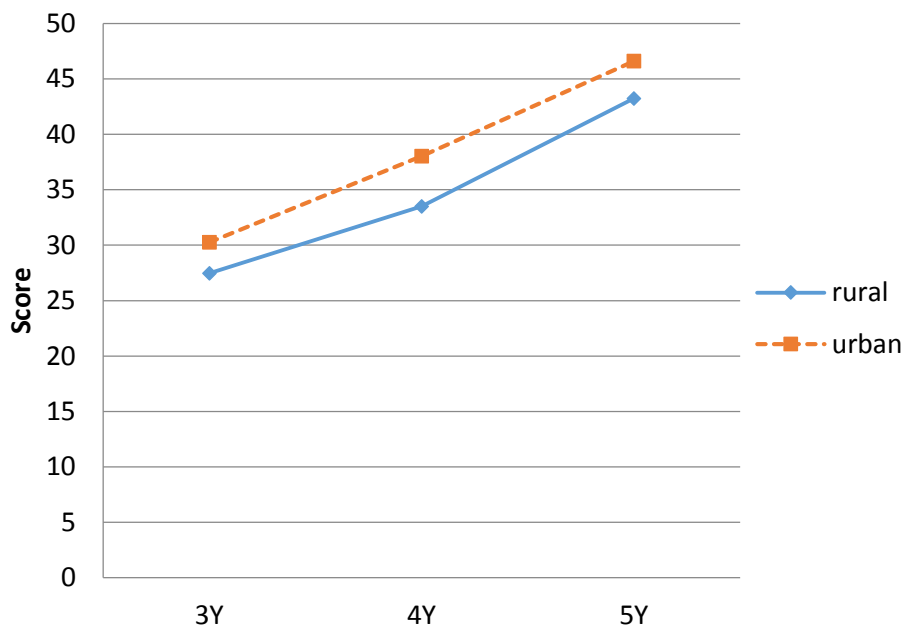
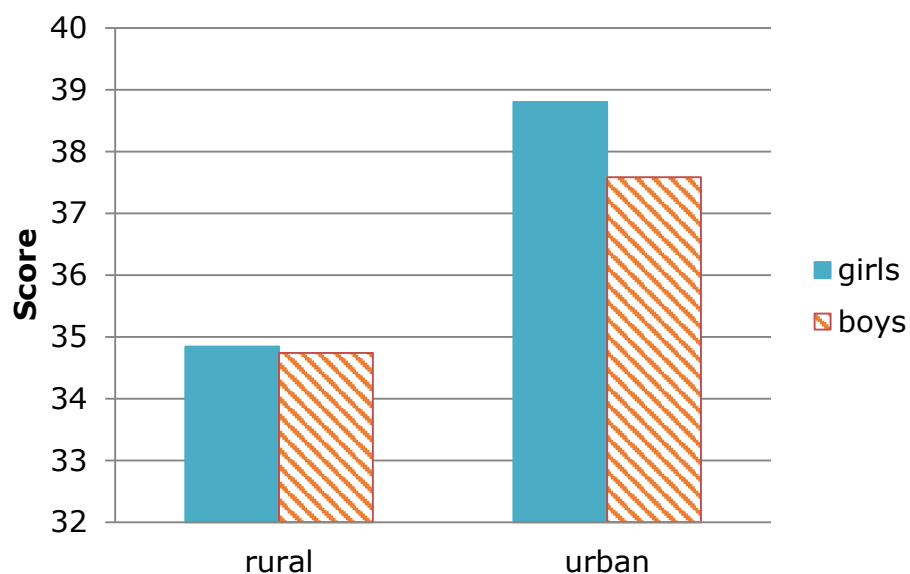


Figure 8.14
Gender differences in Language and Emergent Literacy in children living in rural and urban areas (Timor-Leste)



DOMAIN 5: HEALTH, HYGIENE, AND SAFETY

There were significant Age and Age \times Gender effects in Health Hygiene and Safety. The post-hoc analysis showed that the gender effect was not significant in any of the age groups, but girls were inclined to show better performance than boys among 3- and 4-year-olds the tendency was inverted among 5-year-olds (see Figure 8.15).

Figure 8.15
Age and Gender differences in Health, Hygiene and Safety (Timor-Leste)

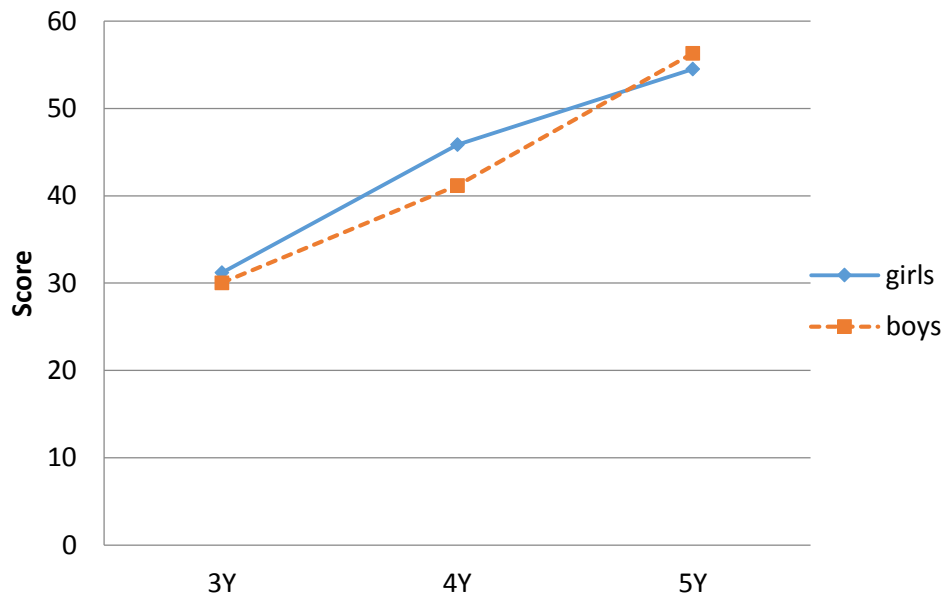


Figure 8.16
Age differences in Health, Hygiene and Safety in children living in rural and urban areas (Timor-Leste)

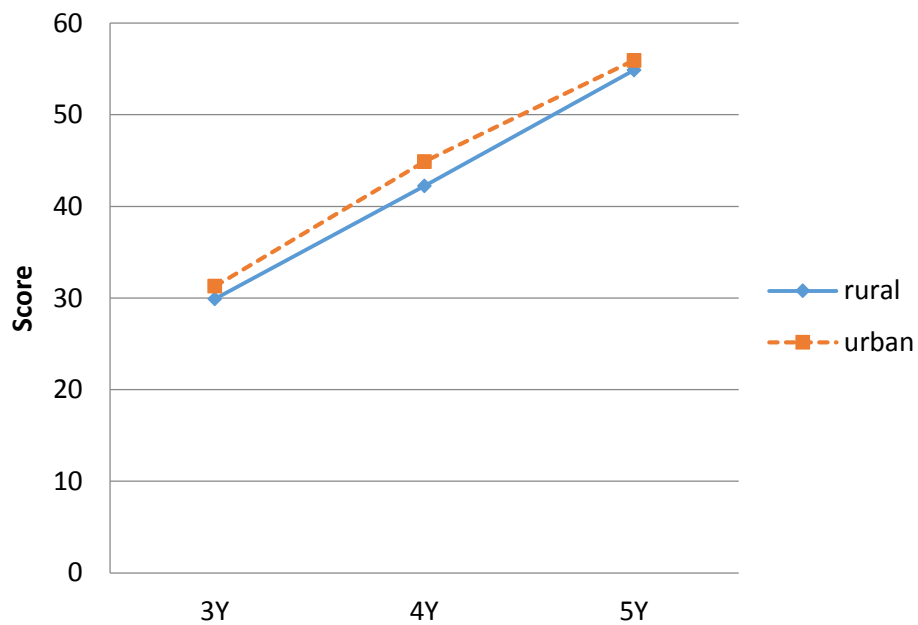
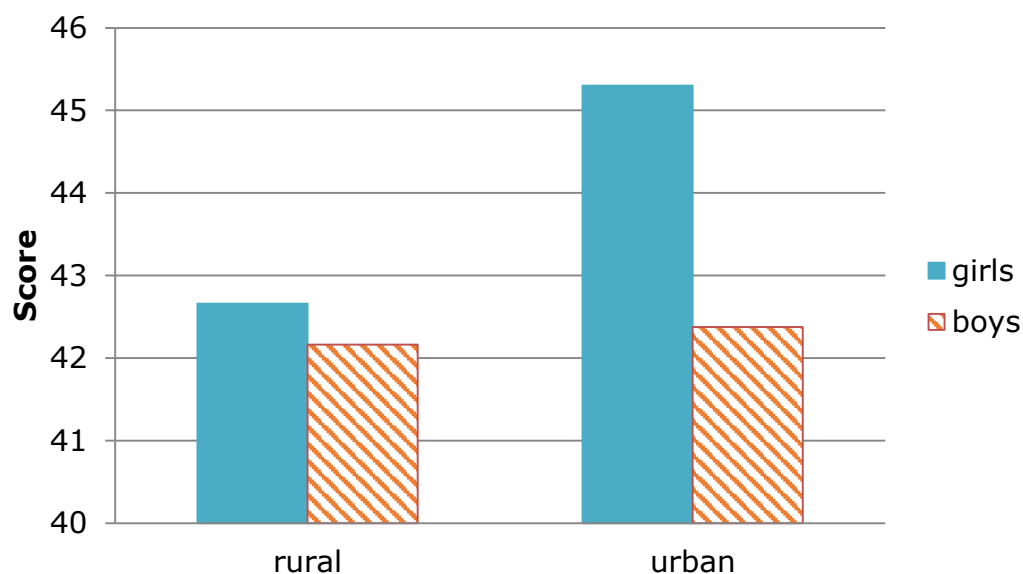


Figure 8.17
Gender differences in Health, Hygiene and Safety in children living in rural and urban areas (Timor-Leste)



DOMAIN 6: CULTURAL KNOWLEDGE AND PARTICIPATION

The effects of Age and Urbanicity were significant in Cultural Knowledge and Participation (see Table 8.4). Similarly, 5-year-olds ($M_{adjusted} = 34.58, SD = 20.07, SE = 0.89$) performed significantly better than the 4-year-olds ($M_{adjusted} = 25.42, SD = 17.20, SE = 0.89$), and 4-year-olds performed significantly better than the 3-year-olds ($M_{adjusted} = 16.04, SD = 15.61, SE = 0.89$). The performance of rural children ($M_{adjusted} = 27.07, SD = 19.90, SE = 0.73$) was significantly better than that of urban children ($M_{adjusted} = 23.62, SD = 18.45, SE = 0.73$).

Figure 8.18
Age and Gender differences in Cultural Knowledge and Participation
(Timor-Leste)

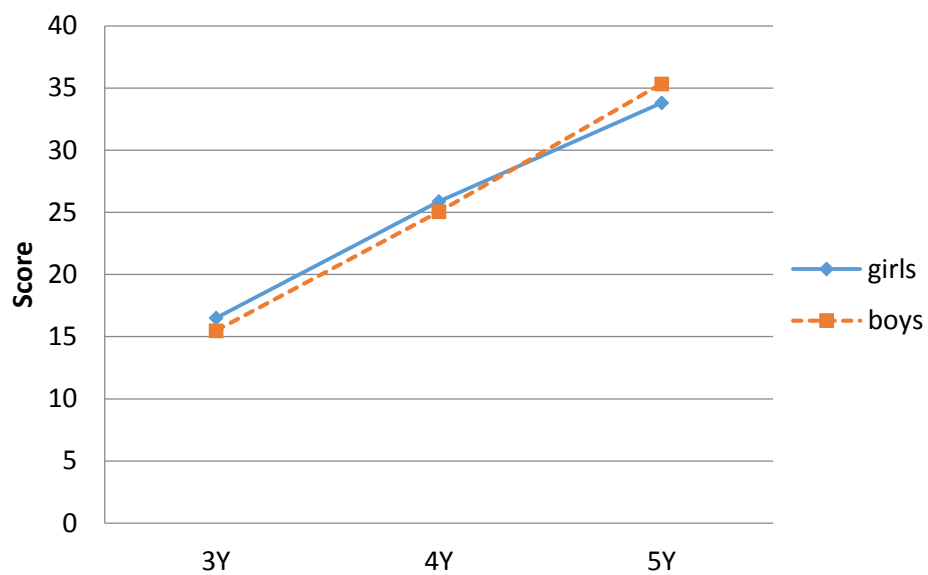


Figure 8.19
Age differences in Cultural Knowledge and Participation in children living
in rural and urban areas (Timor-Leste)

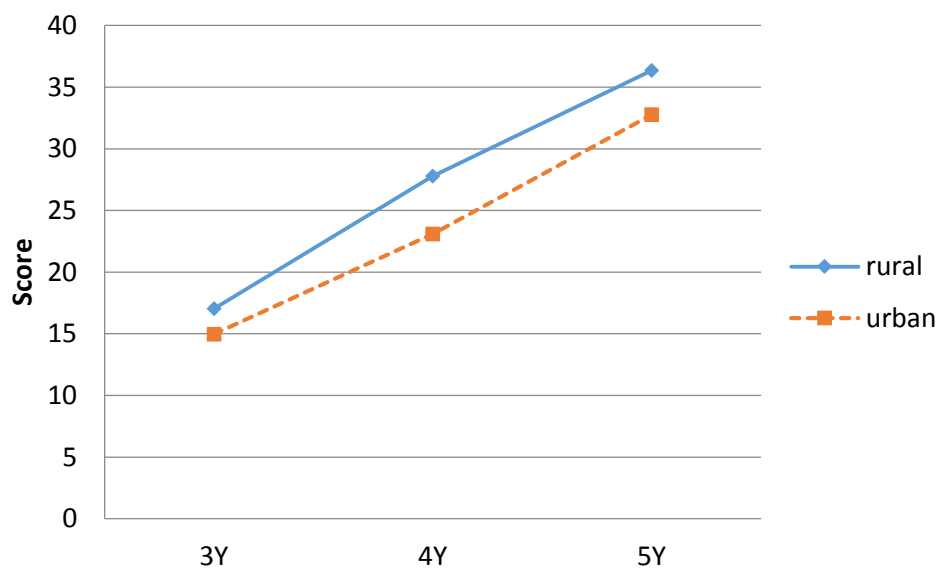
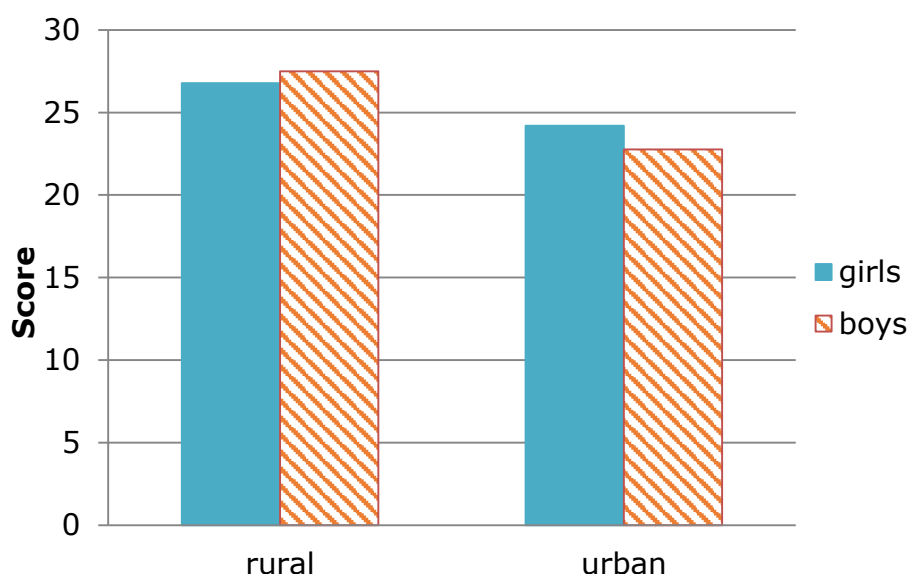


Figure 8.20
Gender differences in Cultural Knowledge and Participation in children living in rural and urban areas (Timor-Leste)



DOMAIN 7: APPROACHES TO LEARNING

There were significant main effects of Age and Urbanicity on children's performance in Approaches to Learning (see Table 8.4). Five-year-olds ($M_{adjusted} = 37.58$, $SD = 18.41$, $SE = 0.87$) performed significantly better than 4-year-olds ($M_{adjusted} = 30.22$, $SD = 17.25$, $SE = 0.87$), and 4-year-olds performed significantly better than 3-year-olds ($M_{adjusted} = 24.42$, $SD = 16.26$, $SE = 0.87$). Urban children ($M_{adjusted} = 31.87$, $SD = 17.89$, $SE = 0.71$) performed significantly better than rural children ($M_{adjusted} = 29.61$, $SD = 18.31$, $SE = 0.71$).

Figure 8.21
Age and Gender differences in Approaches to Learning (Timor-Leste)

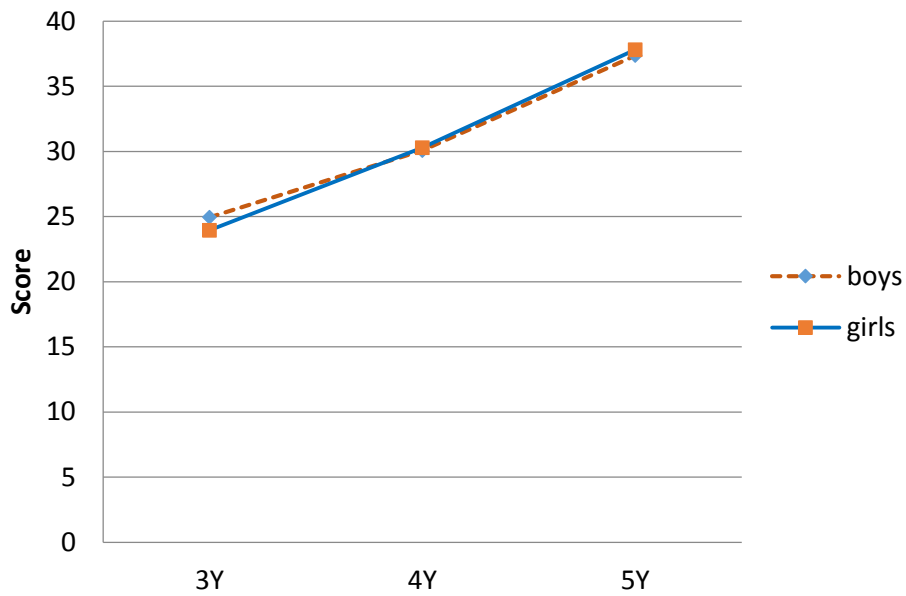


Figure 8.22
Age differences in Approaches to Learning in children living in rural and urban areas (Timor-Leste)

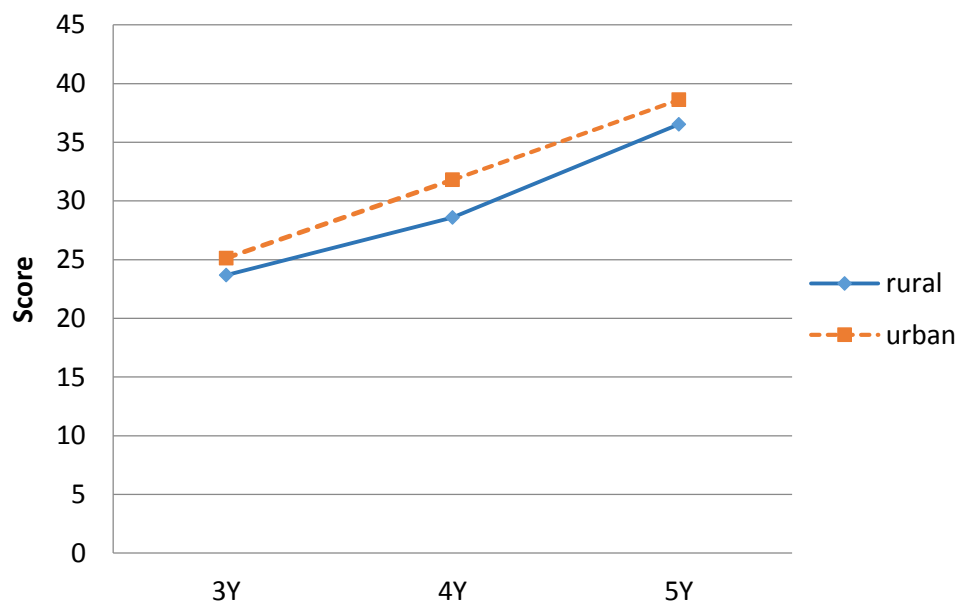
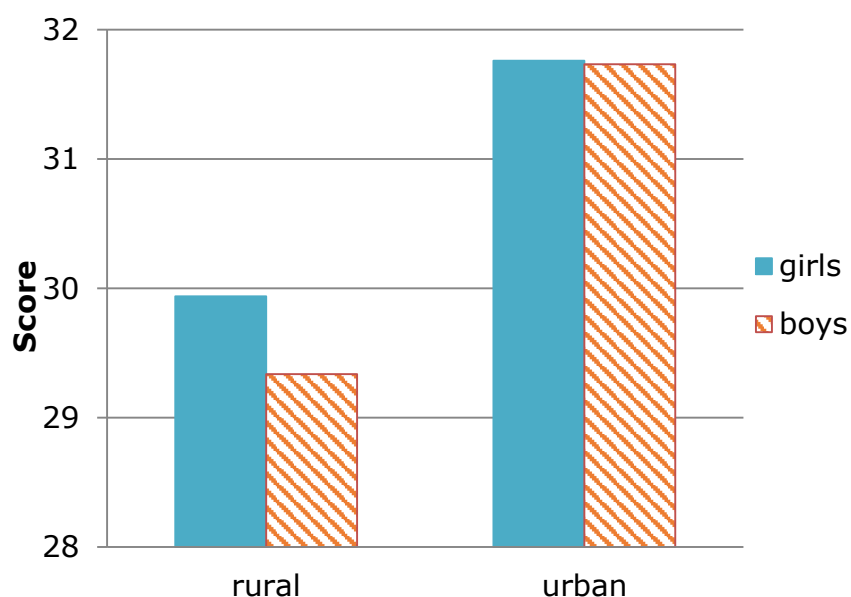


Figure 8.23
Gender differences in Approaches to Learning in children living in rural and urban areas (Timor-Leste)



EXAMINATION OF THE IMPACT OF PRE-SCHOOL ATTENDANCE ON CHILDREN DEVELOPMENT

There were a total of 73 children in preschool as shown in Table 8.5. The coefficients of the multi-level model are presented in Table 8.6. Mother's education, household assets, and children's age are significantly associated with children's performance. Preschool attendance, however, was not significant.

TABLE 8.5
ATTENDANCE IN AN EARLY LEARNING PROGRAMME BY AGE AND GENDER (TIMOR-LESTE)

PRESCHOOL ENROLMENT	AGE		
	3Y	4Y	5Y
No	379	358	347
YES	9	27	37
NA	11	10	10
TOTAL	399	395	394

TABLE 8.6
REGRESSION COEFFICIENTS FROM A MULTI-LEVEL MODEL (TIMOR-LESTE)

	COEFFICIENTS AND 95% CONFIDENCE INTERVALS	P-VALUES
INTERCEPT	-3.57 (-9.35, 2.22)	0.23
PRESCHOOL ATTENDANCE	2.53 ^A (-0.82, 5.82)	0.122
HOUSEHOLD ASSET	0.59 (0.04, 1.14)	0.037
MOTHER'S EDUCATION	0.46 (0.055, 0.86)	0.026
SEX (GIRL AS REFERENCE)	-0.05 (-1.24, 1.15)	0.938
AGE	9.28 (8.54, 10.02)	<0.001

NOTE. ^AALL COEFFICIENTS FOR PRESCHOOL ATTENDANCE ARE FROM THE MULTILEVEL MODEL WHICH INCLUDED ALL SIX COUNTRIES.

CONSISTENCY BETWEEN CHILDREN'S PERFORMANCE AND PARENTS' RATING

WE CONDUCTED A CORRELATIONAL ANALYSIS TO ASSESS THE CONSISTENCY BETWEEN CHILDREN'S PERFORMANCE AND PARENTS' RATING OF CHILDREN'S DEVELOPMENT. AS SHOWN IN TABLE 8.7 PARENTS' RATING OF CHILDREN'S ABILITIES (Q48-52, Q54-56, AND Q67-70 IN THE PARENT QUESTIONNAIRE) WAS POSITIVELY CORRELATED TO THE TOTAL SCORE AS WELL AS THE DOMAIN SCORES.

TABLE 8.7

CORRELATIONS BETWEEN CHILDREN'S PERFORMANCE ON THE EAP-ECDS AND PARENTS' RATING (TIMOR-LESTE)

	PARENTS' RATING	EAP-ECDS TOTAL	CD	SED	MD	LEL	HHS	CKP	ATL
PARENTS' RATING	1	.43***	.37** *	.29** *	.34** *	.39** *	.32** *	.32** *	.37** *
EAP-ECDS TOTAL		1	.73** *	.81** *	.72** *	.78** *	.85** *	.82** *	.62** *
CD			1	.64** *	.47** *	.59** *	.58** *	.53** *	.22** *
SED				1	.46** *	.56** *	.62** *	.68** *	.39** *
MD					1	.47** *	.58** *	.46** *	.28** *
LEL						1	.65** *	.53** *	.46** *
HHS							1	.67** *	.42** *
CKP								1	.45** *
ATL									1

NOTE. * $P < .05$. ** $P < .01$. *** $P < .001$.

INFORMATION ABOUT THE FAMILY

The mean age of mothers was 31.49 and the mean age of fathers was 37.23. Figure 8.24 shows the distribution of parents' highest education attained: 21.2% of the mothers participating in the study had completed primary education, 29.5% obtained upper secondary education and more than one fifth (23.9%) had no formal education. Similarly, 23.3% of the fathers had primary education, 15.1% obtained lower secondary education, 31% had upper secondary education and about one fifth (20.2%) had no formal education. The majority of the mothers (54.1%) worked as service and shop sales workers. About 35.1% worked in skilled agriculture and fishing. Most of the fathers worked in skilled agriculture and fishing. 22.9 of them worked as service and shop sales workers. Most of the parents (92% of mothers and 95.4 % of fathers) participating in the survey had a job. Details about parents' occupation can be found in Figure 8.25.

Figure 8.24
Highest level of education attained by parents (Timor-Leste)

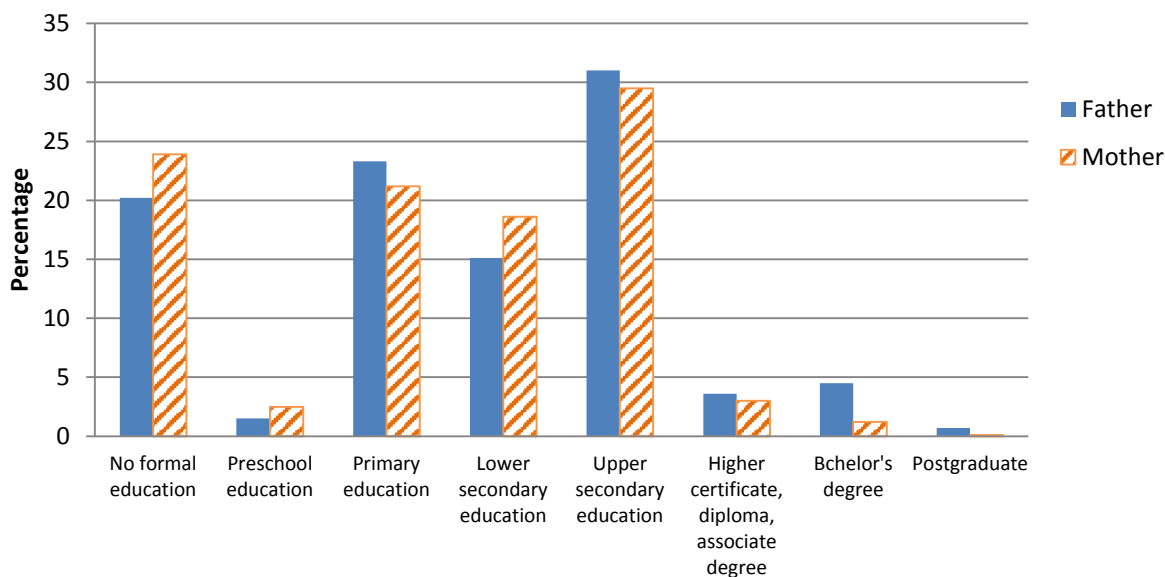
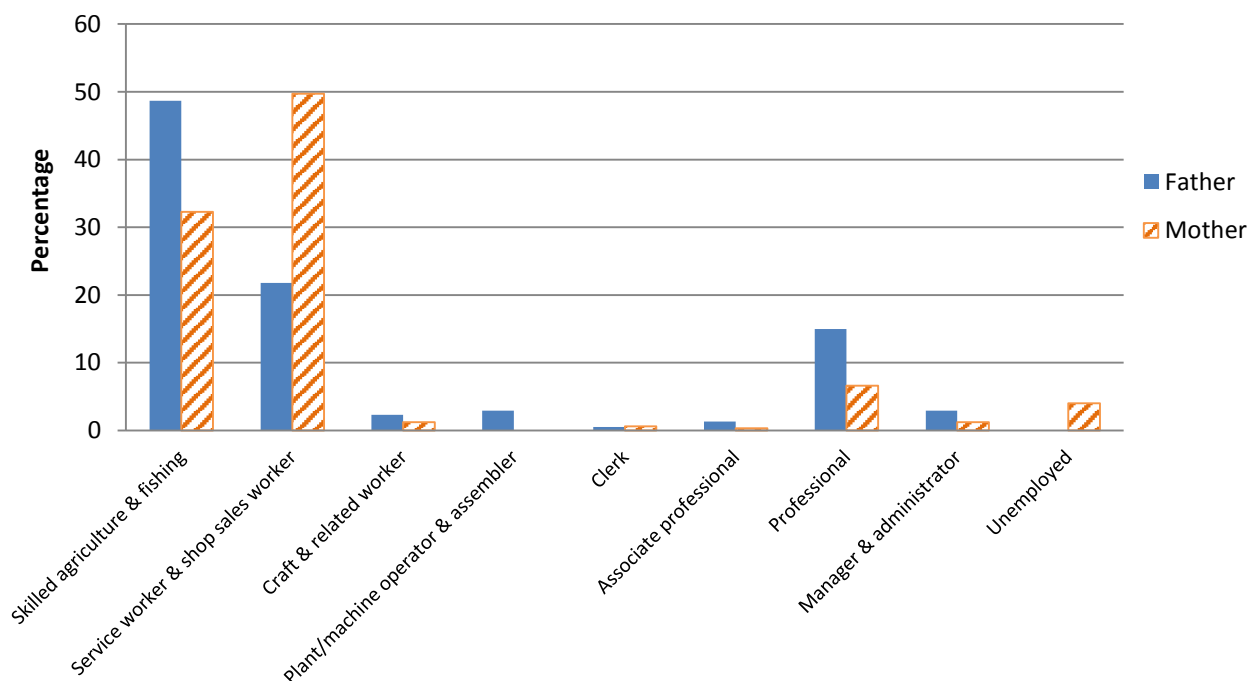


Figure 8.25
Parents' occupations (Timor-Leste)



Among the working mothers, only 7.2% were granted paid maternity leave before the target child was born. The mean length of the maternity leave was 6.35 weeks with a wide range from one to 33 weeks. Only 5.3% of the mothers attended parenting class. No information about the time period for the participation in relevant parenting class was available.

More than half of the families in the survey had electricity (59.5%). Most families reported that one or more family members possessed a mobile phone (65.2%). Less than half of the families had television (43.7%) and radio (32%). Around one third of the families reported that one or more family members had a watch (34%). Only 27.6% of them possessed a motorcycle or scooter and 15.9% had a bicycle. It was uncommon for the families to have fixed line telephones (17.5%) and refrigerators (14.8%). It was uncommon for the family members to have an animal-drawn cart (0.7%), a car or truck (3.6%) and a boat with motor (0.2%).

More than half of the families (62.6%) participating in this study owned land that can be used for agriculture and the mean area of the land was 1.61 hectares, with a range from 0.5 to 12 hectares. The majority of the families (87.5%) owned livestock, herds, other farm animals, or poultry. Only 28% of the families in this survey had a bank account.

EARLY LEARNING AND DEVELOPMENT

Only 6.3% of the children attended some type of organized learning or early childhood education programme. The logistic multiple regression indicated that older children and those living in urban areas were more likely to be enrolled in an early learning programme (see Table 8.8). The mean length of staying in an early learning programme was 11.29 months (range from one to 36 months) for those children who had attended any early childhood education programme.

Table 8.8

Predictors of the probability of enrollment in an early learning programme (Timor-Leste)

Predictor	β	$SE \beta$	Wald's x^2	p	e^{β}
Child's age	0.62	0.17	13.19	<.001	1.85
Child's gender	0.13	0.27	0.24	.624	1.14
Urban or Rural	0.71	0.29	6.02	0.014	2.03
Mother's age	0.01	0.03	0.11	.743	1.01
Mother's education	0.05	0.10	0.21	.643	1.05
Father's age	0.01	0.02	0.08	.780	1.01
Father's education	0.09	0.09	0.92	.338	1.09
Constant	-7.07	1.16	37.05	<.001	0.00

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Among the 73 children who had participated in an organized early learning programme, 82.2% attended such a programme within the seven days prior to the survey. About 44.7% of them participated in a kindergarten and 55.3% of attended community or drop-in centres. Many

of the programmes were open five days a week (48.5%) and most were free of charge (73.8%).

More than half of the children attended such programmes for 10 to 20 hours a week (66.7%). Figures 8.26 and 8.27 show the duration children had stayed in the current early learning programme and the hours they spent per week in that programme, respectively. Most parents reported that their children always (73.8%) wanted to attend the programme.

Figure 8.26
Duration of attendance in an early learning programme (Timor-Leste)

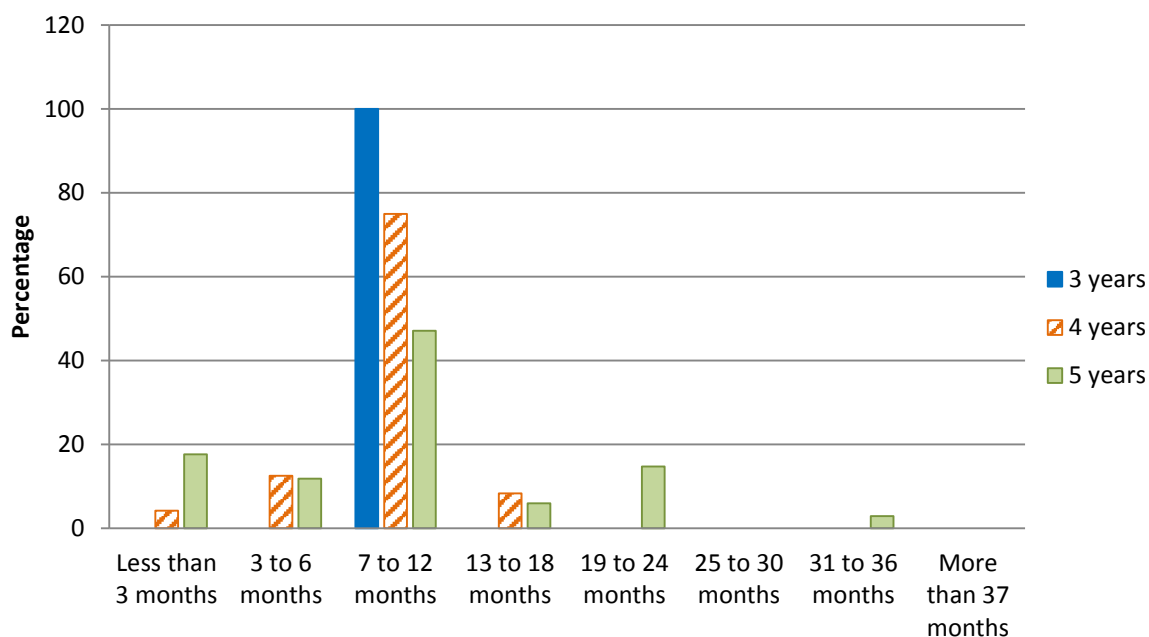
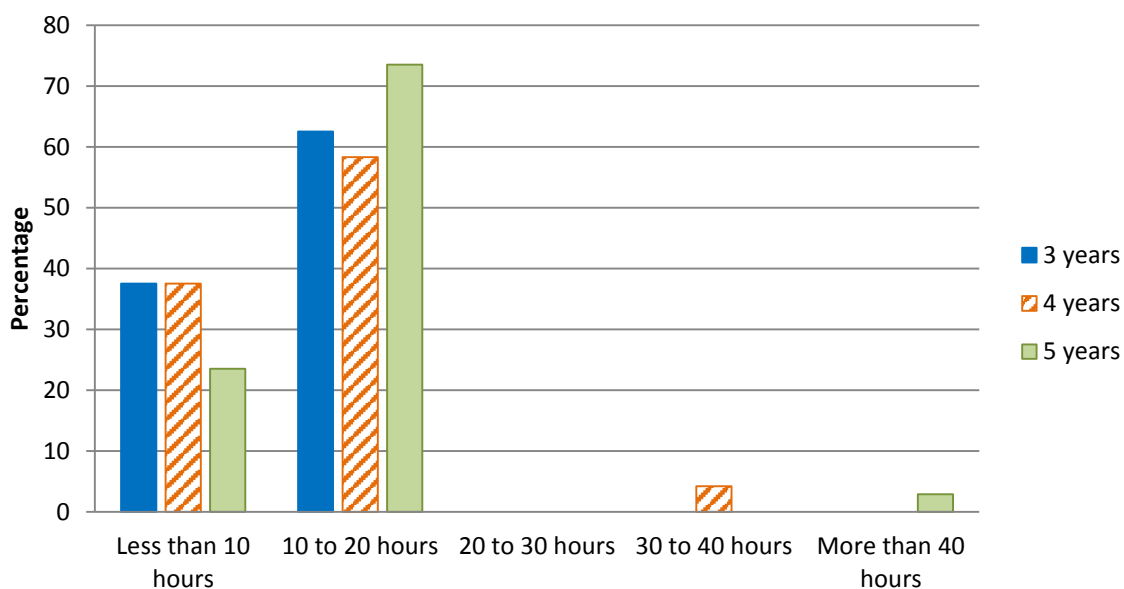


Figure 8.27
Number of hours of programme attendance per week (Timor-Leste)



Parents were further asked to rate their children's abilities in terms of cognitive, language, motor, and social skills as well as society knowledge. Most parents rated their child as "about average" compared to other children of a similar age in domains such as ability to concentrate on learning new tasks (36.9%), ability to learn new things and solve new

problems (37.6%), language skills (35.3%), ability to run and jump (23.8%) and ability to hold chopsticks/spoons/pencils/pens(28.2%). Most parents gave low evaluation in the following 3 aspects with many rating their child as “much below”: participation in important community events (including festivals),(37 %), practice healthy and hygienic habits (38.6%), follow safety rules (45.8%) and display social skills, such as show consideration to others and ability to manage emotions (29.7%).

Parents also evaluated their children’s more general social competencies. About 39.2% of the parents believed that their child was able to do the simple tasks assigned independently sometimes and 26.4% believed their child could always do so; 42.8% of the parents reported their child always got along well with other children of similar ages and 29.2% thought their child sometimes did so; 57.6% of the parents believed their child never kicked, bit, or hit other children or adults and 20.8% reported their child sometimes did; 56.3% of the parents said their child never got distracted easily and 17.9% said their child rarely got distracted easily.

Parents were then asked to report the level of early literacy of their child. They reported that a child can identify 5.11 graphemes on average (range from zero to 60). Only 9.2% of the parents believed that their child could read at least four simple and popular words but more than half of the parents (63.9%) reported that their child could identify all numbers from 1 to 10.

Finally, parents’ involvement in early learning-related activities at home was investigated. Parents were asked to report whether they or any other family members over 15 engaged in six different early learning-related activities with the child in the past three days. Table 8.9 presents the percentages of mothers’, fathers’, and other family members’ involvement in those six common early learning-related activities at home with the target children. Unlike other countries, other family members were engaged in quite a large number of activities at home with children and mothers did not engage more than other family members in such activities in Timor-Leste. Fathers seemed less engaged in such activities with their children at home.

Table 8.9

Adults' involvement in early learning-related activities at home (Timor-Leste)

Activities	Mothers (%)	Fathers (%)	Other Family Members (%)
Read books or looked at picture books with your child	25.8	5.3	37.4
Told stories to your child	31.8	10.4	35.0
Sang songs with your child	34.3	6.6	35.4
Took your child outside the home place	30.6	12.6	25.8
Played games with your child	22.3	7.7	45.0
Spent time with your child in naming things or counting things or drawing	28.6	6.0	25.3

We summed up the scores of mothers', fathers' and other family members' involvement in each type of activity. Although the combined scores cannot represent the frequencies of children's participation in such activities, they showed the opportunities that children had to engage in specific activities at home with adults. As shown in Table 8.10 there were significant correlations among children's participation in those activities, which indicated that those children who were likely to engage in one activity with adults were also likely to engage in other activities with adults at home.

Table 8.10

Correlations among involvement in different early learning-related activities at home (Timor-Leste)

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

	i	ii	iii	iv	v	vi
i. Read books or looked at picture books with your child	1	.56***	.43***	.18***	.36***	.47***
ii. Told stories to your child		1	.51***	.20***	.34***	.37***
iii. Sang songs with your child			1	.27***	.41***	.36***
iv. Took your child outside the home place				1	.37***	.23***
v. Played games with your child					1	.45***
vi. Spent time with your child in naming things or counting things or drawing						1

To better understand mothers', fathers', and other family members' involvement in early learning-related activities at home, we created separate variables to represent mothers', fathers', and other family members' involvement in these six types of activities by summing up the scores each of the parties get in the six items mentioned above. Paired t-test showed that other family members ($M = 2.04$, $SD = 1.87$) were involved the most in early learning-related activities at home compared with mothers ($M = 1.73$, $SD = 2.15$) ($t(1187) = -2.96$, $p < .01$), and fathers ($M = 0.49$, $SD = 1.03$) ($t(1187) = -23.11$, $p < .001$). Mothers had more such activities with children at home than fathers ($t(1187) = 17.36$, $p < .001$).

Separate multiple regression analyses were conducted on scores of mothers', fathers', and other family members' involvement in such activities at home predicted by child age, gender, urban/rural residence, mothers' age, and education, as well as fathers' age and education. As Table 8.11 shows, urban children and those of better educated parents were more likely to have activities with mothers at home. More educated fathers were inclined to have more such activities at home. However, in rural areas and in families with less-educated mothers, other family members were more likely to be involved in such activities with children. Other family members were also inclined to have such activities with older children.

Table 8.11
Predictors of family involvement in early learning-related activities at home (Timor-Leste)

Variables	Mother				Father				Other Family members			
	B	SE B	β	p	B	SE B	β	p	B	SE B	β	p
Constant	0.14	0.44		.755	0.28	0.24		.238	0.46	0.40		.256
Child's age	-0.03	0.07	-.01	.671	0.02	0.04	.02	.592	0.32	0.06	.14	<.001
Child's gender	-0.05	0.11	-.01	.679	-0.04	0.06	-.02	.489	0.00	0.10	.00	.994
Urban or Rural	1.60	0.12	.37	<.001	0.11	0.07	.05	.094	-1.18	0.11	-.31	<.001
Mother's age	0.01	0.01	.03	.399	-0.00	0.01	-.03	.519	0.02	0.01	.07	.060
Mother's education	0.26	0.04	.20	<.001	-0.04	0.02	-.06	.074	-0.08	0.04	-.07	.030
Father's age	-0.02	0.01	-.06	.117	0.00	0.01	0.00	.929	0.01	0.01	.05	.217
Father's education	0.09	0.04	.08	.013	0.09	0.02	.15	<.001	0.00	0.04	.00	.951
R^2	.25				.02				.16			
F	52.97***				3.79***				28.85***			

Note. * $p < .05$. ** $p < .01$. *** $p < .01$

CHILD'S HEALTH AND HABITS

Almost all (93.3%) target children in this study had all vaccinations. More than half of the families (56.7%) took the child for a regular health check-up to the clinic or hospital. Most of the target children did not have their vision/hearing/speech checked by professionals. Only 13.2% of the target children had their vision checked by professionals, 10.8% of the children had their hearing checked by professionals, and 7.3% had their speech checked by professionals. A total score of families' health facilitation practices was created by summing up the scores of the above-mentioned items. The multiple regression analyses showed that families with girls and those living in rural areas were more likely to have better health facilitation practices in Timor-Leste (see Table 8.12).

Table 8.12
Predictors of health facilitation practices (Timor-Leste)

Variables	B	SE B	β	<i>p</i>
Constant	1.80	0.24		<.001
Child's age	0.05	0.04	.04	.226
Child's gender	-0.14	0.06	-.07	.033
Urban or Rural	-0.48	0.07	-.23	<.001
Mother's age	0.00	0.01	.02	.587
Mother's education	0.03	0.02	.05	.171
Father's age	-0.00	0.01	-.00	.922
Father's education	-0.02	0.02	-.03	.365
<i>R</i> ²				.06
<i>F</i>				9.12***

Note. **p* < .05. ***p* < . 01. ****p* < . 001

The percentage of children who had the habit of brushing teeth every day was 80.3%. Among them, 31.7% did this at both morning and night, 66.4% brushed teeth only in the morning, and 1.8% only did so at night. In addition, parents were asked whether their child had three basic health-related habits. Without adults' directions, 35.2% of the children were considered as being able to wash their hands after using the toilet sometimes and 23.1% would never do so. In addition, 33.2% of the children sometimes washed their hands before meals without adults' directions and 25.6% would never do so. As to eating vegetables, 40.4% of the parents reported their child would never do so without adults' directions and 23.1% would do so sometimes. A total score of children's health-related habits were created by summing up the scores of these four items. A multiple regression was conducted on the score of children's habits formation with the predictors of child age, gender, urban/rural residence, mothers' age, and education, as well as fathers' age and education. As Table 8.13 shows, older children, those living in urban areas, and of better-educated fathers were inclined to show better health and hygiene habits in Timor-Leste.

Table 8.13
Predictors of children's health and hygiene habits (Timor-Leste)

Variables	B	SE B	β	<i>p</i>
Constant	2.49	0.93		.007
Child's age	0.28	0.14	.06	.049
Child's gender	-0.44	0.24	-.06	.070
Urban or Rural	1.06	0.26	.14	<.001
Mother's age	0.01	0.02	.01	.763
Mother's education	0.07	0.09	.03	.409
Father's age	0.02	0.02	.04	.356
Father's education	0.16	0.08	.08	.044
<i>R</i> ²	.05			
<i>F</i>	6.41***			

Note. **p* < .05. ***p* < .01. ****p* < .001

About 3.7% of the parents reported medical conditions or chronic illness of their children, and 8.9% reported that their child had allergies. About 8.2% of the children had stayed in hospital for more than 3 days for various reasons. We further asked parents to report whether their child had some specific health problems in the past month. 3% reported wheezing attacks, 2% had snoring, 0.7% had seizures, 4% had dizziness, 10.2% had persistent cough, 3.8% had joints problems, 6.3% had vomiting, 8.1% had diarrhea, 2.1% had constipation or hard stools for 2 weeks, 1.9% had skin rash with red swelling, 1.4% had numbness or weakness in limbs, 3.8% had trouble with eyes, 6.9% had trouble with nose and sinuses, 4.1% had trouble with ears and 5.1% had trouble with teeth, mouth or gums.

The most common health problems were common cold or influenza-like illness. About 15.7% of the target children ever suffered from cold or influenza-like illness in the past month. A total score representing children's basic health situation was created by summing up the scores in these items. A higher score represented more health problems. The multiple regression analyses is presented in Table 8.14 and shows that rural children and those of less-educated fathers were more likely to have reported health problems.

Table 8.14
Predictors of children's health situation (Timor-Leste)

Variables	B	SE B	β	p
Constant	1.93	0.36		<.001
Child's age	-0.03	0.06	-.02	.633
Child's gender	-0.01	0.09	-.00	.952
Urban or Rural	-0.38	0.10	.13	<.001
Mother's age	-0.01	0.01	-.07	.132
Mother's education	-0.01	0.03	-.02	.699
Father's age	0.00	0.01	.01	.882
Father's education	-0.10	0.03	-.12	.002
R^2	.05			
F	6.31***			

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

SUMMARY AND DISCUSSION OF FINDINGS

EAP-ECDS

1. There were significant developmental differences in the EAP-ECDS. Older children performed better than younger children in all the following seven domains of the Scales: Cognitive Development; Socio-emotional Development; Motor Development; Language and Emergent Literacy; Health Hygiene and Safety; Cultural Knowledge and Participation; and Approaches to Learning. This finding is not unexpected as the EAP-ECDS is a developmental scale with adequate validity and reliability.
2. There were no significant gender differences in any of the domains of the EAP-ECDS.
3. Urban children did significantly better than rural children in four of the following seven domains of the Scales: Cognitive Development; Motor Development; Language and Emergent Literacy; and Approaches to Learning. Rural children were significantly better than urban children in the domain of Cultural Knowledge and Participation. Other family members (perhaps grandparents) engaged in learning activities with rural children more than urban parents. This interaction with older relatives may involve some transmission of cultural knowledge.

EARLY LEARNING AND DEVELOPMENT

4. Less than 7% of the participating children attended some form of early education programme. While the GER for pre-primary education (3 to 6 years) was 10.2 in 2008 there are disparities within the country with relatively low coverage rates among the rural

population. The children who were older and those in urban areas were more likely enrolled in an early learning programme than other children. About 44.7% of the children who attended an early childhood programme went to kindergartens (the rest went to community and drop-in centers); and 66.7% of them spent 10 to 20 hours a week in the programme.

5. Less than half of mothers reported having involvement in early learning-related activities at home. Timor-Leste was an exception however in that “other family members” were more involved than either parent in early learning-related activities at home. Mothers were less engaged and fathers only occasional so. That stated, urban children and those with better educated parents were more likely to have activities with mothers at home; while in rural areas and in families with less educated mothers, other family members were more likely to be involved in such activities.

CHILD’S HEALTH AND HABITS

6. In terms of health, almost all (93.3%) children had had their vaccinations. Interestingly, families with girls and those living in rural areas were more likely to have better health facilitation practices.
7. Parents reported on basic health-related habits such as brushing teeth every day, always washing hands after using the toilet and before meals without adults’ directions and eating vegetables without adults’ directions. Regression results indicated that older children, those living in urban areas, and those with more educated fathers tended to have better health and hygiene habits than other children.

CHAPTER 9 VANUATU

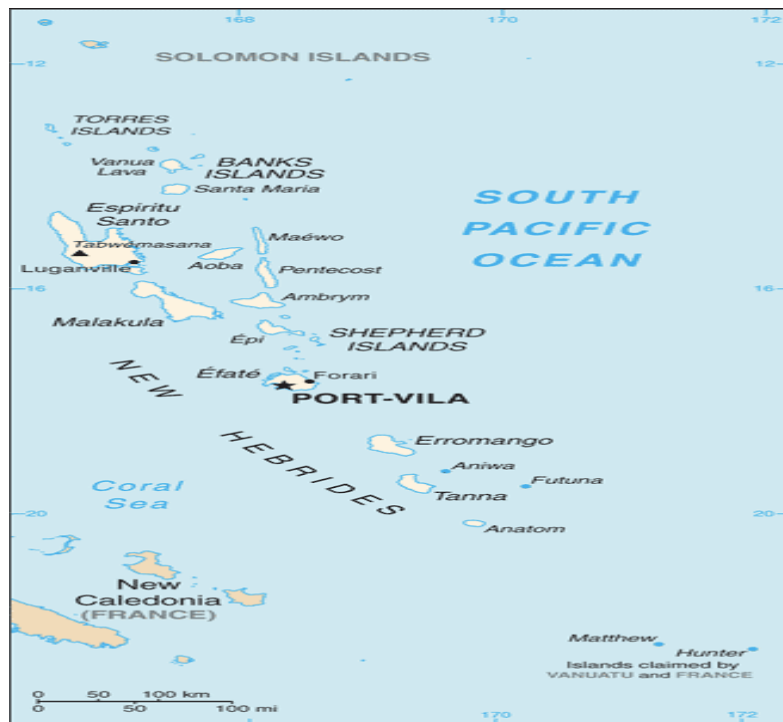


Figure 9.1

Map of Vanuatu

Source: Central Intelligence Agency. (2014). The World Fact Book. <https://www.cia.gov/library/publications/the-world-factbook/geos/nh.html>

GENERAL INFORMATION

Located in the South Pacific Ocean, Vanuatu consists of more than 80 islands of which about 65 are inhabited. About 97.6% of Vanuatu's population of 266,000 belongs to the largest ethnic group, Ni-Vanuatu. More than half of the population is under 25 years of age (Central Intelligence Agency, 2013). Vanuatu is one of the poorest countries in Asia. More than three quarters of the inhabitants lived in rural areas and work as traditional subsistence farmers (World Vision, 2008). Due to the backwardness of the agriculture sector, the economy has not been able to develop quickly. In 2012, it had a gross domestic product (GDP) per capita adjusted for purchasing power parity (PPP) of US\$4531 (UNESCO Institute of Statistics, 2012) and 40% of the population lived below the National Basic Needs Poverty Line (Oxfam New Zealand, n.d). In 2011, the infant mortality and under five mortality rates were 24 and 29, respectively (UNESCO, 2014). About 26% of children under 5 suffer from moderate or severe stunting (UNESCO, 2014).

Early childhood education was started in Vanuatu in the early 1960s but did not receive much attention from the Vanuatu government until recently when the Ministry of Education started to put more focus on preschool education. Working with the Vanuatu Early Childhood Association, the Ministry has approved guidelines on preschool standards and funds a network of Preschool Coordinators, who train preschool teachers and work to raise community awareness. However, resources and funding are lacking due to inadequate allocation of resources to the early childhood sector of the Ministry (International Council for Open and Distance Education, n.d).

Preschool education in Vanuatu is mainly provided by church-run, community, and private preschools. Of the 543 ECE centres in Vanuatu, 406 are private, 115 are community preschools and 22 are church-run preschools (Ministry of Education, 2012). There is no significant disparity between girls and boys in enrolment for early childhood education. However, the gross enrolment ratio varies greatly among provinces (Sanma: 122.8, Shefa: 79; Ministry of Education, 2012). Only a small number of church-run preschools have government assistance. The gross enrolment ratio for pre-primary education (three- to five-year-olds) increased from 51 in 1999 to 59 in 2011 (UNESCO, 2014).

In 2007, the Ministry of Education announced the Vanuatu Education Sector Strategy 2007-2016 (VESS) as a guiding document for the development of the education system from 2007 to 2016. The Vanuatu Education Road Map was later introduced in 2009 to set out the agenda for the development of education. The Road Map recognizes early childhood education as an integral part of the Vanuatu education system. Improving the quality of teachers and facilities and the implementation of a national kindergarten curriculum standards framework are recommended (Ministry of Education, 2009).

EAP-ECDS FINDINGS

SAMPLE

A total of 900 children and their parents/caregivers participated in this study. The sample was drawn from 6 provinces (Malampa, Penama, Sanma, Shefa, Tafea, and Torba), including urban and rural areas. The sampling strategy was determined in conjunction with the Statistical Department and the sample was stratified by region, Urbanicity, child's age and gender. In addition to the child assessment, one parent or caregiver of the child was interviewed, in an individual session. Among the children assessed 702 were from rural areas and 94 from urban areas. The Urbanicity information for 96 children was missing. Data from three to five year olds with information about Urbanicity (n = 694) were included in the Scale Validations. The analyses of parental interview data included children of all age groups.

Table 9.1

Sample distribution in terms of Age, Gender, and Urbanicity in Vanuatu

Age	Rural			Urban			Urbanicity Missing			Total
	Girls	Boys	Gender Missing	Girls	Boys	Gender Missing	Girls	Boys	Gender Missing	
2Y	2	0	0	0	2	0	0	0	0	4
3Y	69	93	0	6	8	0	3	13	0	192
4Y	95	102	0	21	12	0	14	12	0	256
5Y	127	127	0	17	17	0	26	24	0	338
6Y	13	14	0	5	4	0	0	2	0	38
7Y	7	5	0	0	1	0	0	1	0	14
8Y	2	1	0	0	1	0	0	0	0	4
NA	23	22	0	3	5	0	1	0	0	54
Total	338	364	0	52	50	0	44	52	0	900

RELIABILITY AND VALIDITY

Our results indicated that items within the same domain have satisfactory reliability with alpha ranging from 0.75 to 0.95. Among the seven domains, Motor Development, and Approaches to Learning appeared to be relatively slightly weaker in overall internal consistency. Table 9.2 shows the average Cronbach's alpha for each of the domains.

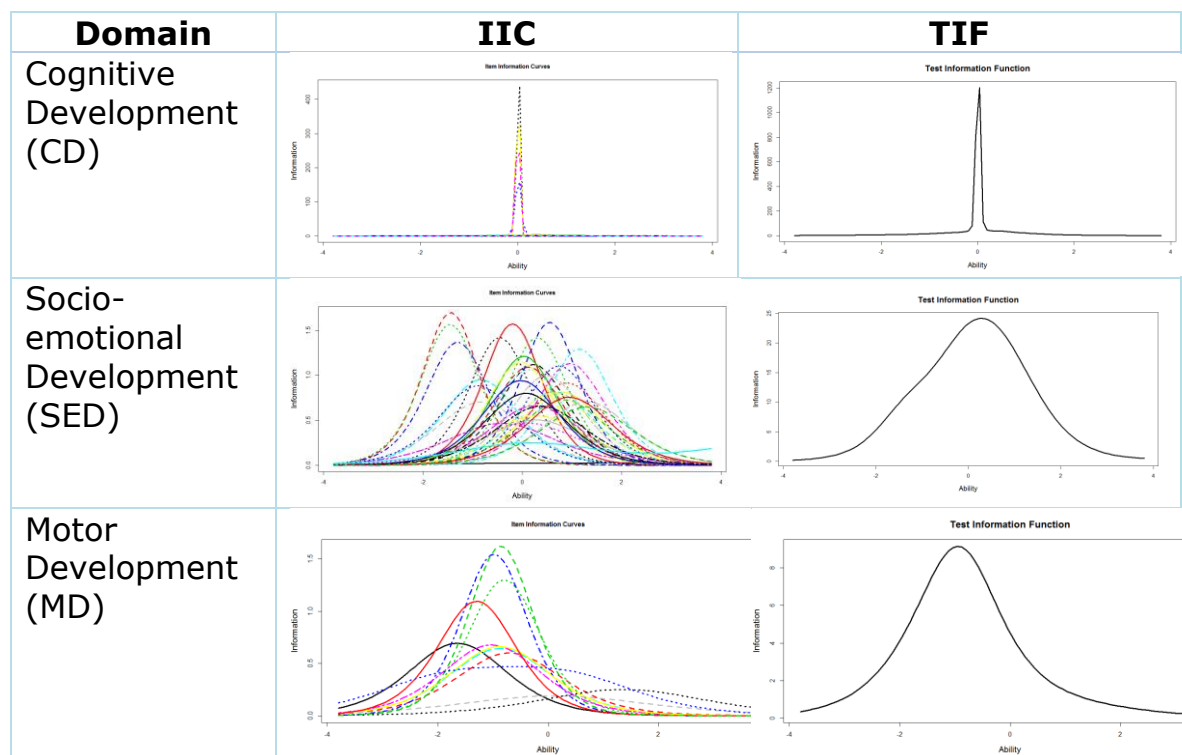
Table 9.2
Internal consistency for each domain (Vanuatu Scale)

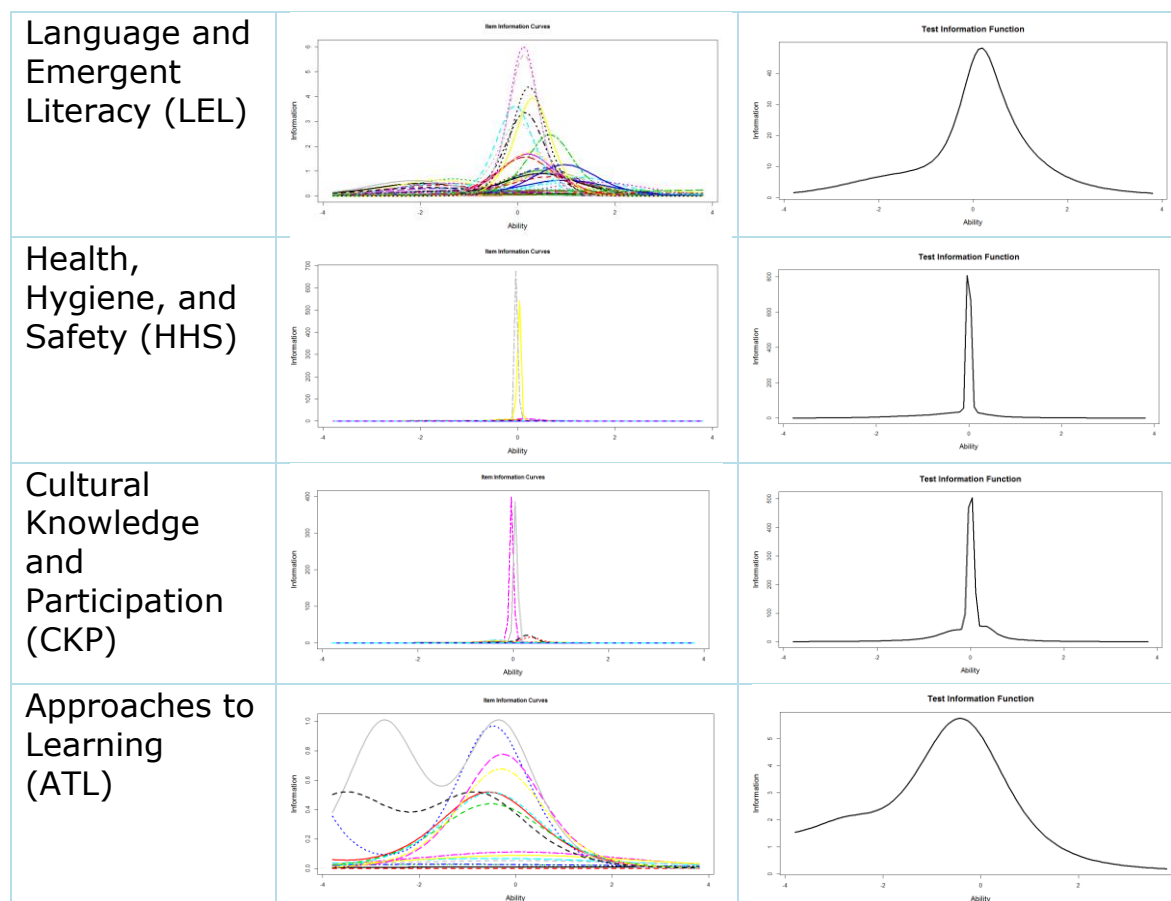
Domain	Cronbach's alpha (all items)
Cognitive development	0.94
Socio-emotional Development	0.94
Motor Development	0.75
Language and Emergent Literacy	0.95
Health, Hygiene, and Safety	0.94
Cultural Knowledge and Participation	0.94
Approaches to Learning	0.88

ITEM ANALYSIS

Figure 9.2 shows the item information curves (IIC) and test information function (TIF) for each domain. These graphs indicate the latent ability level at which the assessment offers the most information. It is noteworthy that information tended to concentrate on mid-high level of ability for Cognitive Development, Socio-emotional Development, Language and Emergent literacy, and Cultural Knowledge and Participation. As for motor skills, most information were represented at the lower ability level.

Figure 9.2
Item information curves (IIC) and test information function (TIF) for each domain (Vanuatu Scale)





EASIEST AND MOST DIFFICULT ITEMS IN EACH DOMAIN

We determined the three easiest and three most difficult items in each domain to enable us to easily compare item difficulty in different countries. In the Cognitive Development domain, the item that asked children to sit on the chair (item 9.2) appeared to be too easy for children while the item that asked children to identify 3:30 on a clock (item 19.3) was the most difficult. Few children, even those with relatively high overall ability, were able to provide the correct response. As for the Socio-emotional Development domain, the easiest item was to state the father's given and family name (item 23.2) The most difficult item was to give a second reason for why it is wrong to point at parents (item 34.3). With respect to Motor Development, the easiest item was to string large beads (item 37.1) and the most difficult item was following more than three instructions to fold a piece of paper (item 40). As for Language and Emergent Literacy, the easiest item was to orally identify the action of kicking a ball (item 46.4). The most difficult item was to identify 11-13 letters. With regard to Health, Hygiene and Safety, the easiest item was identifying the eye (item 66.1) and the most difficult item was to state that landslide sign means danger (item 63.1). For Cultural Knowledge and Participation, the easiest item was to identify the national flag (item 77) and the most difficult item was to provide the name of a second festival (item 73.2). For Approaches to Learning, the easiest item was to show the ability to delay gratification (item 81), and the most difficult item was

to show work independence during the assessment. The easiest items and most difficult items for the different domains are shown below.

Table 9.3
Easiest and most difficult Items in Each Domain (Vanuatu Scale)

Item No.	Item Description	Passing Rate (%)
Cognitive Development		
<i>3 Easiest items</i>		
9.2	Sat on the chair	85.7
9.1	Brought the block/toy to assessor	83.7
1.1	Put 1 block outside the box	83.7
<i>3 most difficult items</i>		
19.3	Could read a clock: 3:30	4.5
6.3	Addition: 8 plus 3 =11	6.1
19.2	Could read a clock: 9:00	6.8
Socio-emotional Development		
<i>3 Easiest items</i>		
23.2	Gave father's given and family names	87.3
23.1	Gave mother's given and family names	87.2
24.1	Gave 1-2 names of children that child played with	84.9
<i>3 most difficult items</i>		
34.3	Gave another reason for why it is wrong to point at parents	17.9
26.5	Knew second kind of help in the losing mummy situation	18.4
34.6	Gave another reason for why queuing up is appropriate	20.7
Motor Development		
<i>3 Easiest items</i>		
43.1	Strung large beads	87.2
37.1	Poured water to designated line in cup	86.0
39	No spills while walking or putting cup down	81.6
<i>3 most difficult items</i>		
42.2	Following instructions to fold a piece of paper (steps 4-7)	23.1
40	Hit the target on three out of three attempts	43.6
42.1	Following instructions to fold a piece of paper (steps 1-3)	47.9
Language and Emergent Literacy		
<i>3 Easiest items</i>		
46.4	Identified action of kicking a ball	89.9
44.1	Identified picture of combing hair	87.2
46.3	Identified picture of writing	85.3

<i>3 most difficult items</i>		
52.4	Named 11 to 13 letters/characters	13.8
52.3	Named 8 to 10 letters/characters	14.6
52.2	Identified 5-7 letters	18.3
Health, Hygiene, and Safety		
<i>3 Easiest items</i>		
66.1	Identified eyes	84.4
66.3	Named a tooth	83.0
60.1	Showed how to clean their face and hands	78.1
<i>3 most difficult items</i>		
63.1	Identified landslide sign means danger	31.0
64.2	Gave an acceptable reason for not following a stranger	33.3
62.4	Fastened and unfastened the small button	33.9
Cultural Knowledge and Participation		
<i>3 Easiest items</i>		
77	Identified national flag of their own country	69.6
71.1	Named 1 natural object in the sky	68.3
75.1	Sang 1 line of the verse	67.0
<i>3 most difficult items</i>		
73.2	Named one more festival	20.7
74.3	Provided another relevant detail of the celebration	21.8
74.2	Provided one more relevant detail of the celebration	23.3
Approaches to Learning		
<i>3 Easiest items</i>		
81	Showed ability to delay gratification	75.1
83.3	Keen to see what will happen next	57.8
83.4	Showed spontaneous positive interaction with assessor	54.0
<i>3 most difficult items</i>		
85	Worked independently during the whole assessment	4.0
80.5	Followed instructions about tapping a pencil (assessor taps once, child should tap twice)	40.1
80.4	Assessor tapped twice, child tapped twice	39.3

Table 9.4
Age, Gender and Urbanicity differences in domain scores (Vanuatu)

Domain	Age		Gender		Urbanicity		Age × Gender		Age × Urbanicity		Gender × Urbanicity	
	<i>F</i> (2, 682)	η_p^2	<i>F</i> (1, 682)	η_p^2	<i>F</i> (1, 682)	η_p^2	<i>F</i> (2, 682)	η_p^2	<i>F</i> (2, 682)	η_p^2	<i>F</i> (1, 682)	η_p^2
CD	30.69***	.08	1.47	.00	10.29**	.02	0.01	.00	1.72	.00	0.54	.00
SED	21.98***	.06	5.29*	.01	0.05	.00	0.24	.00	1.83	.00	2.77	.00
MD	22.79***	.06	0.16	.00	16.35***	.02	0.58	.00	0.08	.00	1.03	.00
LEL	45.61***	.12	13.23***	.02	1.30	.00	0.29	.00	0.17	.00	5.99*	.00
HHS	31.11***	.08	8.85**	.01	0.99	.00	0.59	.00	1.61	.00	7.72**	.00
CKP	23.43***	.06	9.66**	.01	0.26	.00	0.92	.00	2.16	.00	5.15*	.00
ATL	17.49***	.05	6.38*	.01	2.23	.00	0.60	.00	0.33	.00	4.63*	.00

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

COMPARISONS ACROSS DIFFERENT DOMAINS AND GROUPS

A 3 (Age) × 2 (Gender) × 2 (Urbanicity) MANOVA was performed with children's scores in each domain as dependent variables. The omnibus analysis yielded significant effects of Age, $F(14, 1352) = 7.69$, $p < .001$, $\eta_p^2 = .07$, Gender, $F(7, 676) = 2.67$, $p < .05$, $\eta_p^2 = .03$, and Urbanicity, $F(7, 676) = 4.97$, $p < .001$, $\eta_p^2 = .05$. Follow-up univariate tests were further conducted and results are presented in Table 9.4 by domain. Post-hoc comparisons were performed using the Tukey's HSD test with p set at .05 for examinations of interaction effects. No multiple effects were detected.

DOMAIN 1: COGNITIVE DEVELOPMENT

As shown in Table 9.4, there were significant effects of Age and Urbanicity. Five-year-olds ($M_{adjusted} = 43.09$, $SD = 20.56$, $SE = 1.71$) did significantly better than 4-year-olds ($M_{adjusted} = 34.86$, $SD = 18.87$, $SE = 1.82$), and the 4-year-olds did significantly better than the 3-year-olds ($M_{adjusted} = 18.53$, $SD = 15.75$, $SE = 2.63$). Rural children ($M_{adjusted} = 36.04$, $SD = 21.14$, $SE = 0.77$) did significantly better than urban children ($M_{adjusted} = 28.28$, $SD = 21.81$, $SE = 2.29$).

Figure 9.3
Age and Gender differences in Cognitive Development (Vanuatu)

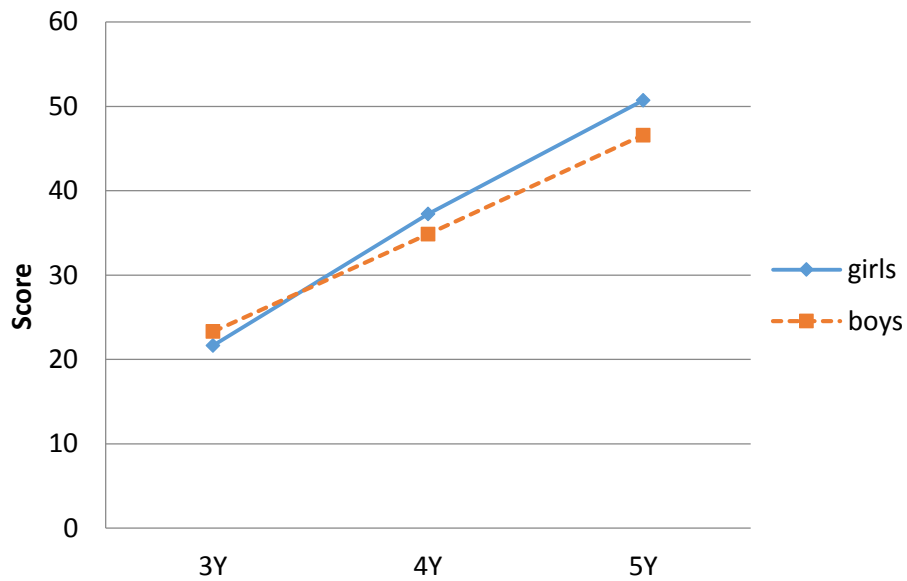


Figure 9.4
Age differences in Cognitive Development in children living in rural and urban areas (Vanuatu)

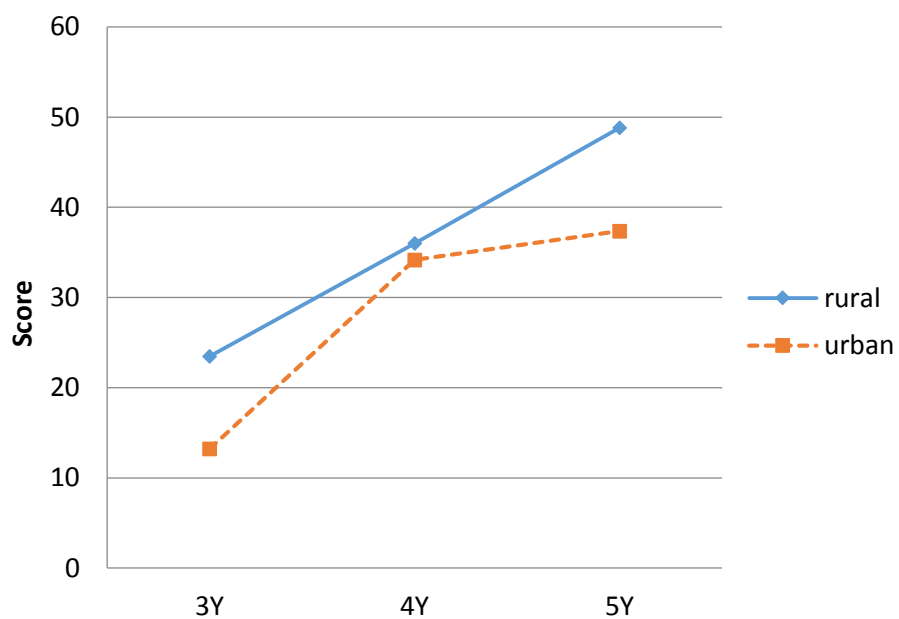
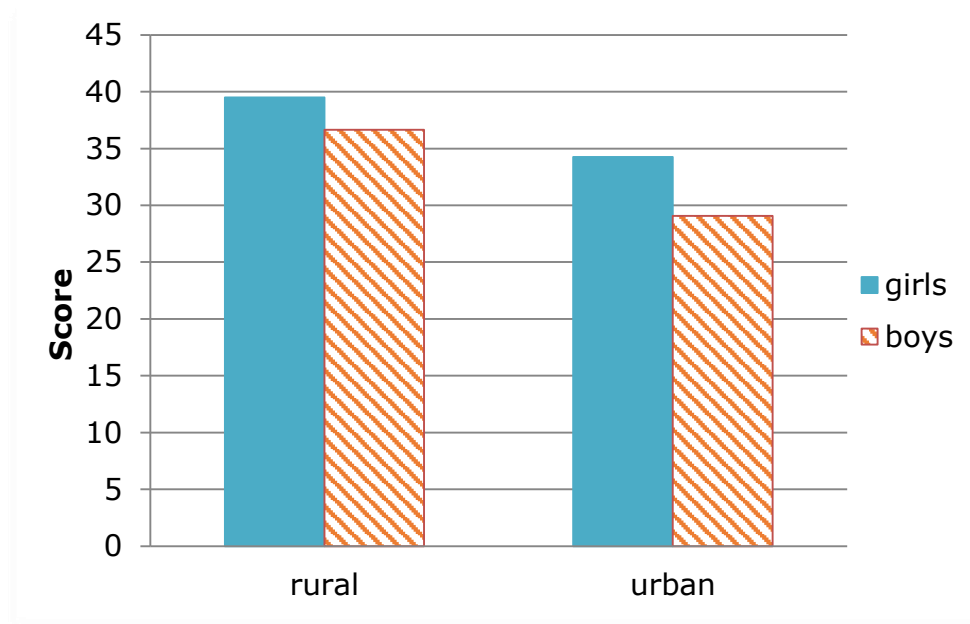


Figure 9.5
Gender differences in Cognitive Development in children living in rural and urban areas (Vanuatu)



DOMAIN 2: SOCIO-EMOTIONAL DEVELOPMENT

There were significant age and gender effects for children's performance in the domain of Socio-emotional Development (see Table 9.4). Five-year-olds ($M_{adjusted} = 51.68$, $SD = 22.15$, $SE = 2.12$) did significantly better than 4-year-olds ($M_{adjusted} = 45.99$, $SD = 24.70$, $SE = 2.26$), and 4-year-olds did significantly better than the 3-year-olds ($M_{adjusted} = 25.97$, $SD = 23.13$, $SE = 3.27$). Girls ($M_{adjusted} = 44.67$, $SD = 25.01$, $SE = 2.14$) showed significantly better performance than boys ($M_{adjusted} = 37.76$, $SD = 25.40$, $SE = 2.11$).

Figure 9.6
Age and Gender differences in Socio-emotional Development (Vanuatu)

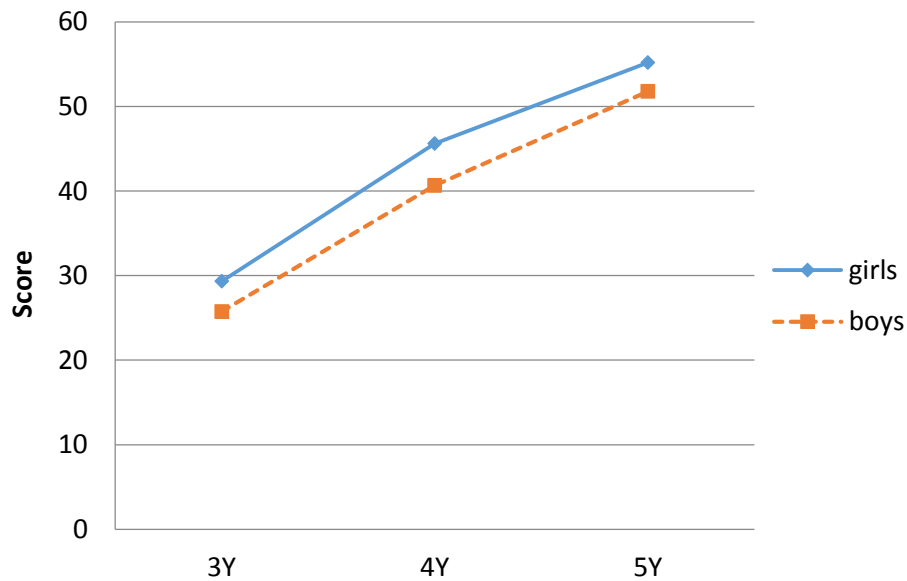


Figure 9.7
Age differences in Socio-emotional development in children living in rural and urban areas (Vanuatu)

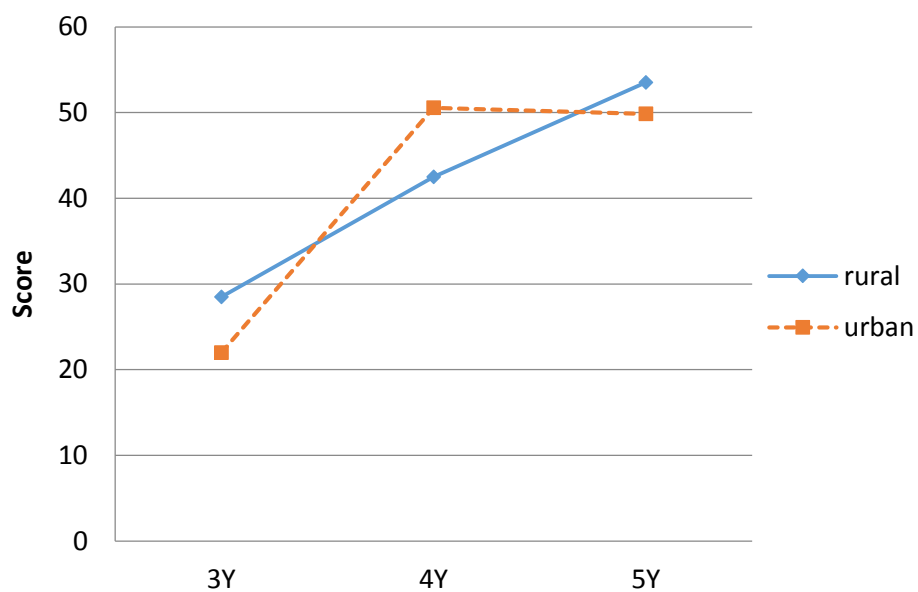
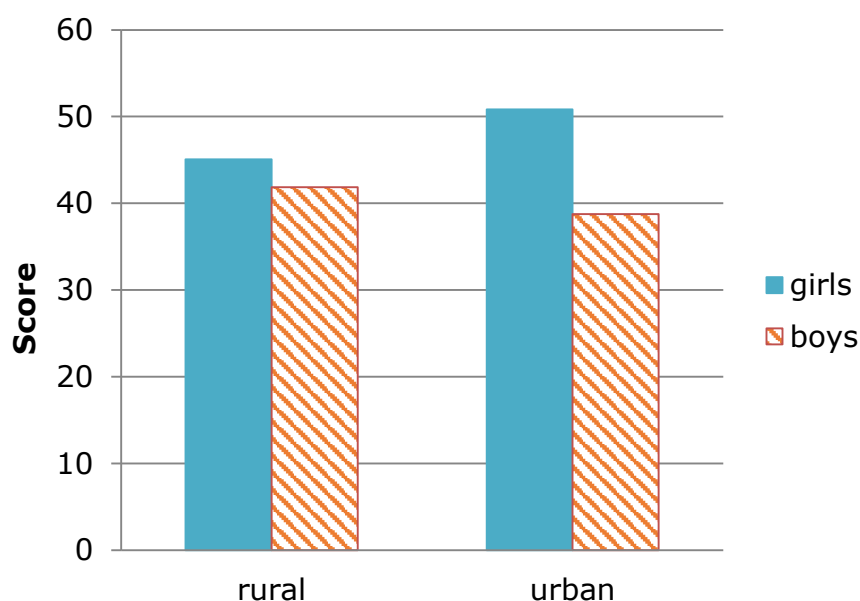


Figure 9.8
Gender differences in Socio-emotional development in children living in rural and urban areas (Vanuatu)



DOMAIN 3: MOTOR DEVELOPMENT

There were significant effects of Age and Urbanicity in children's Motor Development (see Table 9.4). Five-year-olds ($M_{adjusted} = 70.53$, $SD = 20.54$, $SE = 2.12$) did significantly better than 4-year-olds ($M_{adjusted} = 63.54$, $SD = 23.35$, $SE = 2.26$), and 4-year-olds did significantly better than 3-year-olds ($M_{adjusted} = 44.22$, $SD = 27.86$, $SE = 3.27$). Children from rural areas ($M_{adjusted} = 65.51$, $SD = 24.74$, $SE = 0.96$) showed significantly higher performance in Motor Development than those from urban areas ($M_{adjusted} = 53.35$, $SD = 28.27$, $SE = 2.85$).

Figure 9.9
Age and Gender differences in Motor Development (Vanuatu)

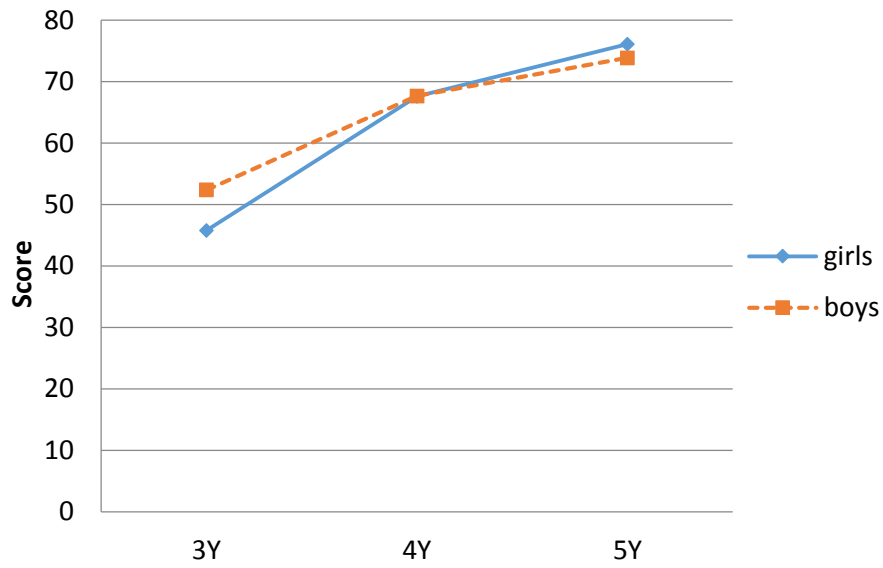


Figure 9.10
Age differences in Motor development in children living in rural and urban areas (Vanuatu)

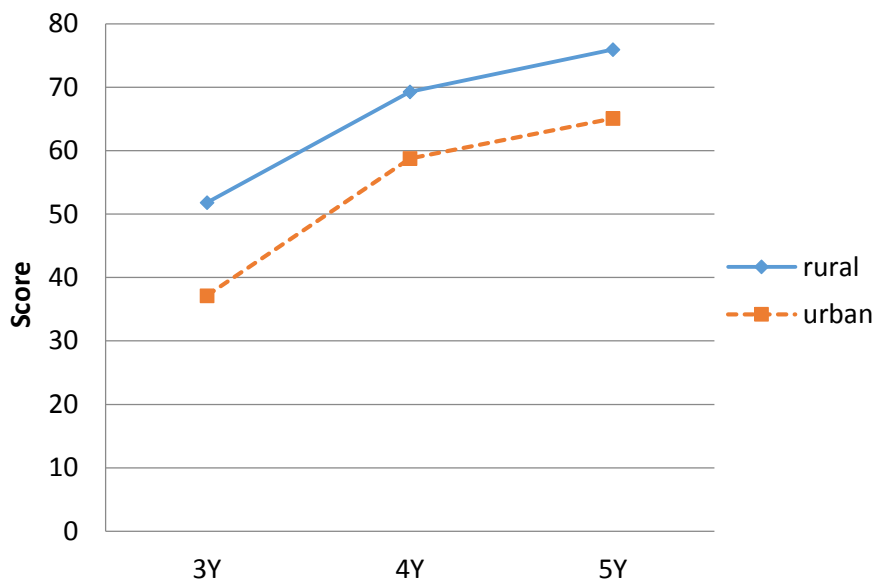
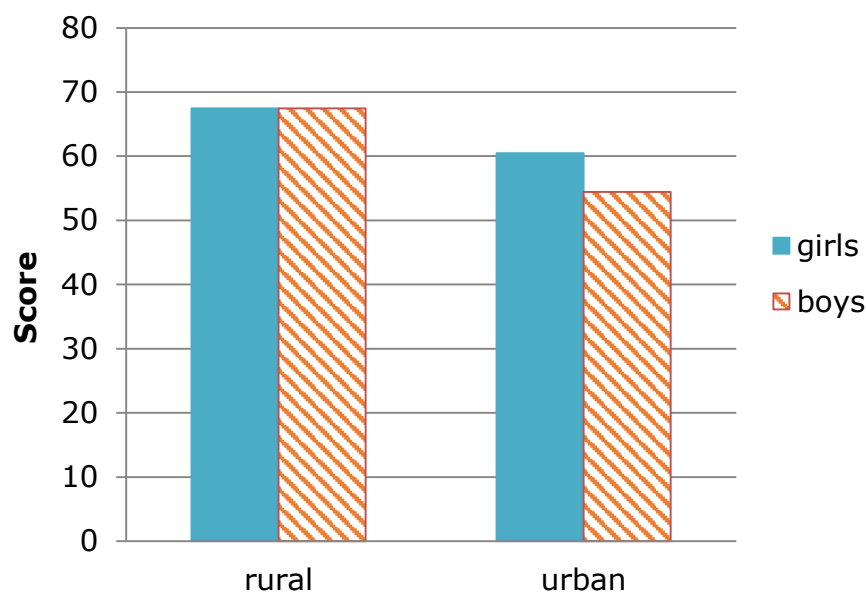


Figure 9.11
Gender differences in Motor development in children living in rural and urban areas (Vanuatu)



DOMAIN 4: LANGUAGE AND EMERGENT LITERACY

The significant age gender and Gender \times Urbanicity effects were detected in children's performance in Language and Emergent Literacy as shown in Table 9.4. Five-year-olds ($M_{adjusted} = 57.72$, $SD = 17.25$, $SE = 1.68$) did significantly better than 4-year-olds ($M_{adjusted} = 43.98$, $SD = 19.85$, $SE = 1.79$), and 4-year-olds did significantly better than 3-year-olds ($M_{adjusted} = 29.14$, $SD = 18.73$, $SE = 2.59$). There was no significant gender difference among urban children, but rural girls did significantly better than rural boys.

Figure 9.12
Age and Gender differences in Language and Emergent Literacy (Vanuatu)

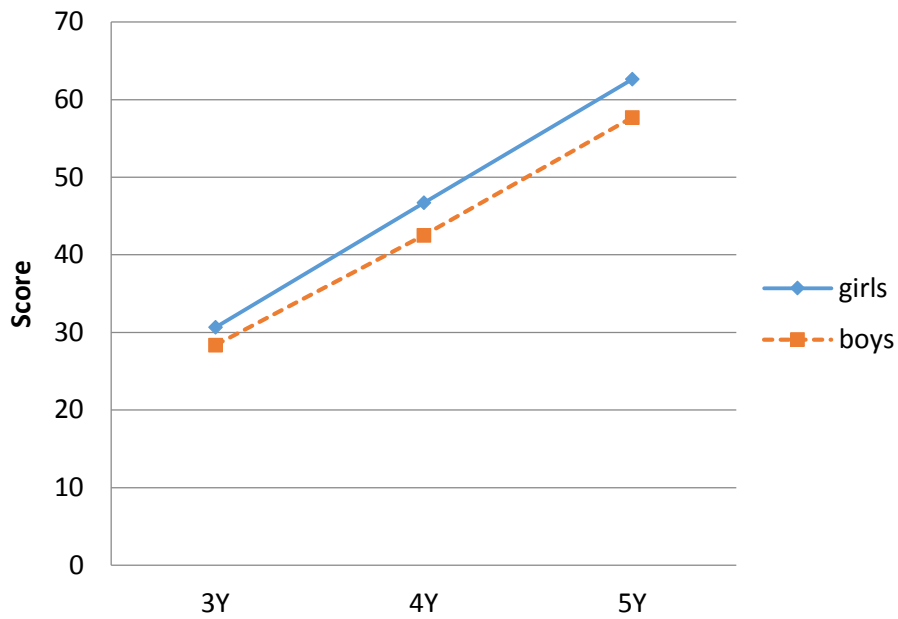


Figure 9.13
Age differences in Language and Emergent Literacy in children living in rural and urban areas (Vanuatu)

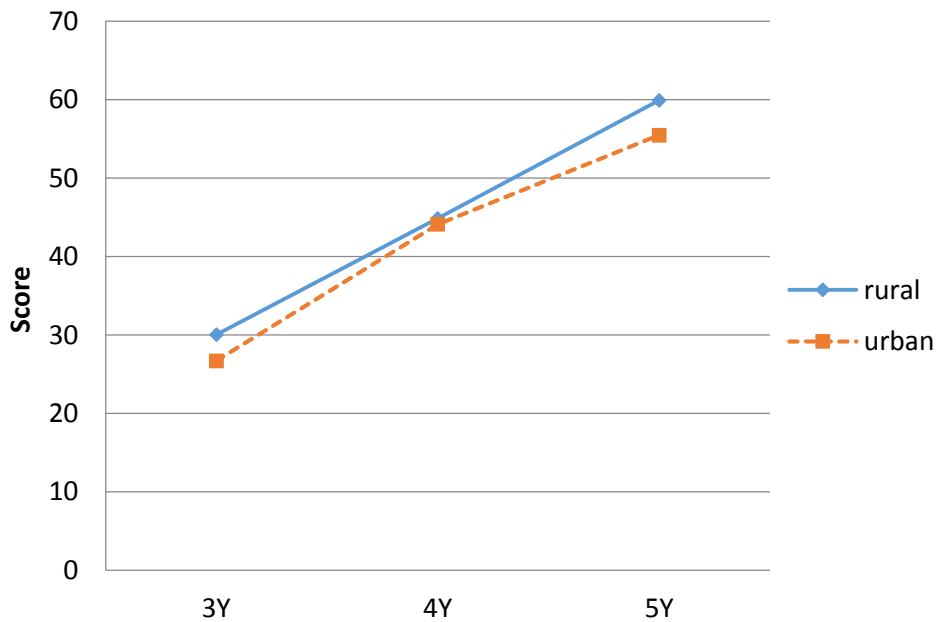
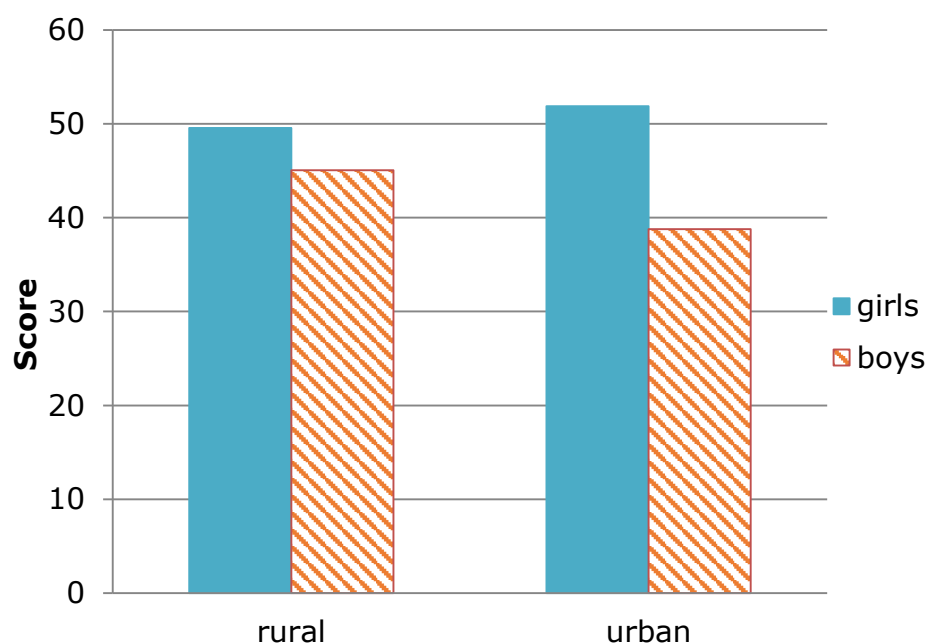


Figure 9.14
Gender differences in Language and Emergent Literacy in children living in rural and urban areas (Vanuatu)



DOMAIN 5: HEALTH, HYGIENE, AND SAFETY

There were significant Age, Gender, and Gender \times Urbanicity effects for Health Hygiene and Safety (see Table 9.4). Five-year-olds ($M_{adjusted} = 66.89$, $SD = 21.73$, $SE = 2.28$) did significantly better than 4-year-olds ($M_{adjusted} = 53.82$, $SD = 28.01$, $SE = 2.43$), and 4-year-olds did significantly better than 3-year-olds ($M_{adjusted} = 34.12$, $SD = 26.26$, $SE = 3.52$). The post-hoc analysis did not find significant urban-rural differences for both boys and girls. But rural boys were more likely to show a higher performance than urban boys in Health, Hygiene, and Safety, as shown in Figure 9.17.

Figure 9.15
Age and Gender differences in Health, Hygiene and Safety (Vanuatu)

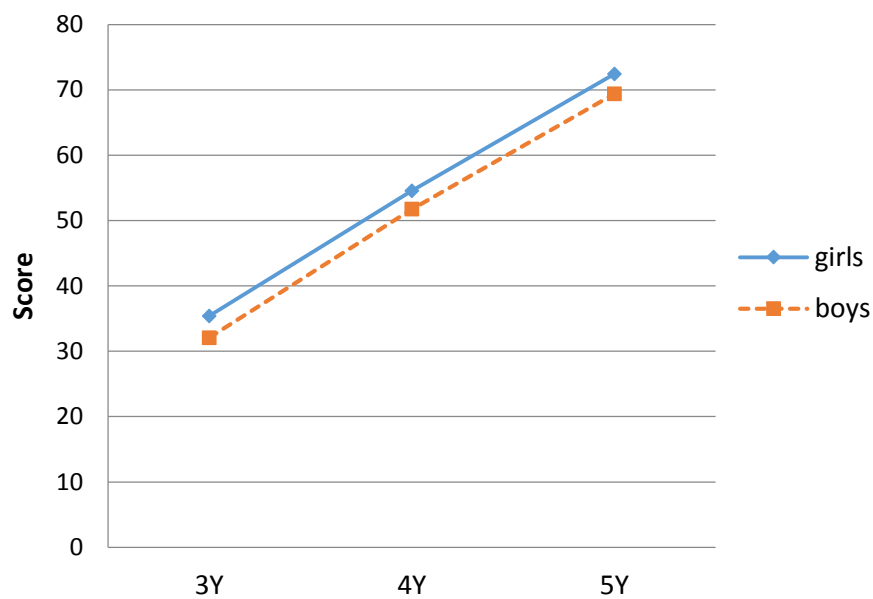


Figure 9.16
Age differences in Health, Hygiene and Safety in children living in rural and urban areas (Vanuatu)

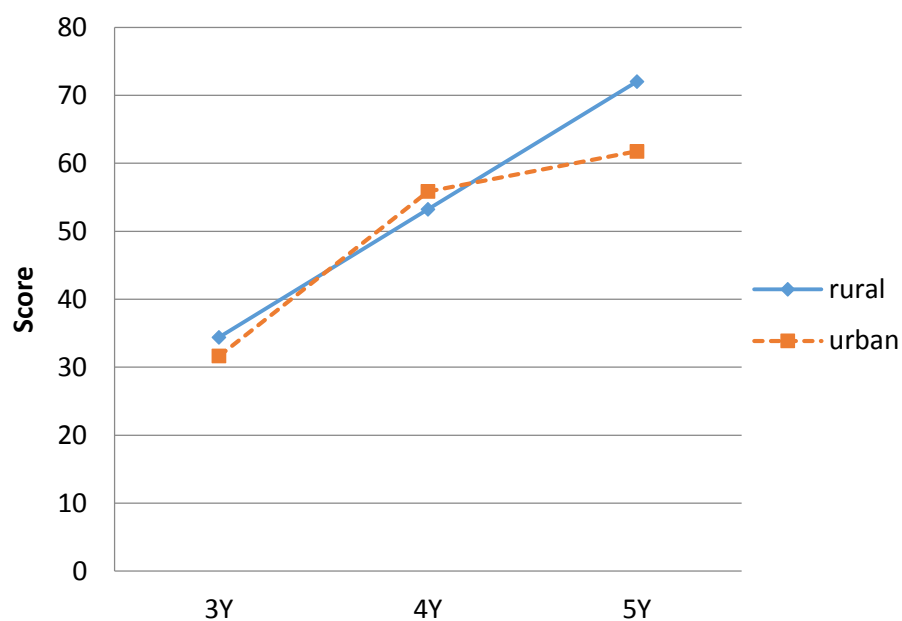
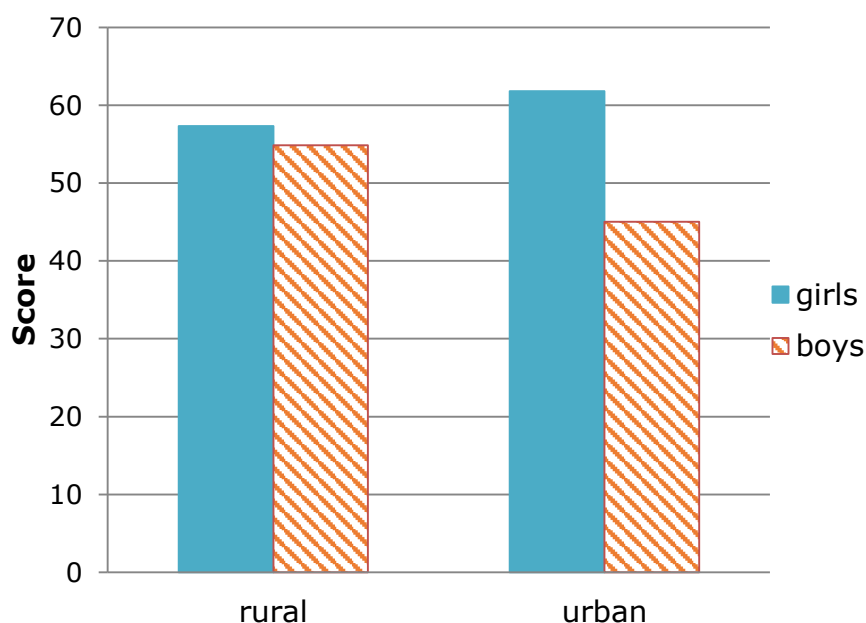


Figure 9.17
Gender differences in Health, Hygiene and Safety in children living in rural and urban areas (Vanuatu)



DOMAIN 6: CULTURAL KNOWLEDGE AND PARTICIPATION

The effects of Age, Gender, and Gender \times Urbanicity were significant for Cultural Knowledge and Participation (see Table 9.4). Similarly, 5-year-olds ($M_{adjusted} = 60.52$, $SD = 24.04$, $SE = 2.29$) performed significantly better than 4-year-olds ($M_{adjusted} = 49.16$, $SD = 27.42$, $SE = 2.44$), and 4-year-olds performed significantly better than 3-year-olds ($M_{adjusted} = 31.96$, $SD = 24.05$, $SE = 3.53$). No urban-rural differences were found for Cultural Knowledge and Participation in either boys or girls in post-hoc analysis, despite the significant Gender \times Urbanicity effect.

Figure 9.18
Age and Gender differences in Cultural Knowledge and Participation
(Vanuatu)

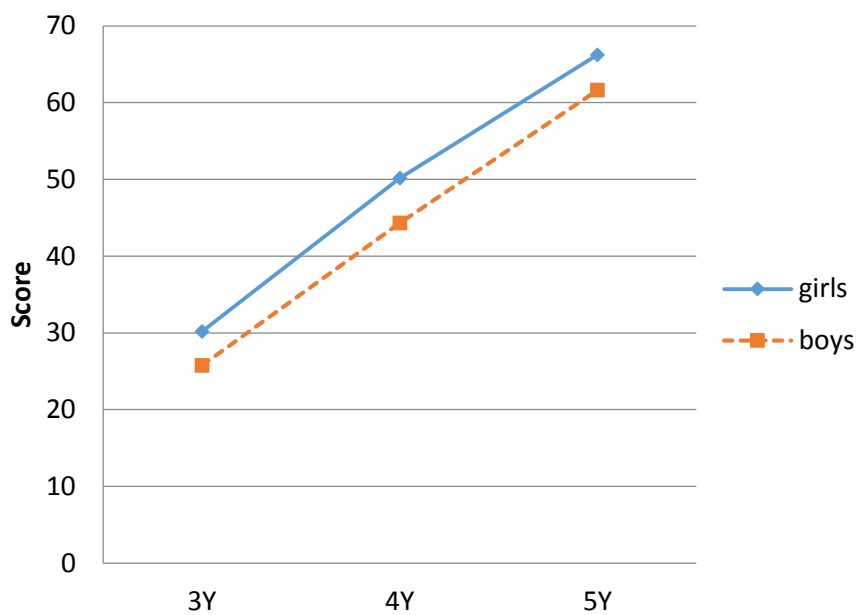


Figure 9.19
Age differences in Cultural Knowledge and Participation in children living
in rural and urban areas (Vanuatu)

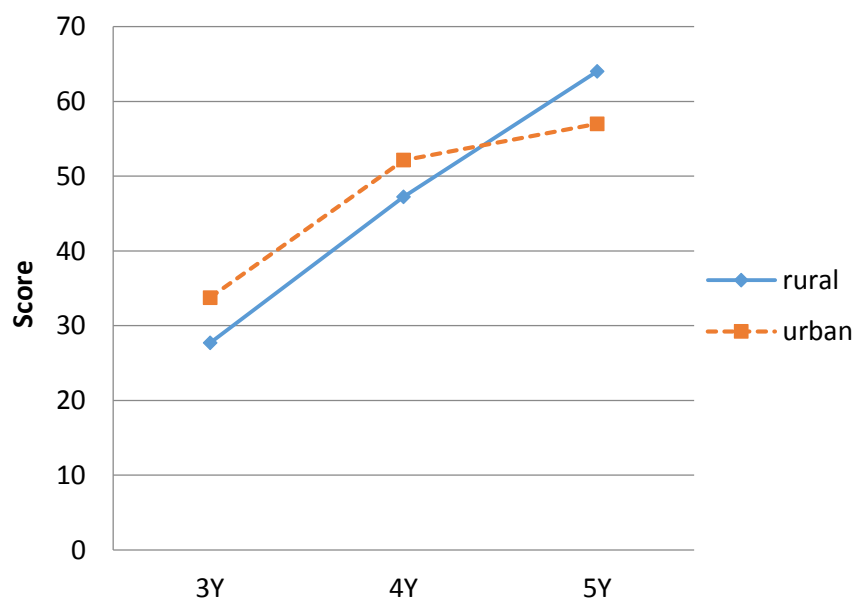
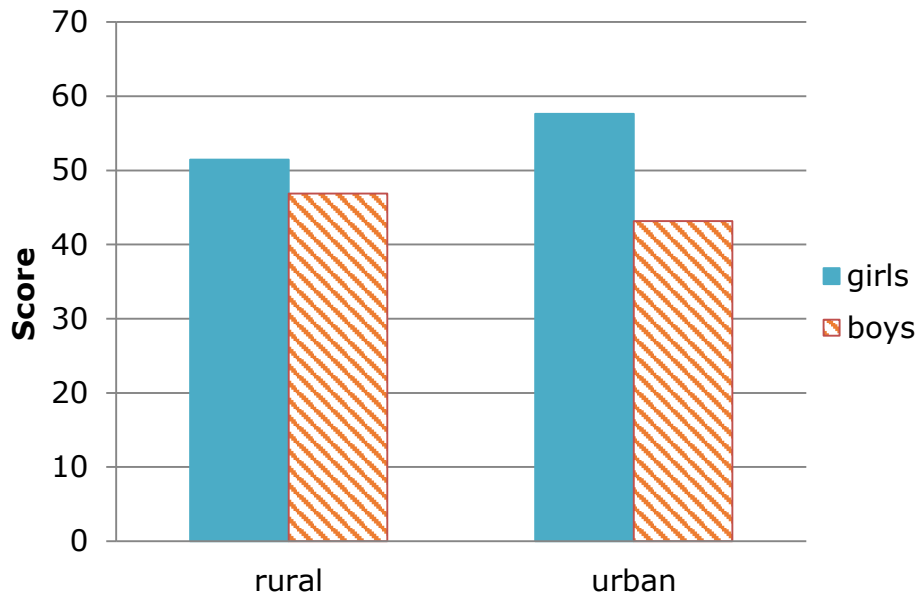


Figure 9.20
Gender differences in Cultural Knowledge and Participation in children living in rural and urban areas (Vanuatu)



DOMAIN 7: APPROACHES TO LEARNING

There were significant main effects of Age, Gender, and Gender \times Urbanicity for Approaches to Learning (see Table 9.4). Five-year-olds ($M_{adjusted} = 39.76$, $SD = 17.45$, $SE = 1.72$) performed significantly better than 4-year-olds ($M_{adjusted} = 31.56$, $SD = 19.87$, $SE = 1.83$), and 4-year-olds performed significantly better than 3-year-olds ($M_{adjusted} = 21.43$, $SD = 19.82$, $SE = 2.65$). Again, no urban-rural differences for Approaches in Learning were found in either boys or girls in post-hoc analysis, despite the significant Gender \times Urbanicity effect.

Figure 9.21
Age and Gender differences in Approaches to Learning (Vanuatu)

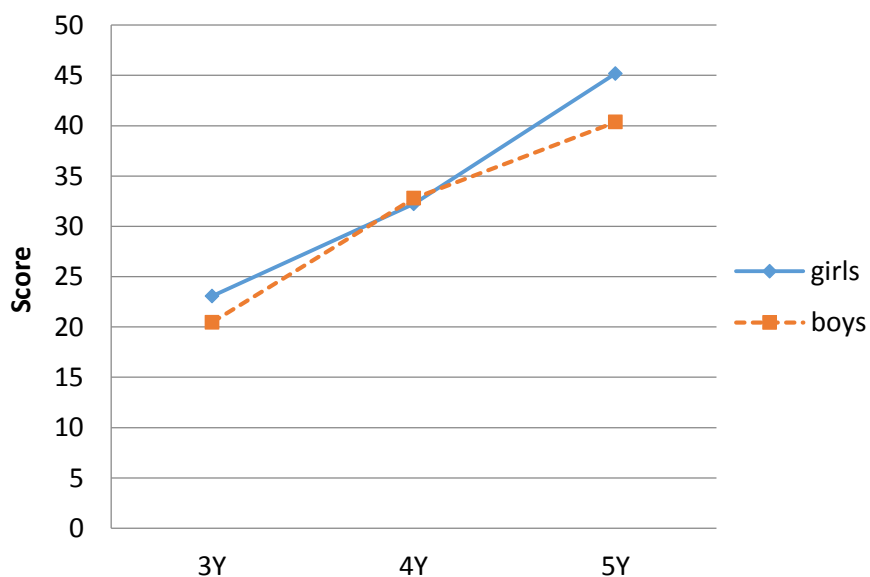


Figure 9.22

Age differences in Approaches to Learning in children living in rural and urban areas (Vanuatu)

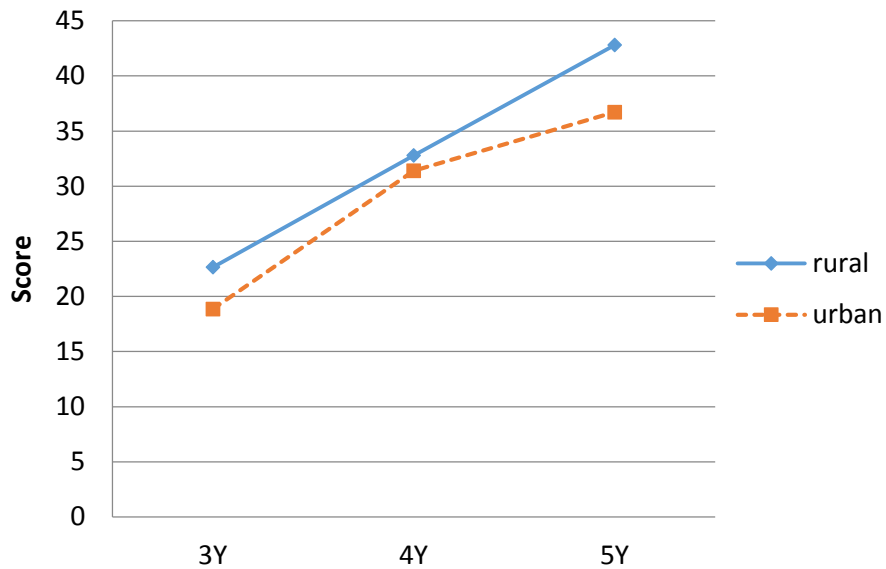
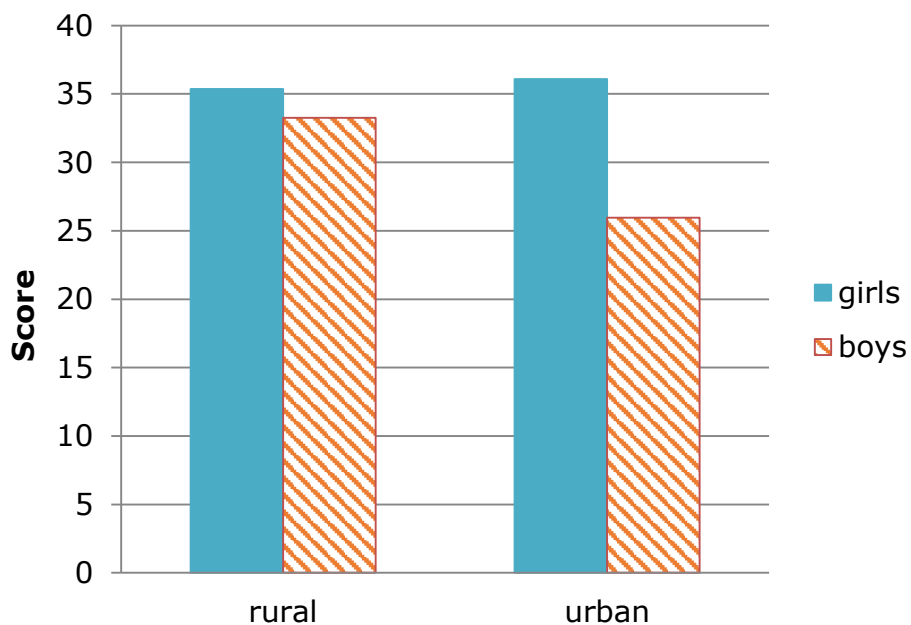


Figure 9.23

Gender differences in Approaches to Learning in children living in rural and urban areas (Vanuatu)



EXAMINATION OF THE IMPACT OF PRE-SCHOOL ATTENDANCE ON CHILDREN DEVELOPMENT

There were a total of 382 children in preschool, as shown in Table 9.5. The coefficients of the multi-level model are presented in Table 9.6. A significant difference was found between children who attended an early learning programme and those that did not. Specifically, children who attended preschool scored 6.01% points higher on average than children that had not attended preschool ($p < 0.001$).

TABLE 9.5
ATTENDANCE IN AN EARLY LEARNING PROGRAMME BY AGE AND GENDER
(VANUATU)

PRESCHOOL ENROLMENT	GENDER	
	GIRLS	BOYS
No	220	240
YES	184	198
NA	30	28
TOTAL	434	466

TABLE 9.6
REGRESSION COEFFICIENTS FROM A MULTI-LEVEL MODEL (VANUATU)

	COEFFICIENTS AND 95% CONFIDENCE INTERVALS	P-VALUES
INTERCEPT	-15.65 (-30.45, -0.86)	0.04
PRE-SCHOOL ATTENDANCE	6.01 ^Δ (2.70, 9.11)	<0.001
HOUSEHOLD ASSET	2.34 (-0.78, 5.47)	0.142
MOTHER'S EDUCATION	0.08 (-2.04, 2.20)	0.942
SEX (GIRL AS REFERENCE)	-3.79 (-8.05, 0.47)	0.08
AGE	15.46 (12.63, 18.28)	<0.001

^Δ ALL COEFFICIENTS FOR PRESCHOOL ATTENDANCE ARE FROM THE MULTILEVEL MODEL WHICH INCLUDED ALL SIX COUNTRIES

CONSISTENCY BETWEEN CHILDREN'S PERFORMANCE AND PARENTS' RATING

We conducted a correlational analysis to assess the consistency between children's performance and parents' rating of children's development. As shown in Table 9.7 parents' rating of children's abilities (Q48-52, Q54-56,

and Q67-70 in the Parent Questionnaire) was positively correlated to the total score as well as the domain scores.

TABLE 9.7

CORRELATIONS BETWEEN CHILDREN'S PERFORMANCE ON THE EAP-ECDS AND PARENTS' RATING (VANUATU)

	PARENT'S RATING	EAP-ECDS TOTAL SCORE	CD	SED	MD	LEL	HHS	CKP	ATL
PARENT'S RATING	1	.30***	.29** *	.25** *	.16** *	.28** *	.25** *	.29***	.24** *
EAP-ECDS TOTAL SCORE		1	.84** *	.86** *	.72** *	.90** *	.91** *	.89***	.77** *
CD			1	.71** *	.61** *	.74** *	.71** *	.68***	.56** *
SED				1	.54** *	.71** *	.75** *	.75***	.59** *
MD					1	.59** *	.51** *	.49***	.47** *
LEL						1	.81** *	.77***	.68** *
HHS							1	.83***	.65** *
CKP								1	.67** *
ATL									1

NOTE. * $P < .05$. ** $P < .01$. *** $P < .001$.

INFORMATION ABOUT THE FAMILY

A total of 900 families (12.7% from urban and 87.3% from rural areas) participated in the study. About 74.7% of respondents to survey questions were mothers, while 11.8% of the interviewees were fathers, and 9% were other family members.

The mean age of mothers was 31.81 and the mean age of fathers was 35.84. Figure 9.24 shows the distribution of parents' highest education attained. Almost half of the mothers (49.5%) had primary education, 30.3% had lower secondary education and 8.8% attained upper secondary education. Similarly, almost half of the fathers (48%) had primary education, 23.7% had lower secondary education and 12.5% attained upper secondary education. 48.1% of mothers and 89.9% of the fathers participating in the survey had a job. More than half of the mothers (54.7%) worked in skilled agriculture and fishing, about one fifth of the mothers (20.8%) worked as service or shop sales workers and 10.9% of them worked as associated professionals. Similarly, more than half of the fathers (53.3%) worked in skilled agriculture and fishing, 12.5% worked as plant/machine operators & assemblers and 12% worked

as service or shop sales workers. Details about parents' occupation can be found in Figure 9.25.

Figure 9.24
Highest level of education attained by parents (Vanuatu)

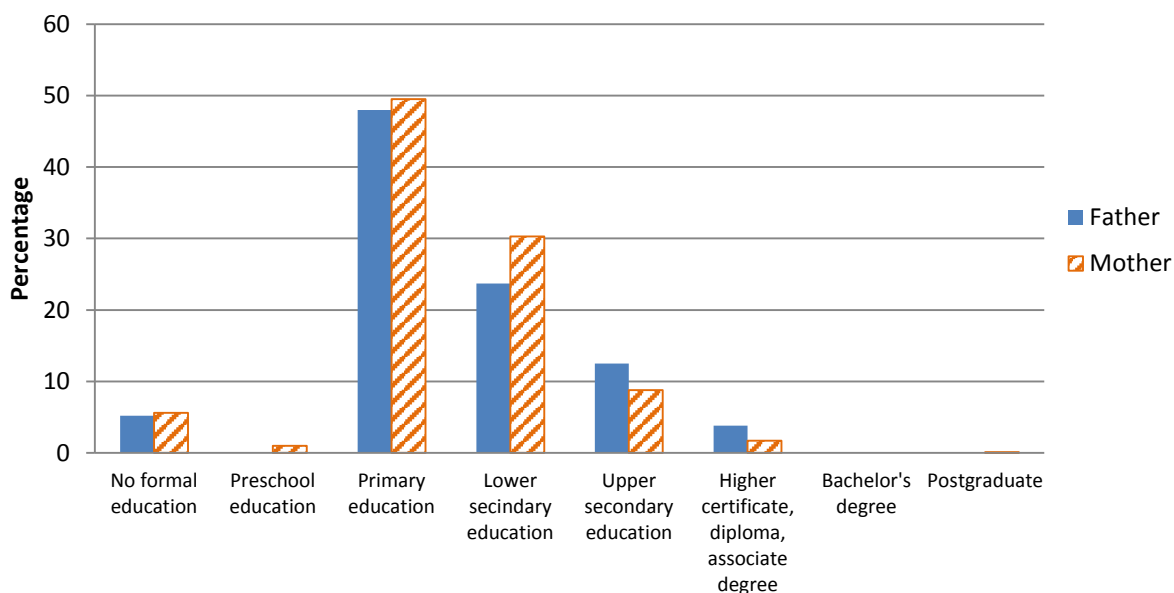
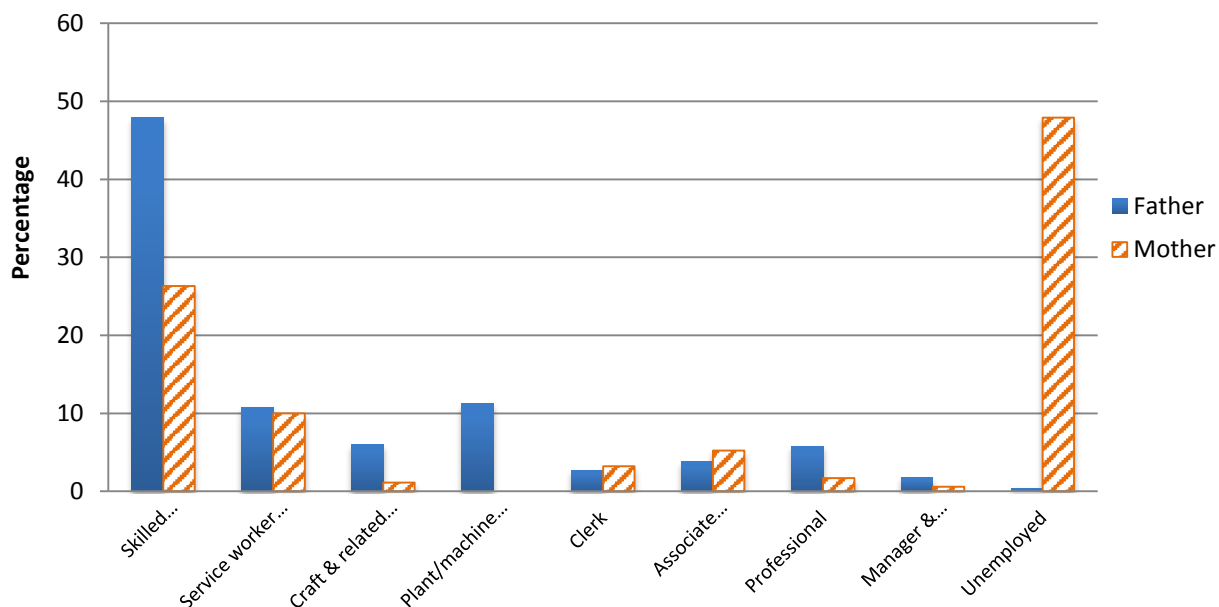


Figure 9.25
Parents' occupations (Vanuatu)



Among the working mothers, only 12.1% were granted paid maternity leave before the target child was born. The mean length of the maternity leave was 6.14 weeks with a range from 1 to 12 weeks. About one fourth (24.4%) of the mothers attended parenting class. More than one third of them attended the class before the child was born (36.3%),

around one fourth (25.9%) attended when the child was above 2 years, and 17.1% attended when the infant was 1 to 6 months old.

Most of the families (89.9%) participating in this survey lived in the dwelling owned by themselves. The majority of the families (81.6%) in the survey had electricity and it was common for the family member to have a mobile phone (88.4%). About one third of the families had radio (38.5%) and television (31.5%). Only 35.4% of the families reported that one or more family members had a watch and 20.8% had a bicycle. It was uncommon for the family to possess a refrigerator (11.7%) and a fixed line telephone (3.4%). It was also unusual for the family members to own a motorcycle or scooter (2%), an animal-drawn cart (1.4%), a car or truck (8%) and a boat with motor (3.6%).

The majority of the families (72.3%) participating in this study owned land that can be used for agriculture and the mean area of the land was 3.77 hectares. More than half of the families (56.5%) owned livestock, herds, other farm animals, or poultry and 59.6% had a bank account.

EARLY LEARNING AND DEVELOPMENT

Around half (45.4%) of the children in the survey attended some type of organized learning or early childhood education programme. The logistic multiple regression indicated that older children were more likely to be enrolled in an early learning programme in Vanuatu (see Table 9.8). The mean length of staying in an early learning programme was 10.34 months (range from zero to 30 months) for those children who had attended any early childhood education programme.

Table 9.8

Predictors of the probability of enrolment in an early learning programme (Vanuatu)

Predictor	β	SE β	Wald's x^2	p	e^β
Child's age	0.45	0.09	26.34	<.001	1.57
Child's gender	-0.13	0.17	0.65	.422	0.87
Urban or Rural	-0.41	0.25	2.56	.110	0.67
Mother's age	-0.01	0.02	0.38	.538	0.99
Mother's education	0.05	0.07	0.54	.464	1.05
Father's age	-0.01	0.02	0.20	.655	0.99
Father's education	-0.03	0.05	0.38	.536	0.97
Constant	-1.28	0.70	3.35	.067	0.28

Among the 375 children who had participated in an organized early learning programme, nearly all of them (98.4%) attended such a programme within the seven days prior to when the survey was conducted. Almost all of them participated in a kindergarten (95.9%), with only a small portion of the children participating in community or

drop-in centres (1%) or other types of early learning programmes (3.1%). The majority the programmes were open five days a week (83.6%). Only 17.1% of the programmes were free of charge.

About half of the children attended such programmes less than 10 hours a week (51.4%) and one third of them attended 10 to 20 hours a week (35.6%). Figure 9.26 and 9.27 show the duration children had stayed in the current early learning programme and the hours they spent per week in that programme. Most of the parents reported that their children “always” (75.8%) or “most of the time” (13.3%) wanted to attend the kindergarten.

Figure 9.26
Duration of attendance in an early learning programme (Vanuatu)

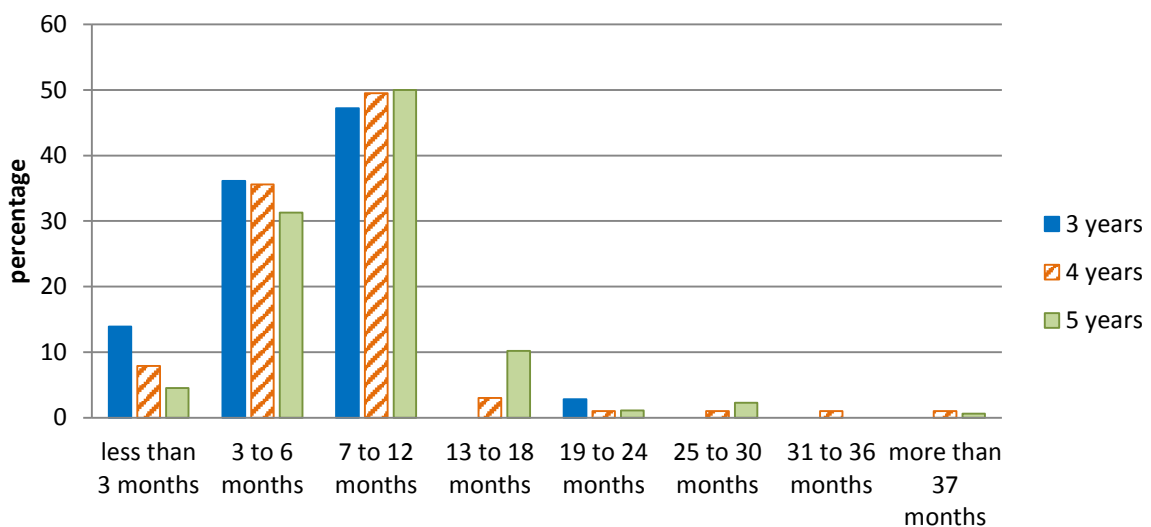
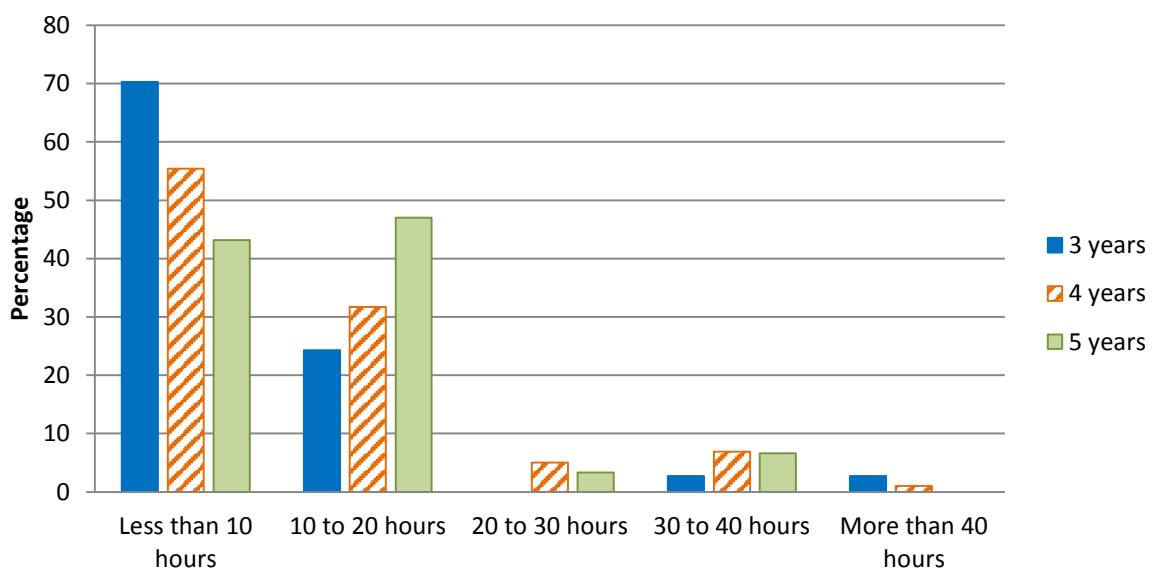


Figure 9.27
Number of hours of programme attendance per week (Vanuatu)



Parents were asked to rate their children's abilities in terms of cognitive, language, motor, and social skills as well as society knowledge. Most parents rated their child as "much above" compared to other children of a similar age in all domains including ability to concentrate on learning new tasks (49.5%), ability to learn new things and solve new problems (35.1%), participation in important community events (29.8%), language skills (71%), ability to run and jump (92.8%), ability to hold chopsticks/spoons/pencils/pens (81.8%), practice healthy and hygienic habits (41.1%), follow safety rules (51%), and display social skills (32.4%).

Parents also evaluated their children's more general social competencies and most parents gave high evaluations to their child in the following two aspects: 62.8% of the parents believed that their child was always able to do the simple tasks assigned independently and 26.9% believed their child sometimes could do so; 77.6% of the parents reported their child always got along well with other children of similar ages and 15.4% thought their child sometimes did so. However, in 2 other aspects, most parents gave relatively low evaluations; 46.6% of the parents believed their child sometimes kicked, bit, or hit other children or adults and 25.7% reported their child always did; 53.9% of the parents recognized that their child sometime get distracted easily and 19.4% said their child always get distracted easily.

Parents were also asked to report the level of early literacy of their child. They reported that a child could identify 9.83 graphemes on average (ranged from 0 to 32). Less than half of the parents (42.6%) believed that their child could read at least four simple and popular words. About half of the parents (51.7%) reported that their child could identify all numbers from 1 to 10.

Finally, parents' involvement in early learning-related activities at home was investigated. Parents were asked to report whether they or any other family members over 15 years engaged in six different early learning-related activities with the child in the past three days. Table 9.9 presents the percentages of mothers', fathers', and other family members' involvement in those six common early learning-related activities at home with the target children. Mothers engaged in these learning activities more frequently than fathers or other family members and about half of mothers engaged in early learning activities with their child at home.

Table 9.9
Adults' involvement in early learning-related activities at home (Vanuatu)

Activities	Mothers (%)	Fathers (%)	Other Family Members (%)
Read books or looked at picture books with your child	47.1	18.6	20.3
Told stories to your child	53.7	23.7	16.3
Sang songs with your child	58.6	20.6	16.3
Took your child outside the home place	54.7	23.4	15.2
Played games with your child	42.8	23.3	27.9
Spent time with your child in naming things or counting things or drawing	54.1	20.6	15.4

We then summed up the scores of mothers', fathers' and other family members' involvement in each type of activity. Although the combined scores could not represent the frequencies of children's participation in such activities, they showed the opportunities that children had to engage in specific activities at home with adults. As shown in Table 9.10 there were significant correlations among children's participation in those activities, which indicated that those children who were likely to engage in one activity with adults were also likely to engage in other activities with adults at home.

Table 9.10
Correlations among involvement in different early learning-related activities at home (Vanuatu)

	i	ii	iii	iv	v	vi
i. Read books or looked at picture books with your child	1	.61 ^{***}	.52 ^{***}	.38 ^{***}	.56 ^{***}	.57 ^{***}
ii. Told stories to your child		1	.71 ^{***}	.53 ^{***}	.58 ^{***}	.58 ^{***}
iii. Sang songs with your child			1	.61 ^{***}	.60 ^{***}	.60 ^{***}
iv. Took your child outside the home place				1	.60 ^{***}	.51 ^{***}
v. Played games with your child					1	.65 ^{***}
vi. Spent time with your child in naming things or counting things or drawing						1

Note. * $p < .05$. ** $p < .01$. *** $p < .001$

To better understand mothers', fathers', and other family members' involvement in early learning-related activities at home, we created separate variables to represent mothers', fathers', and other family members' involvement in these six types of activities by summing up the scores each of the parties get in the six items mentioned above. Paired t-test showed that mothers ($M = 3.98$, $SD = 2.13$) were involved the most in early learning-related activities at home compared with fathers ($M = 1.66$, $SD = 2.14$) ($t(828) = 22.61$, $p < .001$), and other family members ($M = 1.37$, $SD = 1.93$) ($t(828) = 21.86$, $p < .001$). Mothers had more such activities with children at home than fathers ($t(828) = 2.84$, $p < .01$).

Separate multiple regression analyses were conducted and as Table 9.11 shows, urban children were more likely to have such activities with their parents at home. Mothers were more likely to have these activities with young children. Better educated fathers and those in urban areas had more engagement than other fathers. Other family members were more likely to have such activities with older children and those in rural areas were more likely to be engaged in these activities at home with children than those in urban areas.

Table 9.11
Predictors of family involvement in early learning-related activities at home (Vanuatu)

Variables	Mother				Father				Other			
	B	SE B	β	p	B	SE B	β	p	B	SE B	β	p
Constant	5.13	0.61		<.001	2.52	0.64		<.001	0.36	0.56		.521
Child's age	-0.29	0.08	-.14	.001	-0.14	0.09	-.06	0.113	0.17	0.08	.09	.031
Child's gender	0.08	0.16	.46	.643	-0.07	0.17	-.02	.690	-0.07	0.15	-.02	.662
Urban or Rural	0.43	0.24	.07	.08	0.56	0.26	.09	.030	-0.49	0.23	-.09	.031
Mother's age	-0.02	0.02	-.07	.215	-0.03	0.02	-.09	0.132	0.02	0.02	.06	0.267
Mother's education	-0.03	0.06	-.02	.653	0.03	0.07	.02	.712	0.07	0.06	.05	.275
Father's age	0.02	0.02	.09	.114	0.00	0.02	.01	.933	-0.02	0.01	.08	.155
Father's education	0.01	0.05	.01	.878	0.11	0.05	.09	.039	0.07	0.05	-.07	.124
R^2	.03				.03				.02			
F	2.66*				2.90**				2.10*			

Note. * $p < .05$. ** $p < .01$. *** $p < .01$

CHILD'S HEALTH AND HABITS

Almost all target children (95.2%) in this study had all vaccinations, but less than one third of the families (29%) took the child to the clinic or hospital for a regular health check-up. The majority of the target children did not have their vision, hearing or speech checked by professionals. Only one fifth of the target children (19.9%) had their vision checked by professionals, 23.2% of the children had their hearing checked by professionals and only 7.9% had their speech checked by professionals. A total score of families' health facilitation practices was created by summing up the scores of the above-mentioned items. The multiple regression analyses did not detect any significant predictors for families' health facilitation practices in Vanuatu and the whole model was also not significant (see Table 9.12).

Table 9.12
Predictors of health facilitation practices (Vanuatu)

Variables	B	SE B	β	<i>p</i>
Constant	1.28	0.37		.001
Child's age	0.00	0.05	.00	.948
Child's gender	0.13	0.10	.06	.161
Urban or Rural	-0.22	0.16	-.06	.149
Mother's age	0.01	0.01	.03	.653
Mother's education	-0.01	0.04	-.01	.744
Father's age	0.01	0.01	.07	.251
Father's education	-0.04	0.03	-.06	.216
<i>R</i> ²				.02
<i>F</i>				1.63

Note. **p* < .05. ***p* < .01. ****p* < .001

The percentage of children who had the habit of brushing teeth every day was 61.4%. Among them, 28.3% did this at both morning and night, 71.1% brushed teeth only in the morning, and 0.6% only did so at night. In addition, parents were asked whether their child had three basic health-related habits. Without adults' directions, one third of the children (33.4%) were considered as being able to always wash their hands after using the toilet and 33.7% would do so sometimes. Additionally 33.7% of the children would always wash their hands before meals without adults' directions and 35.3% would do so sometimes. As to eating vegetables, 44.7% of the parents reported their child would always do so without adults' directions and 22% would do so sometimes. Similarly, a total score of children's health-related habits were created by summing up the scores of these four items. A multiple regression was conducted on the score of children's habits formation with the child age, gender, urban/rural residence, mothers' age, and education, as well as fathers' age and education as predictors. As Table 9.13 shows, older children, girls, and those of less-educated parents were inclined to show better health and hygiene habits in Vanuatu.

Table 9.13
Predictors of children's health and hygiene habits (Vanuatu)

Variables	B	SE B	β	<i>p</i>
Constant	6.24	1.00		<.001
Child's age	0.54	0.14	.16	<.001
Child's gender	-0.87	0.27	-.13	.001
Urban or Rural	0.47	0.42	.05	.266
Mother's age	0.03	0.03	.07	.232
Mother's education	-0.21	0.10	-.09	.038
Father's age	0.02	0.03	.04	.471
Father's education	-0.24	0.08	-.12	.003
<i>R</i> ²	.09			
<i>F</i>	8.44 ^{***}			

Note. **p* < .05. ***p* < .01. ****p* < .001

About 11.7% of the parents reported medical conditions or chronic illness of their children, and 9% reported that their child had allergies. 9.2% of the children had stayed in hospital for more than 3 days, and the reasons varied with the children. We further asked parents to report whether their child had some specific health problems in the past month. The relatively common health problems were common cold or influenza-like illness, snoring, persistent cough and diarrhoea. Around half of the target children (49.3%) suffered from cold or influenza-like illness, more than one third suffered from persistent coughing (36.8%), 27.8% suffered from snoring and 23.7% suffered from diarrhoea in the past month. 7.8% reported to have wheezing attacks, 1.4% had seizures, 2.2% had dizziness, 8.2% had joints problems, 10.9% had vomiting, 7.7% had constipation or hard stools for 2 weeks, 10.6% had skin rash with red swelling, 1% had numbness or weakness in limbs, 13.2% had trouble with eyes, 16.9% had trouble with nose and sinuses, 10.2% had trouble with ears and 8% had trouble with teeth, mouth or gums. A total score representing children's basic health situation was created by summing up the scores in these items. A higher score represented more health problems. The multiple regression analyses showed that younger children, those living in urban areas, and of younger parents were more likely to have reported health problems.

Table 9.14
Predictors of children's health situation (Vanuatu)

Variables	B	SE B	β	<i>p</i>
Constant	3.28	0.66		<.001
Child's age	-0.22	0.09	-.12	.009
Child's gender	0.27	0.17	.07	.115
Urban or Rural	0.80	0.27	.13	.003
Mother's age	-0.05	0.02	-.14	.017
Mother's education	-0.05	0.07	-.03	.505
Father's age	0.04	0.02	.14	.019
Father's education	-0.06	0.05	-.05	.239
<i>R</i> ²	.04			
<i>F</i>	3.72**			

Note. **p* < .05. ***p* < .01. ****p* < .001

SUMMARY AND DISCUSSION OF FINDINGS

EAP-ECDS

1. There were significant developmental differences in the EAP-ECDS. Older children performed better than younger children in all the following seven domains of the Scales: Cognitive Development; Socio-emotional Development; Motor Development; Language and Emergent Literacy; Health Hygiene and Safety; Cultural Knowledge and Participation; and Approaches to Learning. This finding is not unexpected as the EAP-ECDS is a developmental scale with adequate validity and reliability.
2. There were significant gender differences favouring girls on the EAP-ECDS in the following domains: Socio-emotional Development, Language and Emergent Literacy; Health, Hygiene, and Safety; Cultural Knowledge and Participation; and Approaches to Learning. The only domains in which girls did not do better than boys were Cognitive Development and Motor Development.
3. There were significant Urbanicity differences on the Cognitive Development and Motor Development domains. Rural children did better than urban children on these domains.
4. Less than half (45.4%) of the participating children attended some form of early education programme. The GER for preschool children was 59 in 2011 and analyses indicated that older children were more likely to attend an early learning programme than younger children. Children who attended an early learning programme scored 6 percentage points on the EAP-ECDS than those who did not.
5. More than half of caregivers reported having involvement in early learning-related activities at home. Mothers were more likely to be

engaged in such activities with younger children. Other family members were more likely to be engaged in these activities with older children and better educated fathers were inclined to have more engagement than other fathers. Other family members in rural areas were more likely to be engaged in these activities at home with children than those in urban areas.

CHILD'S HEALTH AND HABITS

6. About 95.2% of the children in the study had had all their vaccinations. Analyses showed that there were no significant predictors for families' health facilitation practices. Parents reported on basic health-related habits such as brushing teeth every day, always washing hands after using the toilet and before meals without adults' directions and eating vegetables without adults' directions. Regression results indicated that older children, girls, and those with less educated parents tended to have better health and hygiene habits than other children.
7. The multiple regression analyses also showed that younger children, those living in urban areas, and of younger parents were more likely to have reported health problems. It is not clear whether urban children suffer poorer health or whether urban parents are more aware of children health issues and are more likely to report health concerns.

CHAPTER 10: DISCUSSION AND RECOMMENDATIONS

The main goal of Phase III of this project was to evaluate the reliability and validity of the EAP-ECDS, a measurement tool to assess the holistic development of children, ranging in age from three to five years, from the East-Asia and Pacific region. Specific objectives included (i) further developing assessment materials, (ii) providing technical support and overseeing the implementation of the test validation process in six countries; and (iii) providing recommendations for next steps based on the findings. Objectives (i) and (ii) have been successfully attained. With the support of in-country teams, test materials, an instructional manual and an administration manual for assessor training have been developed. It should be noted that the materials are available in six languages and are contextually relevant. The research team has overseen the implementation of the study providing both in-country and e-mail support and there is an unprecedented data set on early childhood development in the region. While our main objective was to further develop and validate the EAP-ECDS, we took the opportunity to collect additional data on support for children's early learning and development and children's health and habits. While these data have not been fully analysed, we provide some preliminary findings. All countries collected anthropometric measurements of children who were given the EAP-ECDS. Measurements of height, weight and skin-fold thickness were taken to determine body fat composition. Two countries also assessed children for the presence of dental caries. The anthropometric and dental data are not reported.

SAMPLE CHARACTERISTICS

As shown in Table 10.1, the six countries in this study vary greatly in the size of their populations from 258,000 to 1.35 billion, in their infant mortality rates, and in their gross enrolment ratios. Hence, similar patterns of findings are noteworthy.

Table 10.1
Demographic and Human Development Indicators in the six countries studied

	Cambodia	China	Mongolia	PNG²	Timor-Leste	Vanuatu
Country population 2013 ('000)	14656	1359368	2888	7327	1224	258
IMR 2010-2015	53	20	31	44	56	24
U5MR 2010-2015	69	24	37	58	76	29
Age Group	3 to 5	4 to 6	3 to 5	6 to 6	4 to 5	3 to 5
Official Primary School Entry Age	6	7	6	7	6	6
Number in pre-primary 2011 ('000)	115	29767	122	1166		11
Total GER in PPE (%)	13	61	82			59
Total GER in PPE and other ECCE³	26	61	106			59
Total net entrants to P1 with ECCE	23	92	69			70

² Papua New Guinea

³ Early Childhood Care and Education

Table 10.2
Sample for EAP-ECDS validation by country, age and gender

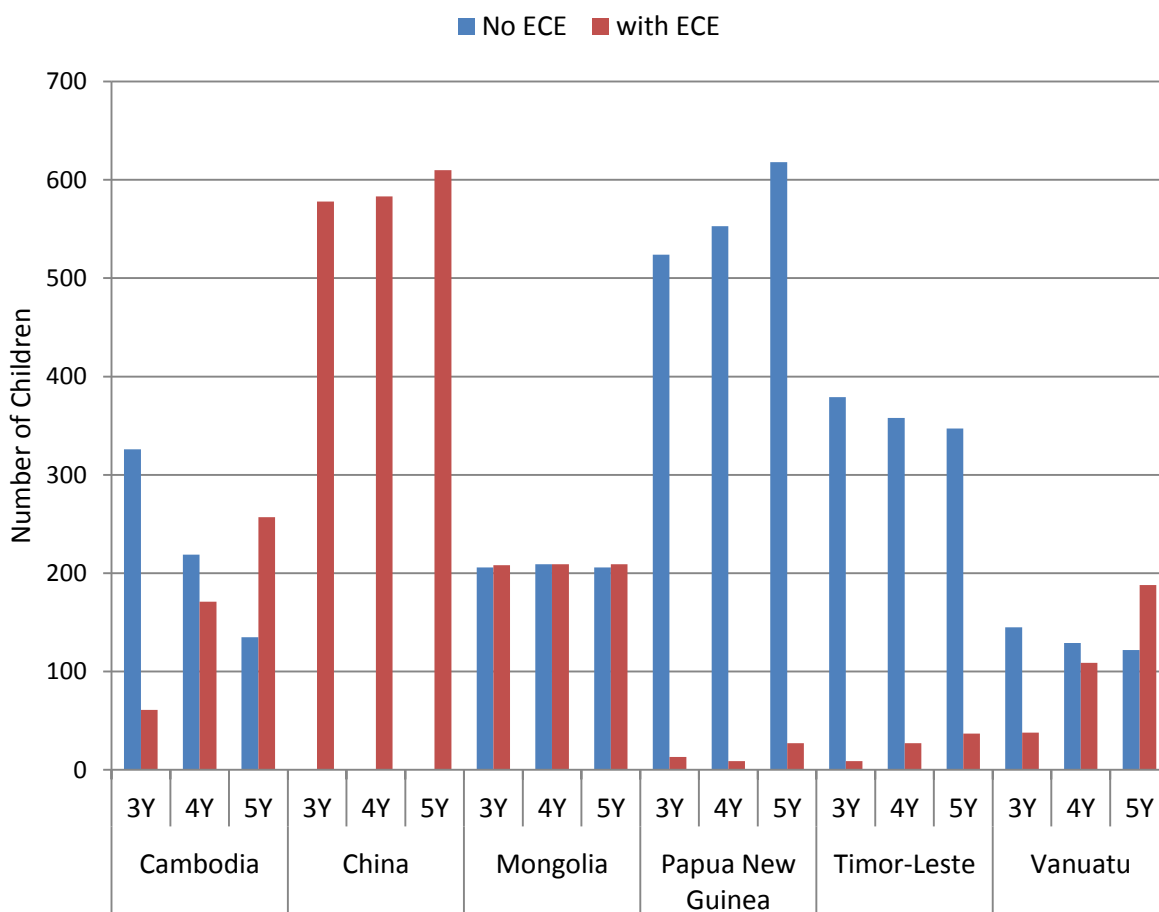
Country	Age	Rural		Urban		Total
		Girls	Boys	Girls	Boys	
China	3Y	88	85	110	104	387
	4Y	89	89	105	107	390
	5Y	88	92	106	106	392
Cambodia	3Y	60	59	214	188	521
	4Y	51	58	214	197	520
	5Y	67	47	199	238	551
Mongolia	3Y	103	102	104	105	414
	4Y	104	105	104	105	418
	5Y	104	104	105	102	415
Papua New Guinea	3Y	173	170	99	95	537
	4Y	181	188	114	79	562
	5Y	226	213	98	108	645
Timor-Leste	3Y	96	97	98	108	399
	4Y	100	100	101	94	395
	5Y	101	96	99	98	394
Vanuatu	3Y	69	93	6	8	176
	4Y	95	102	21	12	230
	5Y	127	127	17	17	288
Total		1922	1927	1914	1871	7634

Table 10.2 provides information about the validation sample. Data from 7634 children between three and five years were used to assess the reliability and validity of the EAP-ECDS. While the gender composition of the sample within countries was relatively balanced, the samples were neither balanced in terms of urbanicity nor representative of the location of residence of the population. For example, the sample from China included 342 children from rural areas and 1250 children from urban areas, while it is estimated that only 52% of China's population is urban. On the other hand, about 25% of Vanuatu's population is urban, but only 81 of 694 children in our sample from the country are from urban areas. The point is that the samples may not be totally representative of variations in the country, however every attempt was made to get as broad a sample as possible. It should be noted that in some countries, children below three years and above five years were also given the EAP-ECDS but the data from these assessments were not included in the validation exercise.

As noted earlier, countries in the region vary greatly in their GERs for pre-primary education. Further, they differ on the official ages for pre-primary education. Figure 10.1 shows the number of children group in our validation sample ($n = 7634$) that had preschool experience. A small percent of children in our samples from Papua New Guinea and Timor-

Leste had Early Childhood Education (ECE) while all children from our Chinese sample had ECE.

Figure 10.1
Number of children with and without Early Childhood Education (ECE)
across countries



RELIABILITY AND VALIDITY OF THE EAP-ECDS

As noted earlier, a regional tool was created and items were adapted by countries so that they were contextually relevant. Appendix 3 provides a summary of the adaptations. The EAP-ECDS was developed in English but translated into the local language for administration. Back translations of the versions were used to evaluate the equivalence of the English and local language versions. Results indicate that the EAP-ECDS is a reliable tool. Coefficient alpha, an indicator of internal consistency, was high for all domains in all countries. Table 10.3 provides the alpha coefficients for the scales and sub-scales of the EAP-ECDS.

Table 10.3
Internal consistency of the EAP-ECDS total and domain scores across countries

	Cambodia	China	Mongolia	Papua New Guinea	Timor- Leste	Vanuatu
Cognitive development	0.94	0.94	0.93	0.91	0.88	0.94
Socio-Emotional Development	0.93	0.91	0.92	0.93	0.89	0.94
Motor Development	0.78	0.74	0.78	0.86	0.8	0.87
Language and Emergent Literacy	0.94	0.93	0.92	0.93	0.89	0.95
Health, Hygiene, and Safety	0.91	0.84	0.87	0.93	0.87	0.94
Cultural Knowledge & Participation	0.91	0.89	0.91	0.92	0.89	0.94
Approaches to Learning	0.92	0.88	0.88	0.88	0.87	0.88

As part of an item analysis, we looked at the test information curves and the test information function for each domain. Results suggest that the items reflect varying latent ability levels as desired. We also considered the easiest and hardest items in the different domains in different countries and there were considerable similarities across countries.

Table 10.4
Comparability of easy and difficult items across countries

The following items featured in the list of the three easiest items and three hardest items in at least 3 of the 6 countries.

Item No.	Item Description
Cognitive Development	
<i>Easiest Items</i>	
9.2	Sat on the chair (5 countries)
9.1	Brought the block/toy to the assessor (5 countries)
2.1	Comparing quantities (4 countries)
<i>Hardest Items</i>	
21.3	Named at least 7 to 8 geometric shapes (4 countries)
19.3	Could read an analog clock showing 3:30 (3 countries)
Socio-Emotional Development	
<i>Easiest Items</i>	
23.1	Gave mother's given and family names (6 countries)
23.2	Gave father's given and family names (6 countries)
24.1	Gave names of 1-2 friends that child played with (3 countries)
<i>Hardest Items</i>	
34.6	Gave another reason for why queuing up is appropriate (4 countries)
29.4	Gave 1 more answer to what makes the child angry (3 countries)
Motor Development	
<i>Easiest items</i>	
43.1	Strung large bead (6 countries)
37.1	Walked forward on a straight line (6 countries)
43.2	Strung small beads (3 countries)
<i>Hardest items</i>	
40	Hit the target on 3 out of 3 attempts (6 countries)
42.2	Following instructions to fold a piece of paper (6 countries)
41	Caught ball three times (3 countries)
Language and Emergent Literacy Development	
<i>Easiest items</i>	
44.1	Identified action of combing hair (5 countries)
46.4	Identified action kicking a ball (5 countries)
44.2	Identified action of washing face (3 countries)
<i>Hardest items</i>	
52.3	Named 8 to 10 letters/characters (4 countries)
52.4	Named 11 to 13 letters/characters (4 countries)
56	Wrote part of or full name (3 countries)

Health, Hygiene and Safety	
<i>Easiest items</i>	
66.3	Identified teeth (5 countries)
66.1	Identified eyes (4 countries)
60.1	Showed how to clean his/her face and hands (4 countries)
<i>Hardest items</i>	
66.6	Described the function of an elbow (5 countries)
66.5	Identified the elbow (3 countries)
64.2	Gave an acceptable reason for not following a stranger (3 countries)
Cultural Knowledge and Participation	
<i>Easiest items</i>	
77	Identified national flag of his/her own country (6 countries)
70.1	Named 1 item used at night for sleeping (3 countries)
71.1	Named 1 natural object in the sky (3 countries)
<i>Hardest items</i>	
74.3	Provided another relevant detail of the celebration (6 countries)
74.2	Provided one more relevant detail of the celebration (4 countries)
73.2	Named 1 more festival (4 countries)
Approaches to Learning	
<i>Easiest item</i>	
81	Showed ability to delay gratification (6 countries)
<i>Hardest items</i>	
80.5	Followed instructions about tapping a pencil (assessor taps once, child should tap twice) (4 countries)
79.2	Stated a skill he/she could do well (4 countries)

Cognitive Development. Items on following the first and second steps of a multiple step instruction (item 9.1 and item 9.2) were among the three easiest items in all countries except China. Comparing quantities, i.e., stating that 9 fruits were more than 3 fruits (item 2.1) was also one of the three easiest items in all countries except Papua New Guinea. There was less commonality across countries in the three most difficult items in the Cognitive Development domain. However, naming 7 to 8 shapes (item 21.3) was relatively difficult for children in Cambodia, Mongolia, Papua New Guinea, and Timor-Leste. Further, reading the analog clock showing 3:30 was among the 3 most difficult items for children in Cambodia, China, and Vanuatu.

Socio-emotional development. Stating parents' given and family names (item 23) were among the three easiest items for all six countries. Further, for children in Papua New Guinea, Timor-Leste, and Vanuatu, providing the names of playmates (item 24.1) was among the three easiest items. On the other hand, items that required children to explain

reasons for certain behaviours (items 34.3 and 4.6) were difficult for children in most of the countries. It was also difficult for children in Cambodia, China, and Mongolia to give more than one answer on what makes them angry (item 29.4). There were no commonalities in the three items determined to be the most difficult in Papua New Guinea and Timor-Leste and other countries.

Motor Development. Walked forward on a straight line (item 37.1) and strung a larger bead (item 43.1) were included in the three easiest items in all six countries. On the other hand, an item requiring children to throw a ball and hit the target (item 40) were among the three most difficult items in all six countries. Following instructions to fold a piece of paper (item 42) was also difficult for children in Papua New Guinea, Timor-Leste, and Vanuatu.

Language and Emergent Literacy. Items related to identifying familiar actions (item 44.1 and item 46.4) were among the three easiest items in all six countries. The most difficult items in the Language and Emergent Literacy domain were related to early literacy. In particular, identifying more than 8 letters (items 52.3 and 52.4) were included in the most difficult items in all countries except for China and Timor-Leste. Items requiring children to write part of or their full name (items 56.2 and 56.3) were among the three most difficult items in Cambodia, China, and Papua New Guinea.

Health, Hygiene and Safety. Identifying teeth (item 66.3) eyes (item 66.1) and showing how to clean the face and hands (item 60.1) were easy for children in almost all countries. Naming (item 66.5) and describing the functions of an elbow (item 66.6) were among the top 3 most difficult items for all countries except Vanuatu, reflecting children's (lack of) knowledge about the human body. Further, in three countries, children found it difficult to give an acceptable reason for not following a stranger.

Cultural Knowledge and Participation. Identifying the national flag (item 77) was one of the easiest items in all six countries. Naming one item used at night for sleeping (item 70.1) and one natural object in the sky (item 71.1) were among the three easiest items in half of the countries. On the other hand, providing more than one detail of celebration (items 74.2 and 74.3) was difficult for children in all six countries. Naming more than one festival (item 73.2) was also among the three most difficult items for children in all countries except for China and Mongolia.

Approaches to Learning. The delay of gratification task (item 81) was the easiest one for children in all six countries. For this task, the child was required not to touch an attractive object for one minute. Showing persistence (item 82) was easy for children in Cambodia and Papua, but not for others. In most countries, children found it difficult to name a skill that he/she could do well (item 79). Children in all four countries had difficulty in following instructions in the tapping task (item 80.5). It should be noted that several items in the Approaches to Learning Domain

were scored based on the assessors' observations during the assessment process, and the scoring of these items is more subjective than the scoring of items in other domains.

Validity

Content validity was achieved through soliciting the advice of experts in the region on earlier versions of the scale. Suggestions were discussed by the team and items were modified or retained accordingly. As noted earlier, in all countries, older children did better than younger children indicating that the EAP-ECDS is clearly a developmental scale. A correlational analysis was performed to assess the consistency between children's performance and parents' assessment of children's development. The purpose of this analysis was to examine the comparability of parent report on children's development and the results from direct assessment of children on the EAP-ECDS. Parents were asked to rate their children on a 5-point rating scale (see below) and questions were mapped to the seven domains of the scale.

Table 10.5
Items for parents' rating of children's competence

Domain	Skill
Cognitive Development	Ability to learn new things and solve new problems
Socio-Emotional Development	Display social skills, such as showing consideration for others and ability to manage emotions
Motor Development	Ability to run and jump
	Ability to hold chopsticks, spoons/pencils/pens
Language and Emergent Literacy	Language Skills
Health, Hygiene, and Safety	Practice healthy and hygienic habits (e.g. washing hands independently)
	Follow safety rules (e.g., not touching hot/dangerous things)
Cultural Knowledge & Participation	Participate in important community events (including festivals)
Approaches to Learning	Ability to concentrate on learning new tasks (exclude watching TV)

48. Think of your child's behavior and characteristics. Compared to other children of your child's age, please rate your child on the following 9 items using the scale below:

	Much below	Slightly Below	About Average	Slightly Above	Much Above
a. Ability to concentrate on learning new tasks (exclude watching TV)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Ability to learn new things and solve new problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Participation in important community events (including festivals)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Language skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Ability to run and jump	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Ability to hold chopsticks / spoons / pencils / pens	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Practice healthy and hygienic habits (e.g. washing hands independently)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Follow safety rules (e.g. not touching hot / dangerous things)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Display social skills, such as show consideration of others and ability to manage emotions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

As shown in Table 10.6 correlations between EAP-ECDS scores and parents rating were statistically significant. However, the strength of the relationship between parents' rating and EAP-ECDS varied across countries and domains.

Table 10.6
Correlations between parents' rating and EAP-ECDS domain and total scores

	EAP-ECDS Total	CD	SED	MD	LEL	HHS	CKP	ATL
Cambodia	.46***	.40***	.37***	.36***	.47***	.42***	.45***	.22***
China	.26***	.29***	.20***	.19***	.29***	.18***	.19***	.17***
Mongolia	.46***	.48***	.42***	.20***	.47***	.39***	.41***	.39***
PNG	.23***	.21***	.21***	.14***	.23***	.17***	.22***	.17***
Timor	.43***	.37***	.29***	.34***	.39***	.32***	.32***	.37***
Vanuatu	.30***	.29***	.25***	.16***	.28***	.25***	.29***	.24***

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

CD Cognitive Development; SED: Socio-Emotional Development; MD: Motor Development; LEL: Language and Emergent Literacy; HHS: Health, Hygiene and Safety; CKP: Cultural Knowledge and Participation; ATL: Approaches to Learning

COMMONALITIES AND VARIATIONS ACROSS COUNTRIES ON THE EAP-ECDS

The purpose of this study was to assess the reliability and validity of the EAP-ECDS and not to make cross-country comparisons of early childhood development. However, the data do permit us to make comparisons across countries. The three figures presented below illustrate age, gender and urbanicity differences on the EAP-ECDS total score. They summarise information presented in the country chapters.

As shown in Figure 10.2, older children performed better than younger children in all countries. Children from China had the highest scores, followed by children from Cambodia and Mongolia who performed at a similar level. Children from Vanuatu performed at an intermediate level, followed by children from Papua New Guinea and Timor-Leste. Among the six countries, China has the lowest under-five mortality rate and Papua New Guinea and Timor-Leste have the highest rates. Hence, there is some association between country-level statistics and children's performance. However, these results have to be interpreted with caution because of the sampling issues mentioned earlier. Girls tended to do better than boys in all countries with the exception of Papua New Guinea. The reason for this finding needs to be explored. Urban children did better than children from rural families in Cambodia, China, Mongolia and Timor-Leste but the opposite was true for the two countries in the Pacific, Papua New Guinea and Vanuatu. This may have something to do with the nature of urban and rural communities in the Pacific.

Figure 10.2
Age Difference in Total EAP-ECDS score across countries

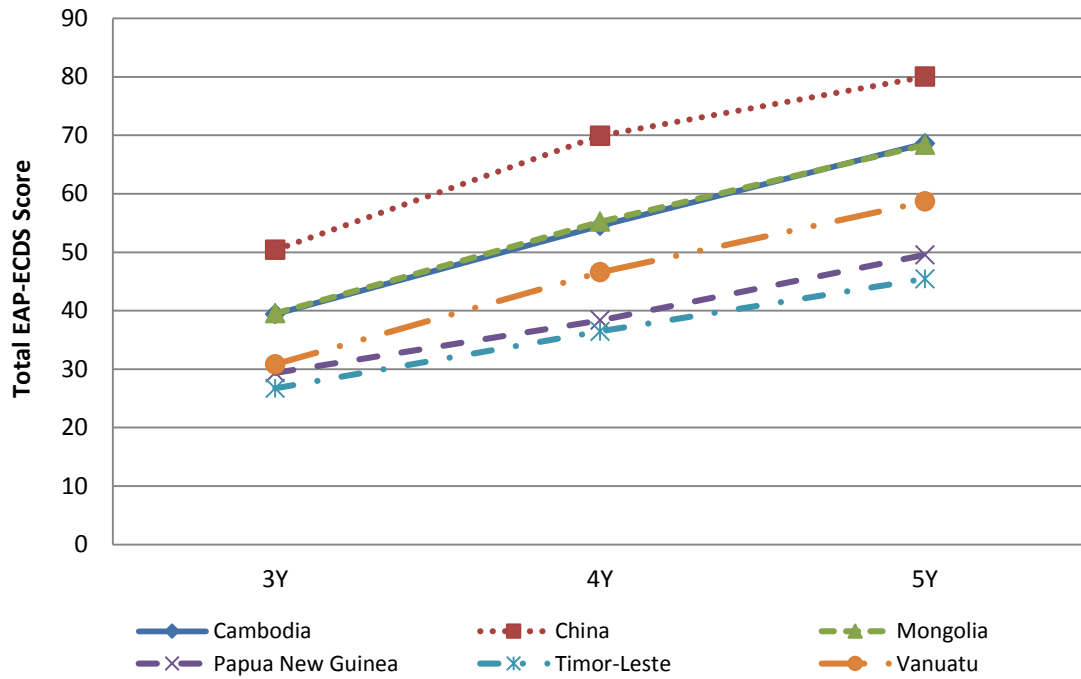


Figure 10.3
Gender Difference in Total EAP-ECDS score across countries

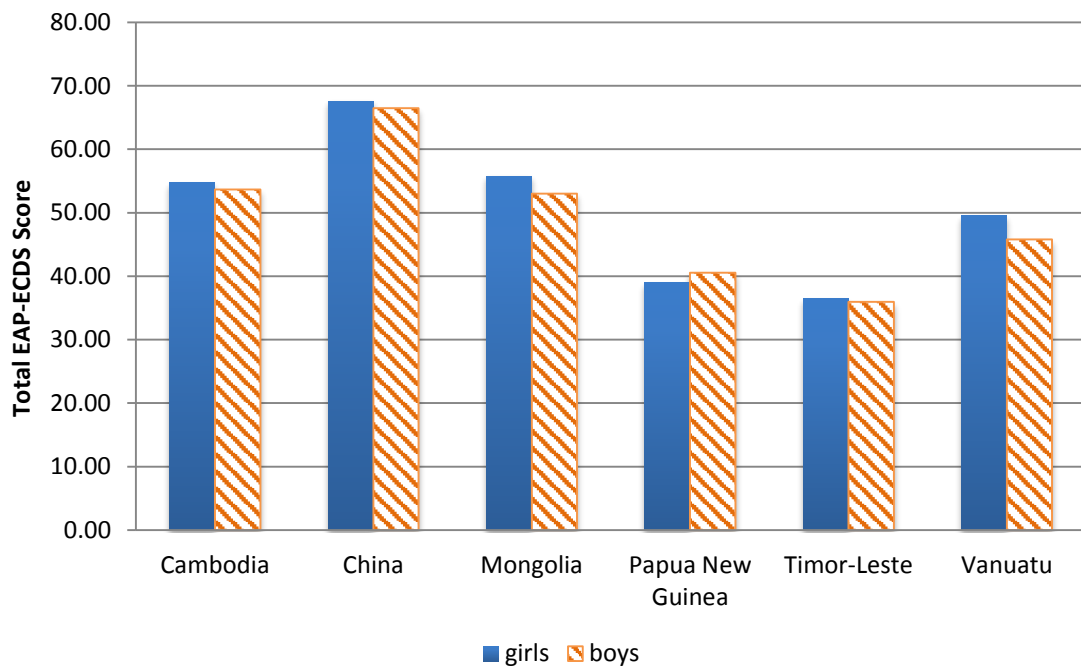
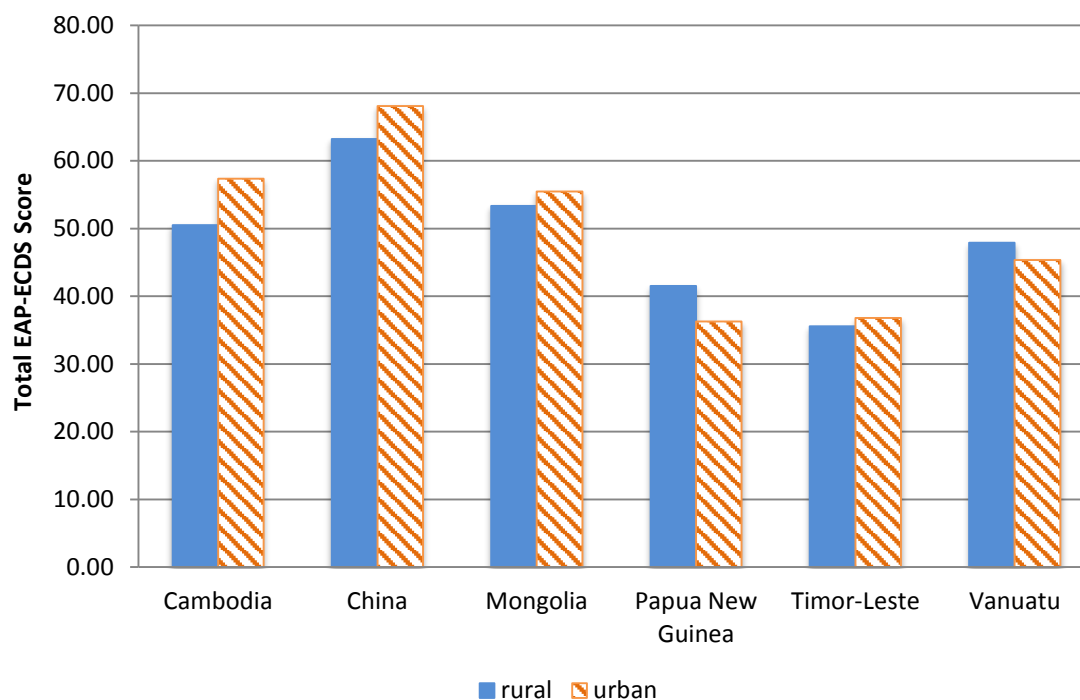


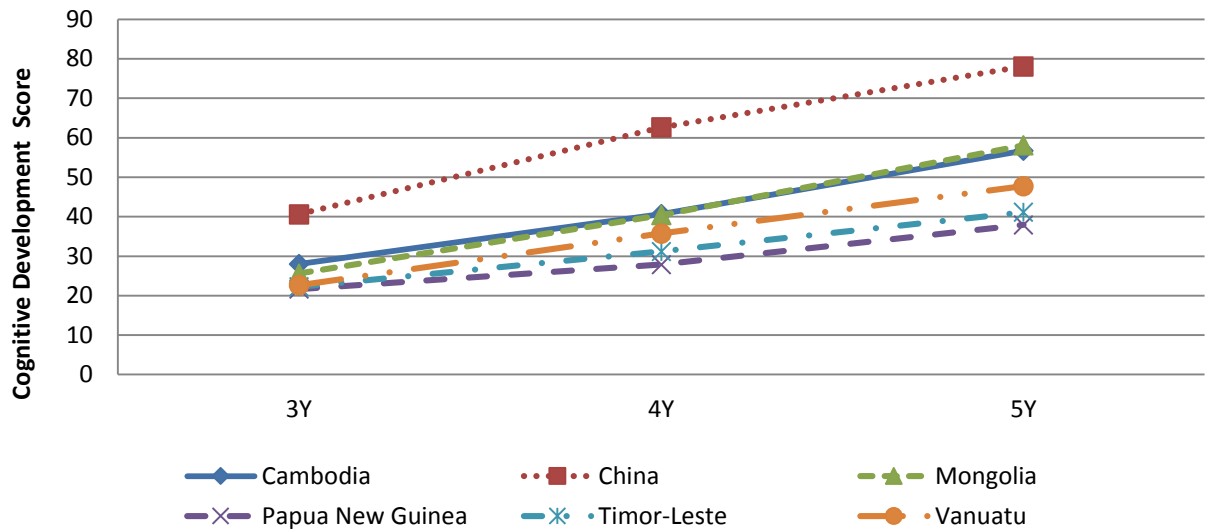
Figure 10.4
Urban-rural difference across countries in the EAP-ECDS scores



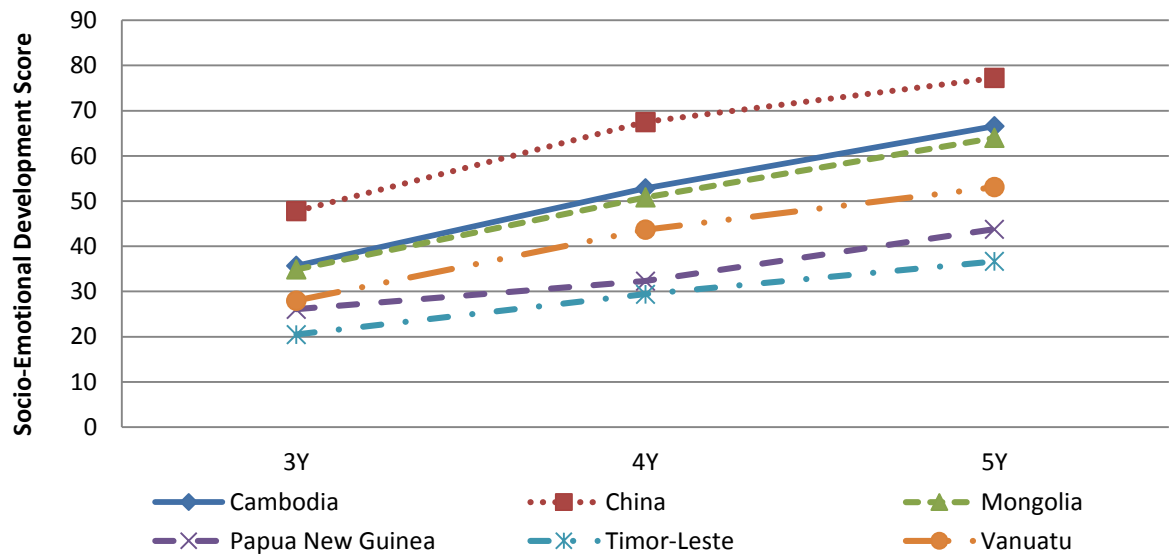
The following figures illustrate age differences in the different countries across domains. With the exception of the motor domain, Chinese children tended to perform the best in all domains. However, as noted earlier, all children in China were enrolled in early childhood education programmes. Children in Timor-Leste tended to obtain the lowest scores on all domains. As noted earlier, items used to evaluate Approaches to Learning relied on ratings by the assessors, and were therefore more subjective than items from other domains.

Figure 10.5
Age differences across Domains and Countries

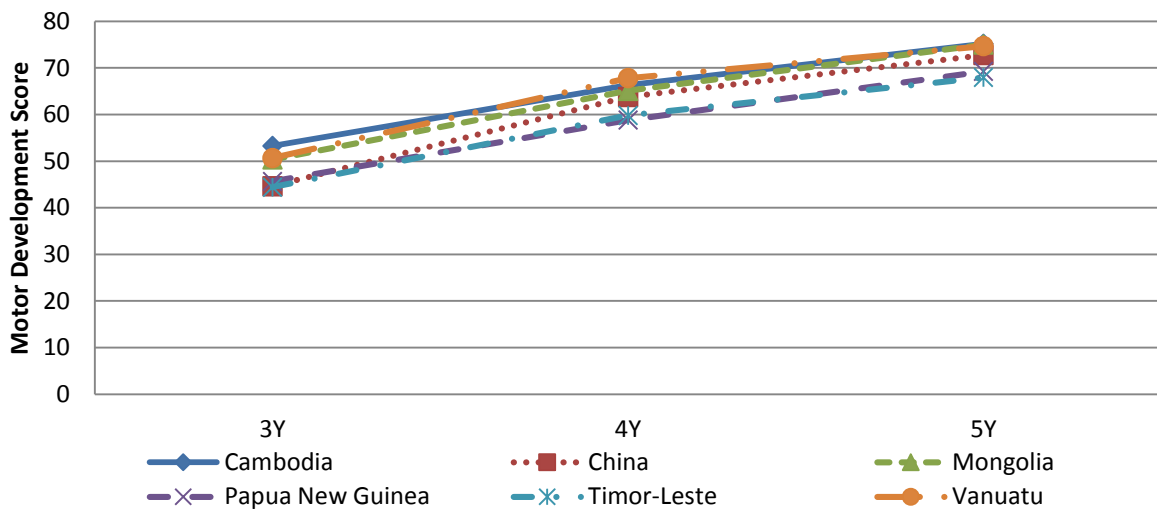
Cognitive Development



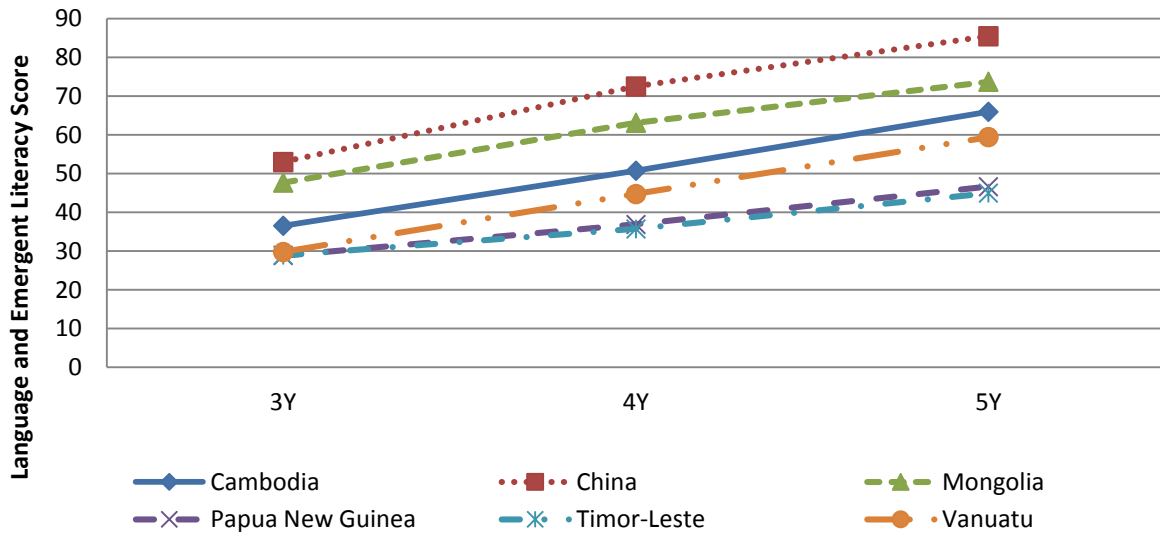
Socio-emotional Development



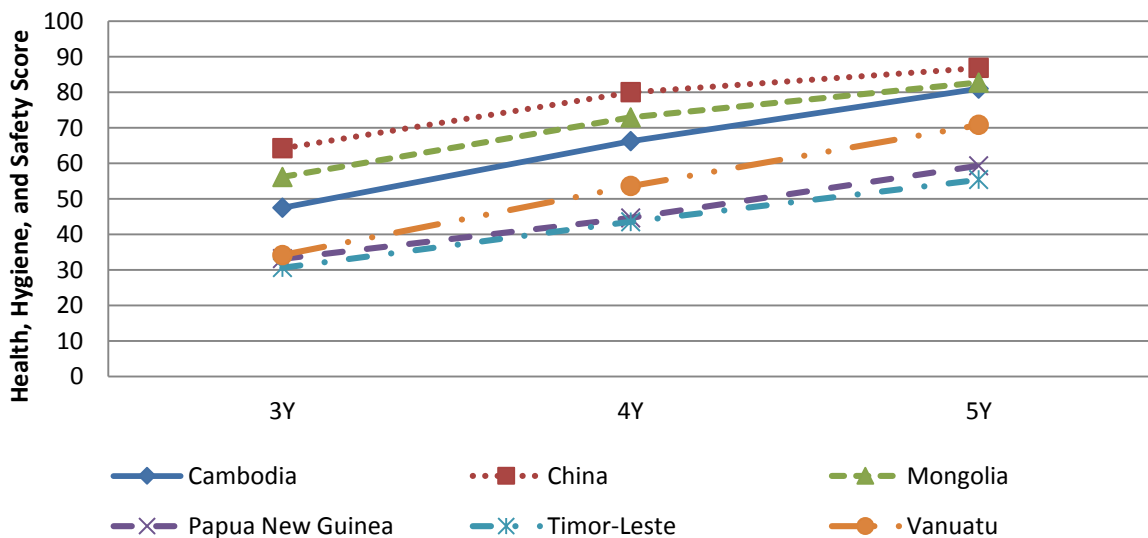
Motor Development



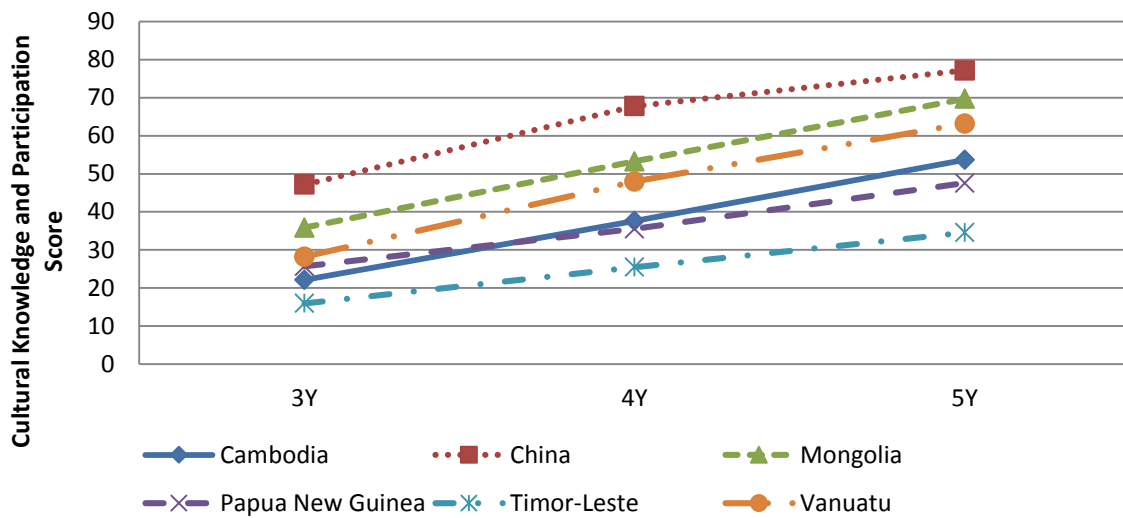
Language and Emergent Literacy



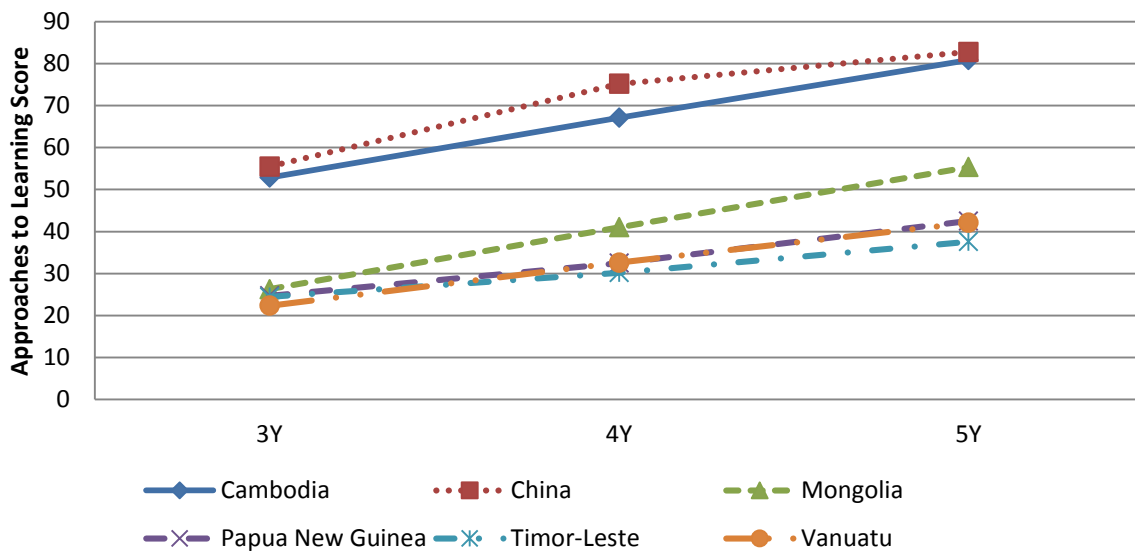
Health, Hygiene, and Safety



Cultural Knowledge and Participation



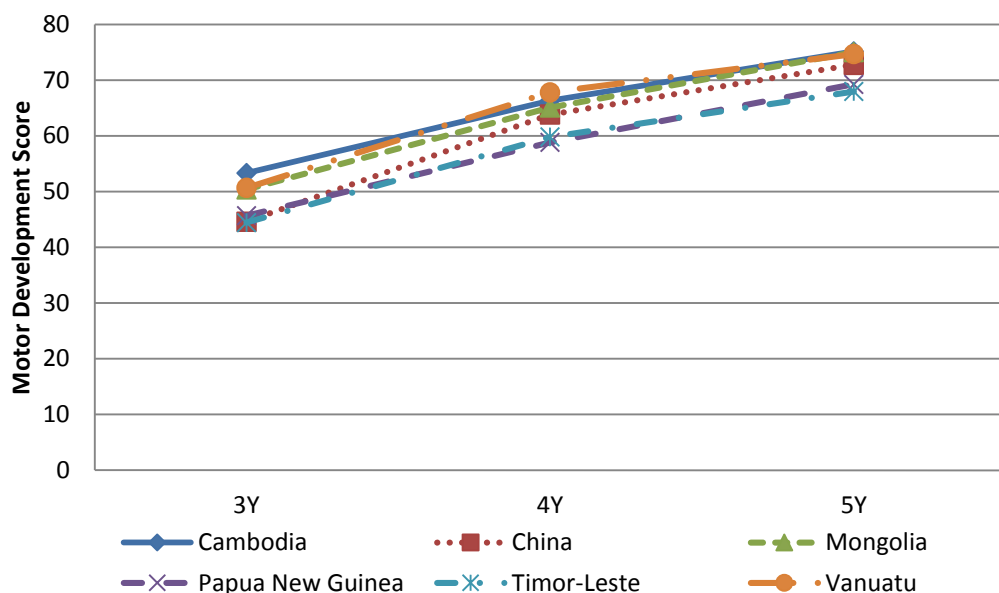
Approaches to Learning



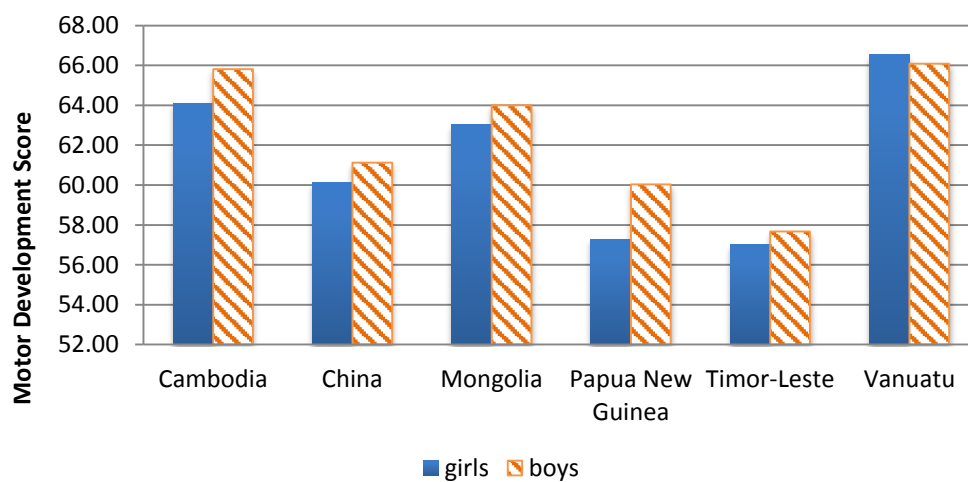
Children’s performance on the Motor Development domain will be used to illustrate some important points about early childhood development and issues related to the assessment. As shown in Figure 10.6 children’s performance in the Motor Development domain showed less variability than that in other domains. This reflects our common biology. However, opportunities to use fine-motor (use of chopsticks in China and Cambodia) and gross-motor skills (opportunities for outdoor play in Vanuatu) vary across countries. Rural children tended to better than urban children in all countries except Cambodia and Timor-Leste. Consistent with research findings, boys tended to do better than girls in Motor Development in all countries except Vanuatu.

Figure 10.6
Age and gender differences in Motor Development in children living in rural and urban areas across countries

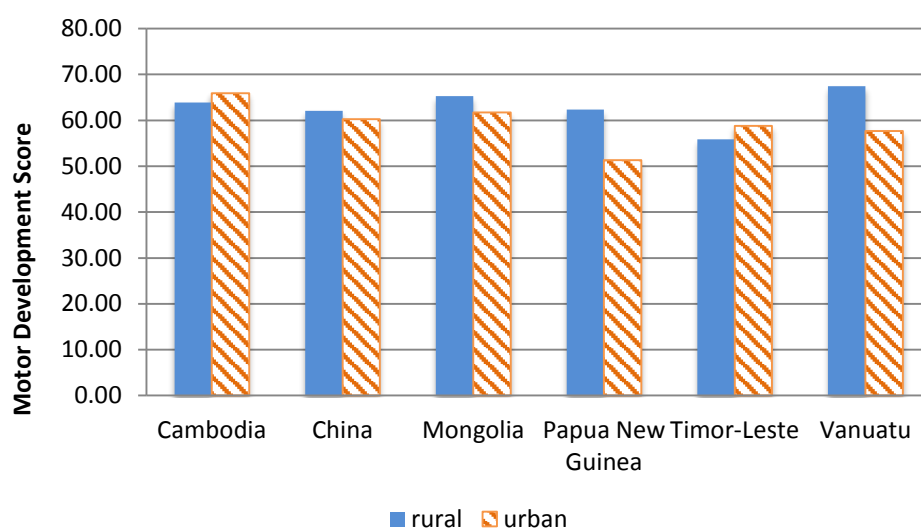
Motor Development across age



Motor Development across gender



Motor Development in rural and urban children



EXAMINATION OF THE IMPACT OF PRESCHOOL ATTENDANCE ON EARLY CHILD DEVELOPMENT

A multilevel model was applied to examine the impact of attending a preschool programme using data from all countries. The specific model is as follows:

$$Scores = \beta_0 + \beta_1 I_{pre-school} + \beta_2 Asset + \beta_3 Age + \beta_4 Edu_{mother} + \beta_5 Sex + \alpha_{province:country} + \gamma_{district:province:country} + \eta_{country} + \phi_{country} I_{pre-school}$$

Where the dependent variable of interest is the total score from assessment (combined across all domains), the independent variables include a dummy variable indicating pre-school attendance ($I_{pre-school}$), household asset ($Asset$), mother's education (Edu_{mother}), child's sex (Sex) and child's age (Age). Three random effect coefficients were included, namely, a district nested in province nested in country random intercept, $\gamma_{district:province:country}$ a province nested in country random intercept, $\alpha_{province:country}$ and a country random intercept $\eta_{country}$ and country random slope on pre-school effect $\phi_{country}$. Together, these random effects capture the geographical variability.

Significant association was found between pre-school attendance and child development. After accounting for different socio-demographic factors, children who had previously attended preschool scored 6.52 ($p < 0.001$) percentage points higher than those without pre-school experience.

Table 10.7
Predicting early childhood development in the East Asia Pacific

	Coefficients and 95% confidence intervals	P-values
Intercept	-7.40 (-13.69, -1.11)	0.02
Preschool attendance	6.43 (4.10, 8.76)	<0.001
Household Assets	0.81 (0.53, 1.09)	<0.001
Mother's education	0.67 (0.50, 0.87)	<0.001
Sex (Girl as reference)	-1.0 (-1.54, -0.46)	<0.001
Age	12.28 (11.95, 12.62)	<0.001

The effect of preschool attendance on early child development in different countries was also examined. Figure 10.7 illustrates country specific effects. The red line demarcating zero represents the null effect while the blue line indicates the global average effect of pre-school (i.e., the pre-school fixed effect coefficient). Each horizontal line represents the country-specific effect with uncertainty intervals. If a horizontal line overlaps with the red vertical line, it implies that the country-specific pre-school effect is not statistically significant. The graph above therefore indicated that except in Timor-Leste, pre-school attendance yielded significantly positive gains in developmental outcomes. The global and country-specific effects are presented in the Table 10.8.

Figure 10.7
Country-specific effects of the impact of attendance in an early childhood programme on early child development and learning

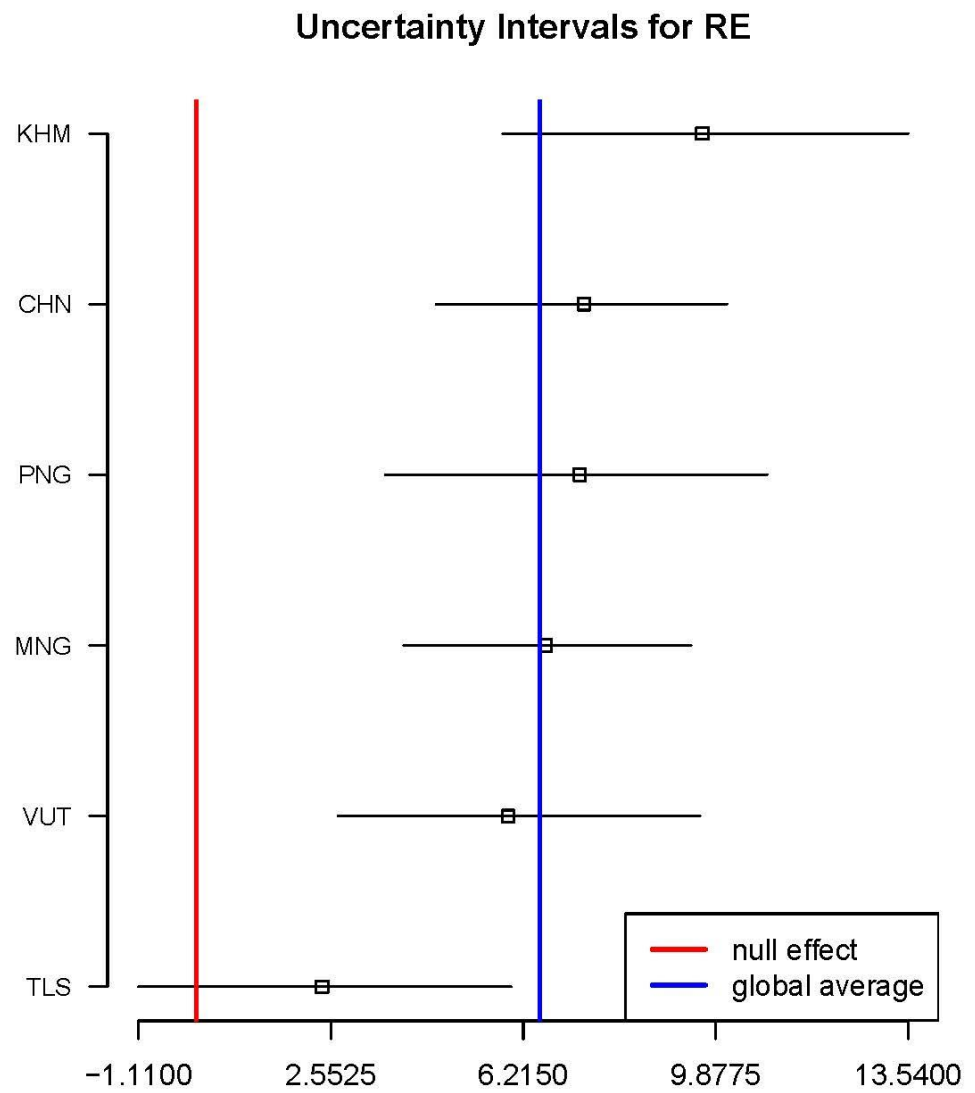


Table 10.8

Regression coefficients from multi-level model for global and country specific effects of preschool attendance on the EAP-ECDS

	Pre-School Effects	p-value
Global	6.43 (4.10, 8.76)	<0.001
Cambodia (KHM)	9.41 (5.66, 12.90)	<0.001
China (CHN)	7.16 (4.50, 9.95)	<0.001
Mongolia (MNG)	6.54 (3.80, 9.31)	<0.001
Papua New Guinea (PNG)	6.91 (3.39, 10.30)	<0.001
Timor-Leste (TLS)	2.53 (-0.82, 5.82)	0.122
Vanuatu (VUT)	6.01 (2.70, 9.11)	<0.001

EARLY LEARNING AND DEVELOPMENT

1. With the exception of China (100%), less than half of the participating children attended some form of an early education programme. Cambodia, Mongolia and Vanuatu had participation rates between 40% and 50%. Timor-Leste had a very low participation rate of 7% and was not the lowest perhaps because Papua New Guinea (2.8%) children typically started pre-school at the age of six.
2. There were urban-rural disparities within four of the countries. In some countries children from urban families were more likely to attend early childhood education programmes than children from rural families (Mongolia and Timor-Leste) but the reverse was true in Cambodia and Papua New Guinea).
3. The children who were older or of better-educated parents were more likely enrolled in an early learning programme than other children. In almost all countries, the children who attended an early childhood programme went to kindergarten. The exception was Timor-Leste where about half of the children went to kindergarten and the other half to community or drop-in centres. Number of hours per week in a kindergarten varied considerably across the six countries. China was exceptional at 30 to 40 hours per week; Mongolian children attended pre-school for 20 to 40 hours per week; children from Vanuatu and Cambodia were at such programmes for 10 to 20 hours per week; while children from Papua New Guinea and Timor-Leste spent less than 10 hours a week in pre-schools. Children from these two countries also

had the lowest participation rates. Not surprisingly, older children had spent a longer time in early childhood programmes than younger children. Age was the only variable that predicted attendance in an early childhood programme.

4. In China and Vanuatu, more than half of the caregivers reported having involvement in early learning-related activities at home; while in Cambodia, Mongolia and Timor-Leste, it was less than half of caregivers that were involved in such activities. Mothers were more involved in early learning activities than other family members with the exception of Timor-Leste where "other family members" (check if only true for rural areas) were more involved than mothers. Given that Timor-Leste was also the only country where about half of the children went to community and drop-in centres, it is probable that the two factors are related. An educated parent in an urban area was more likely to support early learning at home than other caregivers.

CHILD'S HEALTH AND HABITS

1. Almost all children (93.3% in Timor-Leste was the lowest) had had their vaccinations. The child's age was the best predictor of parents' health facilitation practices such as taking the child for a health check.
2. Parents reported on basic health-related habits such as always washing hands after using the toilet and before meals without adults' directions, and eating vegetables without adults' directions. Regression results indicated that older children of better educated parents tended to have better health and hygiene habits than the other children.
3. Looking at all countries together, urban parents and better educated mothers were more likely to report that their children had health problems. It is not clear whether urban children suffer poorer health or whether urban parents are more aware of children health issues and are more likely to report health concerns.

LIMITATIONS

There are many limitations to this study. The first relates to sampling issues but as far as possible, we tried to get a representative sample of children from the six countries. An endeavour such as this places considerable demands on the countries, and lack of resources prevented us from doing a more direct assessment of implementation fidelity. Despite limitations, this project has a useful deliverable for those concerned with early childhood development and education in the region.

CONCLUSIONS AND RECOMMENDATIONS FOR NEXT STEPS

The results of this study show that the EAP-ECDS is a valid and reliable measure of developmental functioning/school readiness for children in six countries in the region. As expected, older children did better than younger children in all domains of the Scales. However,

results also revealed that urbanicity, preschool attendance, maternal education, and family wealth affected child development. A goal for each country should be the elimination of urban and rural in-school readiness. On the whole, girls did better than boys and this should be encouraged, as girls historically have had lower participation rates in education than their male peers. On the basis of the data, we make the following prioritised recommendations:

- ✓ **Priority 1.** Use these findings to impact policy decisions and invest in factors that correlate with early childhood development.
- ✓ **Priority 2.** Invest in early childhood programmes as children who attend preschool have better outcomes than those who do not.
- ✓ **Priority 3.** Invest in decreasing developmental gaps between rural and urban areas as children in rural areas had significantly poorer outcomes than those in rural areas.
- ✓ **Priority 4.** Invest in maternal education and consider maternal education as an early childhood intervention. Maternal education predicted child outcomes in the sample as a whole and in most countries.
- ✓ **Priority 5.** Invest in building the capacity of in-country teams to conduct evaluation research, thereby improving the quality and representativeness of the body of knowledge for evidence-based policy-making. Further develop the parents' rating associated with the EAP-ECDS given the significant correlations between the EAP-ECDS and the rating scales and the resource intensiveness of that the EAP-ECDS. Parent interviews may be a good option in settings which are constrained by financial and human resources.
- ✓ **Priority 6.** Capitalise on this unprecedented data set from the East Asia and Pacific region and allocate resources for data mining to gain a better understanding of how and why certain factors (e.g., preschool attendance and maternal education) affect early childhood development in the region and in specific countries.

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