

Child Activity Patterns for Environmental Exposure Assessment in the Home.

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CONTENTS

PREFACE.....	IX
ACKNOWLEDGMENTS	IX
DISCLAIMER	IX
DEFINITIONS	X
ABBREVIATIONS	X
1 INTRODUCTION.....	1
2 PORT PIRIE, SOUTH AUSTRALIA	1
3 THE STUDIES	1
3.1 INFANT STUDY 1-7 MONTHS	2
3.2 BEHAVIOUR OBSERVATION STUDY 5-20 MONTHS	2
3.3 THE RISK FACTOR STUDIES 9-31 MONTHS.....	2
3.3.1 1995 Risk Factor Study.....	2
3.3.2 1995 Follow up Study	2
3.3.3 1996 Risk Factor Study.....	2
3.4 1997 INTAKE SCREENING AND QUESTIONNAIRE.....	3
4 DATA MANAGEMENT	3
4.1 ACTIVITY DIARIES	3
4.2 VIDEO DATA.....	3
4.3 1997 INTAKE STUDY AND QUESTIONNAIRE.....	4
4.4 MERGING DATA.....	5
4.4.1 Activity Diaries.....	5
4.4.2 Questionnaire data.....	5
4.4.3 Hand lead data.....	5
4.4.4 Data Analysis	5
5 INSIDE, OUTSIDE, OR AWAY FROM HOME.....	6
6 LOCATION OF CHILDREN WHEN AWAY FROM HOME	14
7 ACTIVE PLAY, QUIET PLAY, OR SLEEPING/NAPPING	16
8 INSIDE LOCATION	24
9 OUTSIDE LOCATION	33
10 INSIDE SURFACE TYPE.....	38
11 OUTSIDE SURFACE TYPE	46
12 EATING AND MOUTHING BEHAVIOUR.....	49
ACTIVITY DIARIES.....	49
CHILD QUESTIONNAIRES:	53
13 LONGITUDINAL DATA.....	58
14 VIDEO DATA	76
15 HAND LEAD.....	89
16 1997 INTAKE STUDY	96

17 CONCLUSIONS	101
18 BIBLIOGRAPHY	102

TABLES

Table 1: Behaviour Observation and Risk Factor Studies: Average percent time spent inside, outside and away from home for children aged 7-31 months, stratified by age.....	7
Table 2: Behaviour Observation and Risk Factor Studies: Average percent time spent inside, outside and away from home for children aged 7-31 months, stratified by age and sex.....	8
Table 3: Infant study: Average percent time spent inside, outside and away from home for children aged 1-7 months, stratified by age.....	10
Table 4: Infant study: Average percent time spent inside, outside or away from home for children aged 1-7 months, stratified by age and sex.....	11
Table 5: 1996 Risk Factor Study: Average percent time spent at locations when away from home for children aged 11-29 months, stratified by age.....	14
Table 6: 1996 Risk Factor Study: Average percent time spent at locations when away from home for children aged 11-29 months, stratified by age and sex.....	15
Table 7: Behaviour Observation Study and Risk Factor Studies: Average percent time spent engaged in active play, quiet play or sleeping/napping for children aged 7-31 months between the hours 7:30am-9:30pm, stratified by age.....	16
Table 8: Behaviour Observation and Risk Factor Studies: Average percent time spent in active play, quiet play or sleeping/napping for children aged 7-31 months, between the hours of 7:30am-9:30pm, stratified by age and sex.....	19
Table 9: Infant Study: Average percent time spent sleeping/napping or awake for children aged 1-7 months, over 24 hours and stratified by age.....	20
Table 10: Infant Study: Average percent time spent sleeping/napping or awake for children aged 1-7 months over 24 hours, stratified by age and sex.....	22
Table 11: Behaviour Observation and Risk Factor Studies: Average percent time spent at inside locations by children aged 7-31 months, stratified by age.....	24
Table 12: Behaviour Observation and Risk Factor Studies: Average percent time spent at inside locations for children ages 7-31 months stratified by age and sex.....	27
Table 13: Infant Study: Average percent time spent at inside locations for children aged 1-7 months, stratified by age.....	29
Table 14: Infant Study: Average percent time spent at inside locations for children aged 1-7 months, stratified by age and sex.....	31
Table 15: Behaviour Observation and Risk Factor Studies: Average percent time spent at outside locations for children aged 7-31 months, stratified by age.....	33
Table 16: Behaviour Observation and Risk Factor Studies: Average percent time spent at outside locations for children aged 7-31 months, stratified by age and sex.....	36
Table 17: Behaviour Observation and Risk Factor Studies: Average percent time spent on inside surface types for children aged 7-31 months, stratified by age.....	38

Table 18: Behaviour Observation and Risk Factor Studies: Average percent time spent on inside surface types, stratified by age and sex.	40
Table 19: Infant Study: Average percent time spent on inside surfaces for children aged 1-7 months, stratified by age.	41
Table 20: Infant Study: Average percent time spent on inside surface type for children aged 1-7 months, stratified for age and sex.	44
Table 23: Risk Factor Studies: Average percent time spent on outside surface type for children aged 9-31 months, stratified by age.	46
Table 24: Risk Factor Studies: Average percent time spent on outside surface types for children aged 9-31 months, stratified by age and sex.	48
Table 25: Behaviour Observation study: Number of hourly intervals that recorded specific eating behaviours one or more times for children aged 5-20 months, stratified by age. (NOTE: 14 hour day diary).....	49
Table 26: Behaviour Observation Study: Number of hourly intervals that recorded eating behaviours one or more times for children aged 5-20 months, stratified by age and sex (NOTE: 14 hour day diary).....	50
Table 27: Infant Study, 1995 Risk Factor, Follow up and Behaviour Observation Study: Do 1-31 month old children place non food items in their mouth, stratified by age.	53
Table 28: 1995 Risk factor, Follow up and Behaviour Observation Study: Percent frequency that 7-31 month old children place non-food items in their month, stratified by age.	53
Table 29: All Studies: Do 1-31 month old children suck their fingers or thumbs, stratified by age.....	54
Table 30: All Risk Factor, and Behaviour Observation Studies: Percent frequency that 7-31 month old children place their finger or thumb in their mouth's stratified by age.....	54
Table 31: All Studies: Do 1-31 month old children use a dummy, stratified by age.	54
Table 32: All Risk Factor and the Behaviour Observation Studies: The percent frequency that 7-31 month old children place a dummy in their mouth's, stratified by age.....	55
Table 33: All Risk Factor and Behaviour Observation Studies: Do 7-31 month old children mouth security blankets or soft toys, stratified by age.	55
Table 34: 1995 and 1996 Risk Factor Studies: Do 7-31 month old children take any vitamin supplements, stratified by age.....	55
Table 35: All Risk Factor and Behaviour Observation Studies: Percent frequency that 7-31 month old children put dirt in their mouths, stratified by age.	56
Table 36: Infant, Behaviour Observation and 1995 Risk Factor Studies: Average number of times per day 1-31 month old children wash their hands, stratified by age.....	56
Table 37: All Risk Factor and Behaviour Observation Studies: Percent frequency that 7-31 month old children wash their hands before a meal, stratified by age.	56
Table 38: All Risk Factor and Behaviour Observation Studies: Percent frequency that 7-31 month old children wash their hands before a snack, stratified by age.	57
Table 39: All Risk Factor and Behaviour Observation Studies: Non-food items that children aged 7-31 months were reported to mouth in declining ranked order.	57
Table 40: 1995 and 1996 Risk Factor Studies: Selected Household Questionnaire items related to inside and outside the house.	87

Table 41: 1995 and 1996 Risk Factor Studies: Average number of days since floors and window sills were or dry cleaned.....	87
Table 42: Infant, Behaviour Observation and 1996 Risk Factor Studies: Median hand wipe lead results for children aged 1-31 months, stratified by age.	89
Table 43: 1997 Intake Study: “Does anyone smoke regularly inside the house where the child resides or visits regularly?”, stratified by age.	96
Table 44: 1997 Intake Study; “Where does a child eat a snack generally?”, stratified by age.....	96
Table 45: 1997 Intake Study: “Is the child ever allowed to carry his/her bottle around with them?”, stratified by age and sex.....	98
Table 46: 1997 Intake Study: “Do you open the window in the child’s bedroom during the night?”, stratified by age and sex.....	99
Table 47: 1997 Intake Study: “What type of surface does the child have as a main play area?”, stratified by age.....	100
Table 48: 1997 Intake Study: “How many cats and dogs do you have?”, stratified by age.	100

FIGURES

Figure 1: Behaviour Observation and Risk Factor Studies: Average percent time spent inside, outside and away from home for children aged 7-31 months, stratified by age.....	7
Figure 2: Behaviour Observation and Risk Factor Studies: Average percent time spent inside, outside and away from home for children aged 7-31 months, stratified by sex.....	9
Figure 3: Infant study: Average percent time spent inside, outside or away from home for children aged 1-7 months.	10
Figure 4: Infant study: Average percent time spent inside, outside or away from home for children aged 1-7 months, stratified by age.....	11
Figure 5: Infant study: Average time spent inside, outside or away from home for children aged 1-7 months, stratified by sex.	12
Figure 6: Infant study: Average percent time spent inside, outside or away from home for children aged 1-7 months, stratified by age and sex.....	12
Figure 7: 1996 Risk Factor Study: Average percent time spent at away locations for children aged 11-29 months.....	14
Figure 8: 1996 Risk Factor Study: Average percent time spent at away locations for children aged 11-29 months, stratified by age.	15
Figure 9: 1996 Risk Factor Study: Average percent time spent at away locations for children aged 11-29 months, stratified by sex.	16
Figure 10: Behaviour Observation and Risk Factor Studies: Average percent time spent engaged in active play, quiet play or sleeping/napping for children aged 7-31 months.....	17
Figure 11: Behaviour Observation and Risk Factor Studies: Average percent time spent engaged in active play, quiet play or sleeping/napping for children aged 7-31 months, stratified by age.	18
Figure 12: Behaviour Observation and Risk Factor Studies: Average percent time spent engaged in active play, quiet play or sleeping/napping for children aged 7-31 months, stratified by sex.....	20

Figure 13: Infant Study: Average percent time spent sleeping or awake for children aged 1-7 months. .	21
Figure 14: Infant Study: Average percent time spent sleeping or awake for children aged 1-7 months, stratified by age.....	21
Figure 15: Infant Study: Average percent time spent sleeping/napping or awake for infants aged 1-7 months, stratified by sex.	23
Figure 16: Infant Study: Average percent time sent sleeping/napping or awake for infants aged 1-7 months, stratified by sex.	23
Figure 17: Behaviour Observation and Risk Factor Studies: Average percent time spent at inside location for children aged 7-31 months.	24
Figure 18: Behaviour Observation and Risk Factor Studies: Average percent time spent at inside locations for children aged 7-31 months, stratified by age.	25
Figure 19: Behaviour Observation and Risk Factor Studies: Average percent time spent at inside locations for children aged 7-31 months, stratified by sex.	28
Figure 20: Infant Study: Average percent time spent at inside locations for infants aged 1-7 months.....	29
Figure 21: Infant Study: Average percent time spent at inside locations for infants aged 1-7 months, stratified by age.....	30
Figure 22: Infant Study: Average percent time spent at inside locations for children aged 1-7 months stratified by sex.	32
Figure 23: Behaviour Observation and Risk Factor Studies: Average percent time spent at outside locations for children aged 7-31 months.	34
Figure 24: Behaviour Observation and Risk Factor Studies: Average percent time spent at outside locations for children aged 7-31 months, stratified by age.	35
Figure 25: Behaviour Observation and Risk Factor Studies: Average percent time spent at outside locations for children aged 7-31 months, stratified by sex.	37
Figure 26: Behaviour Observation and Risk Factor Studies: Average percent time spent on inside surface types for children aged 7-31 months.	38
Figure 27: Behaviour Observation and Risk Factor Studies: Average percent time spent on inside surface types for children aged 7-31 months, stratified by sex.	39
Figure 28: Infant Study: Average percent time spent on inside surface type for children aged 1-7 months.	41
Figure 29: Infant Study: Average percent time spent on inside surface type for children aged 1-7 months, stratified by age.....	43
Figure 30: Infant Study: Average percent time spent on inside surface type for children aged 1-7 months, stratified by sex.	45
Figure 34: Risk Factor studies: Average percent time spent on outside surface types for children aged 9-31 months.	46
Figure 35: Risk Factor Studies: Average percent time spent on outside surface types for children aged 9-31 months, stratified by age.	47
Figure 36: Risk Factor Studies: Average percent time spent on outside surface types for children aged 9-31 months, stratified by sex.	48

Figure 37: Behaviour Observation Study: Number of hourly intervals that recorded eating behaviours for children aged 5-20 months.....	49
Figure 38: Behaviour Observation Study: Number of hourly intervals that recorded eating behaviours for children aged 5-20 months, stratified by sex.	51
Figure 39: Behaviour Observation Study: Number of hourly intervals that recorded eating behaviours for children aged 5-20 months, stratified by age.	52
Figure 40: Behaviour Observation Study: Average percent time children spent inside the home between the hours of 7:30am and 9:30pm (n=29).....	59
Figure 41: Behaviour Observation Study: Average percent time children spent outside the home between the hours 7:30am and 9:30pm (n=29).	61
Figure 42: Behaviour Observation Study: Average percent time children spent away from home between the hours 7:30am – 9:30pm (n=29).	63
Figure 43: Behaviour Observation Study: Average percent time children spent engaged in active play between the hours 7:30am and 9:30pm (n=29).	65
Figure 44: Behaviour Observation Study: Average percent time spent engaged in quiet play between the hours 7:30am and 9:30pm (n=29).	68
Figure 45: Behaviour Observation Study: Average percent time children spent on the floor or ground while inside the home between the hours 7:30am and 9:30pm (n=29).	70
Figure 46: Behaviour Observation Study: Average number of hours that a child was reported to eat at some stage during the hour (n=29). Note: 14 hour Activity Diary.	73
Figure 47: Behaviour Observation Study: Frequency that children mouth non-food items per 10 minute interval (n=29).	77
Figure 48: Behaviour Observation Study: Frequency that children mouthed fingers or thumbs per 10 minute interval (n=29).	79
Figure 49: Behaviour Observation Study: Frequency that children mouth dummies per 10 minute interval (n=29).	81
Figure 50: Behaviour Observation Study: Frequency that children mouth food items per 10 minute interval (n=29).	83
Figure 51: Behaviour Observation Study: Child hand lead results after 10 minutes of unobstructed indoor activity (n=29).....	90
Figure 52: Behaviour Observation Study: Child hand lead results after 10 minutes of unobstructed outdoor activity (n=8).....	94

Preface

This publication is one of a series of monographs from the National Environmental Health Forum on environmental health topics. It is based on studies of children residing in Port Pirie, South Australia, and has been compiled to provide exposure assessment data relevant to Australia.

The variability of human exposure assessment is such that new information is being uncovered all the time. We welcome your comments on this document and you are invited to assist in the development of further documents. If any information is found to be incorrect the reader should contact the authors immediately.

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Definitions

Total human exposure:

A person's exposure to a contaminant is defined as the contact at one or more boundaries between a human and a contaminant at a specific concentration for a period of time. Total exposure consists of increments from all media that contain the contaminant, and all routes of entry, including inhalation, ingestion and dermal entry (Lioy, 1990).

Activity-time patterns:

Individual or group activities of humans measured over a period of time can be sorted into common patterns. Activity patterns vary with time of day, season, location, or characteristics of the human(s) under study.

Temporal variability:

Activity patterns may vary according to the time of day, day of week, seasonally, and with age.

Spatial variability:

Activity patterns may vary according to the location of the individual or group, where they are in the house, yard, and room, what surface type they are near.

Location:

The location of the child, ie inside the lounge room, bedroom, kitchen, etc. for the purposes of filling out the activity diaries.

Surface Type:

What surface the child was in or on, ie chair, pram, floor, etc. for the purpose of filling out the activity diaries.

Abbreviations

SD - Standard Deviation

1 Introduction

This monograph is a compilation of child activity data obtained during investigations into lead transport and exposure pathways by the South Australian, Port Pirie Lead Investigation Group. These investigations included the use of activity time diaries, video recorded behaviour observation and questionnaires. The research resulted in information on infants and young children's activities which can be applied to many disciplines.

There is limited information available that documents the activity patterns of Australian children. It is important for risk assessment research to have local data to appropriately indicate the general activity patterns of people. When interpreting activity pattern data, consideration needs to be given to the effects of culture, climate and the physical geography of the society we live in, compared to those of other countries.

It is believed that a child's behaviour and activity may increase their exposure to environmental contaminants. Children are susceptible to a high intake of contaminants due to their physiology and stage of development. They have an underdeveloped detoxification, immune and defence systems, and enhanced absorption of contaminants compared to adults due to their relatively greater body surface area, and food, air and water ingestion rates. Exposures to contaminants may have irreversible effects on a child's growth and development (Phillips et al 1991, ARB. California EPA 1991).

Analysis of activity data may associate certain activities with exposure to environmental contaminants. A useful way to describe the general nature of activity patterns is by looking at the average amount of time spent in locations or engaged in activities. Even though children have a high risk of exposure they have been largely overlooked in terms of modelling total pollutant exposure and dose (Phillips et al 1991). As childhood exposure represents a significant proportion of total lifetime exposure, it is important in determining lifetime risk from contaminants (ARB. California EPA 1991).

2 Port Pirie, South Australia

Port Pirie is situated on the eastern side of Spencer Gulf, South Australia, 230 kilometres north of Adelaide. It has a population of approximately 15,000. Port Pirie originally developed as a grain port, but the major industry for the last century has been lead and other metal smelting and refining (Maynard, Calder, Phipps, 1993).

3 The Studies

Six studies were completed over a two year period to investigate activity patterns of children aged 1 to 59 months. Two of the studies were longitudinal in nature, the others cross sectional.

The following notes explain how these studies were used to provide data for the tables and graphs presented in this monograph.

3.1 Infant Study 1-7 months

The longitudinal Infant Study investigated; activity patterns, hand lead levels, household and environmental characteristics for 29 subjects. The study commenced in July 1996 and was completed by October 1996. Children were aged between 1-5 months at the first observations which were repeated monthly for 4 months. Infant Study data instruments were:

- Activity Diary: completed by parents at hourly intervals for one 24 hour period once a month.
- Hand Lead Wipes and Field Notes.
- Child and Household Questionnaires (administered once only).

3.2 Behaviour Observation Study 7-20 months

The longitudinal Behaviour Observation Study observed activity patterns and associated household and environmental characteristics of 29 children aged between 8-12 months. Observations of these children included monthly video tape, activity diary and hand lead wipe samples collected from August through December 1995. Instruments used in the Behaviour Observation Study were:

- Activity Diary: completed by parents at hourly intervals over 2 consecutive days during 'day time hours' (7.30am-9.30pm) once a month.
- Hand Lead Wipes and Field Notes.
- Child and Household Questionnaires (administered once only).

3.3 The Risk Factor Studies 9-31 months

Three Risk Factor Studies were conducted over a period of two years. Each study used a cross-sectional research design and included the use of similar instruments and the same research staff.

3.3.1 1995 Risk Factor Study

The initial study investigated Port Pirie children aged between 9 and 31 months. The study was conducted from July to September 1995 and collected data on a population of 135 children.

3.3.2 1995 Follow up Study

During the period October to December 1995, a follow up study was performed on a sub-sample of 34 children from the 1995 Risk Factor study. This study was designed to address any seasonal differences in both household and child activity.

3.3.3 1996 Risk Factor Study

In July 1996 the study investigated 71 children aged between 11 and 29 months.

Data instruments used for each of the three studies were:

- Activity Diary: completed by parents at hourly intervals over 3 consecutive days during 'day time' hours (7.30am-9.30pm).

- Hand Lead Wipes
- Child and Household Questionnaires (administered once only).

3.4 1997 Intake Questionnaire

Annual blood lead screening takes place in Port Pirie as part of the Port Pirie Environmental Health Centres Lead Program. Every second year a full census of young children is conducted. In 1997, children between 9 to 59 months (inclusive) at any time during the period 1st February 1997 to 31st March 1997 who were resident of Port Pirie were invited for a capillary blood lead screen. The 1997 screening included 821 children involving 639 families. This represented 95% of Port Pirie children as identified by the Australian Bureau of Statistics Census of August 1996.

Although the questionnaire was developed for the Lead Program, the results point to some behaviours and factors that may be applicable to other areas of risk assessment and exposure in young children. The results presented here are: smoking in the home or elsewhere; the location for the taking of snacks by children; use of bottles; opening windows in children's bedrooms at night; and the presence of pets in the household.

It should be noted that the results relate only to the children that were eligible for the screening due to their age. The presence of older or younger siblings and other family members which may affect age-related factors are not considered.

4 Instruments and Data Management

4.1 Activity Diaries

Activity diaries were recorded by parents at hourly intervals. Activity data were collected about inside and outside locations and what the child was in or on, type of activity, and if a meal or snack was consumed. Additionally the 1996 Risk Factor Study yielded information about activities of children while they were away from home.

Parents were instructed to tick each box during an hour which applied to the location of the child, the surfaces the child had spent time on, the activity they were involved in and the meals the child had eaten. Where multiple entries were ticked within the same hour the data were treated as equal proportions of an hour. For example, if both "inside" and "outside" were ticked the data were entered as 50% inside and 50% outside. This also applied to "where" the child was and "type of activity" the child was engaged in.

Data were aggregated for each child over all diaries collected. The mean percentage time was calculated for each child's category of locations and activities.

Data on meals and snacks were entered as frequency data.

4.2 Video Tape of Activities

Children were video taped approximately once a month over the course of the Behaviour Observation Study for a minimum of 10 minutes, and on some occasions up to 20 minutes during a single session to observe their mouthing behaviour patterns. The majority of children were observed several times. The videos were viewed generally to determine definitions of mouthing behaviour, and then assessed

second by second. The start and finish of every mouthing behaviour was recorded; the results have been reported as frequency and duration of mouthing activity.

Some video sessions were not precisely 10 or 20 minutes and in these situations all results were proportioned to represent 10 minutes of video session. Five groups were used to represent mouthing behaviours which include: mouthing non-food items; mouthing digits (fingers/thumbs/toes); mouthing of a dummy; mouthing fixed objects (walls/furniture); and mouthing/eating food items.

All the video tapes obtained from the Behaviour Observation Study were dubbed with an hour, minute and second time code display by professional dubbing specialists. This meant that each frame on the video was embedded with the time to the exact second enabling fast forwarding, rewinding, lengthy pauses without losing the ability to uniquely identify each frame. A single research assistant was employed to view, code and enter the information into a Microsoft Access database. Each row in the database represented a single second of video observation. For each second it is possible to determine whether a mouthing event took place and what that event was. By recording the data in this fashion it is possible to report results as frequency (the number of times each behaviour occurred in a given time period) and duration of mouthing activity (the length of time a continuous sequence a mouthing behaviour occurs).

4.3 Hand Lead Wipes and Field Notes

For the Infant Study and Risk Factor Studies hand lead samples were collected from children at the end of the visit and can be considered a 'casual' observation.

For the Behaviour Observation Study hand lead samples were collected from all participating children as part of the monthly visit to the child's home. Up to four sets of hand leads were obtained. At each visit a maximum of three samples was collected. The first sample was taken at the start of the visit and can be considered a 'casual' observation. The second sample was taken after a 10 minute indoor exposure and the third before a 10 minute outdoor exposure. Children's hands were thoroughly washed prior to the indoor and outdoor exposures. Video taping of the child's activities was conducted during the 10 minute exposures and no attempt was made to control the child's activities during these intervals. Hence, these exposures represent the "normal" activities of the child.

For all studies, the hand wipe method involved all surfaces of both hands, including the front and back and in between the fingers, being wiped thoroughly using a circular motion.

All surfaces of both hands, including the front and back and in between fingers, were wiped thoroughly using a circular motion.

4.4 1997 Intake Study and Questionnaire

At the time the children's capillary test was taken, the parent was asked a series of 12 questions by a staff member. The questionnaire forms were pre-printed with the child's name and details taken from the appointment schedule. The result was a 100% response rate for the questionnaire for children included in the screening. Very few individual questions were unanswered, providing a very reliable census of children of this age living in the town of Port Pirie.

There were 825 completed questionnaires from the 1997 Intake Screening. Four questionnaires were excluded from analysis: a child who resided outside the catchment area; a child without a blood test; a child who was nearly 6 years at the time of the screening; and a child younger than 9 months. Included was one child just slightly over the upper age limit. This resulted in 821 children forming the basis of both the blood lead and questionnaire analysis. The tables presented in this Monograph are frequencies of responses to questions stratified by age and gender as appropriate.

4.5 Merging Data

4.5.1 Activity Diaries

Initially data from each study were tabled and analysed separately. Upon analysis, there were no significant differences between the data from the Behaviour Observation and the Risk Factor studies, so they were merged. Both studies collected data from children who were similar in age. The variables that were able to be merged for the two studies were: time spent inside, outside and away; time spent engaged in active or quiet play or sleeping; time spent at inside locations; and time spent at outside locations. The Infant study collected data for a 24 hour period from children of a younger age group than the other studies, therefore that data was analysed separately. The list of tables/figures identifies which studies were merged for each table.

4.5.2 Questionnaire data

Wherever possible child and household questionnaire information from the Infant, Behaviour Observation and Risk Factor studies was aggregated and analysed.

4.5.3 Hand lead data

Hand lead data from the Infant, Behaviour Observation and Risk Factor studies were aggregated and analysed. The values represent lead ($\mu\text{g}/\text{sample}$) from wiping all of both hands.

4.5.4 Data Analysis

All data analyses were conducted using the Statistical Program for Social Sciences (SPSS). Descriptive statistics were calculated for all variables. Much of the cross sectional data presented in this monograph has high standard deviations, indicating large variations of data across the study sample. Each individual child varies across sessions, and substantial variability occurs when comparing different children. Other researchers in the field have also found high variability when analysing self-reported activity diary information.

5 Inside or Outside (at Home), or Away from home

Diary information from the Behaviour Observation and Risk Factor studies was aggregated and analysed cross sectionally for children aged 7-31 months. Note that the hours of the diary range from 7.30am – 9.30pm. The data below represents percent time spent inside, outside and away during a child's 'waking hours' or 'day time hours'.

Table 1: Behaviour Observation and Risk Factor Studies: Average percent day time spent inside, outside and away from home for children aged 7-31 months, stratified by age.

Age group (months)	Average time spent inside (percent)		Average time spent outside (percent)		Average time spent away (percent)		number of diaries
	mean	SD	mean	SD	mean	SD	
7-9	84	10	4	9	12	9	13
10-12	79	14	3	4	18	14	64
13-15	77	10	7	6	16	10	73
16-18	76	12	10	8	14	11	85
19-21	67	11	11	7	22	14	39
22-24	67	10	12	9	21	10	32
25-27	62	8	15	9	23	9	16
28-31	64	14	13	8	23	15	29
ALL	73	13	9	8	18	12	351

Table 1 shows that children aged 7-31 months spent, on average, a majority of their time indoors at home (73%), 9% outdoors and 18% away from home. Not surprisingly, young infants (7-9 months) have the highest percent time indoors with older children spending more time outdoors and away from home.

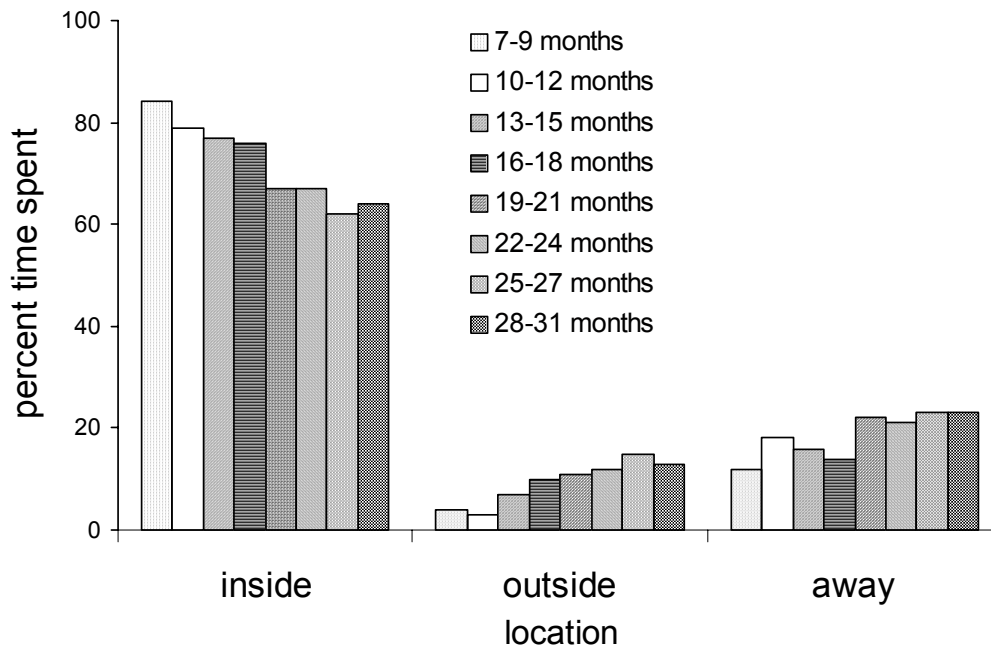


Figure 1: Behaviour Observation and Risk Factor Studies: Average percent day time spent inside, outside and away from home for children aged 7-31 months, stratified by age.

Table 2: Behaviour Observation and Risk Factor Studies: Average percent time spent inside, outside and away from home between the hours of 7:30am and 9:30pm for children aged 7-31 months, stratified by age and sex.

Sex	Male						
Age group (months)	Average time spent inside (percent)		Average time spent outside (percent)		Average time spent away (percent)		number of diaries
	mean	SD	mean	SD	mean	SD	
7-9	88	4	3	3	8	5	5
10-12	82	10	5	5	13	9	29
13-15	78	10	7	6	15	10	35
16-18	75	10	11	7	14	10	28
19-21	71	9	13	6	16	8	17
22-24	67	9	7	6	26	9	13
25-27	60	5	18	8	22	6	8
28-31	64	17	13	7	23	19	11
ALL	75	12	9	7	16	11	146
Sex	Female						
Age group (months)	Average time spent inside (percent)		Average time spent outside (percent)		Average time spent away (percent)		number of diaries
	mean	SD	mean	SD	mean	SD	
7-9	81	12	4	4	15	10	8
10-12	76	17	2	3	21	16	35
13-15	76	10	7	6	17	9	38
16-18	76	12	9	8	14	12	57
19-21	63	12	10	7	27	15	22
22-24	67	11	15	9	18	10	19
25-27	65	9	11	8	24	12	8
28-31	65	13	12	9	23	12	18
ALL	73	14	8	8	19	13	205

Table 2 shows that there are no large gender differences in the average amount of time spent indoors and outdoors. However, there are gender differences in the time spent away from home. For girls, in several age categories the average percent time spent away from home is considerably higher than for boys.

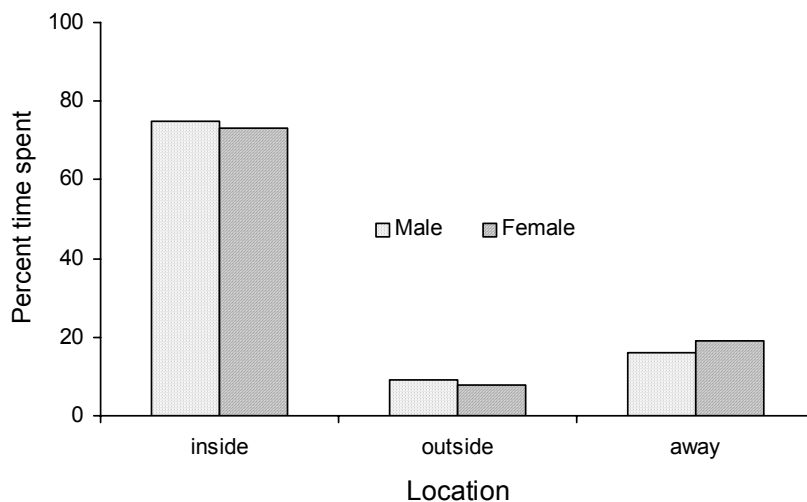


Figure 2: Behaviour Observation and Risk Factor Studies: Average percent time spent inside, outside and away from home between the hours of 7:30am and 9:30pm for children aged 7-31 months, stratified by sex.

Diary information from the Infant Study was aggregated and analysed cross sectionally for children aged 1-7 months. The Infant Study diary ran for 24 hours of the day representing the total day and night of a child's life.

Table 3: Infant study: Average percent time (24 hours) spent inside, outside and away from home for children aged 1-7 months, stratified by age.

Age group (months)	Average percent time spent inside		Average percent time spent outside		Average percent time spent away		number of diaries
	mean	SD	mean	SD	mean	SD	
1-2	92	9	<1	1	7	9	19
3	95	8	<1	2	4	7	21
4	88	19	2	5	10	17	27
5	92	13	1	3	7	11	22
6-7	91	11	2	4	7	10	23
ALL	92	13	2	3	7	12	112

Table 3 shows that these infants spend 92% of their time indoors and 2% of their time outdoors. A substantial part of their time was spent away from home (7%).

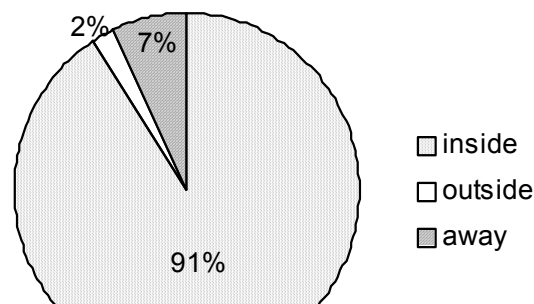


Figure 3: Infant study: Average percent time (24 hours) spent inside, outside or away from home for children aged 1-7 months.

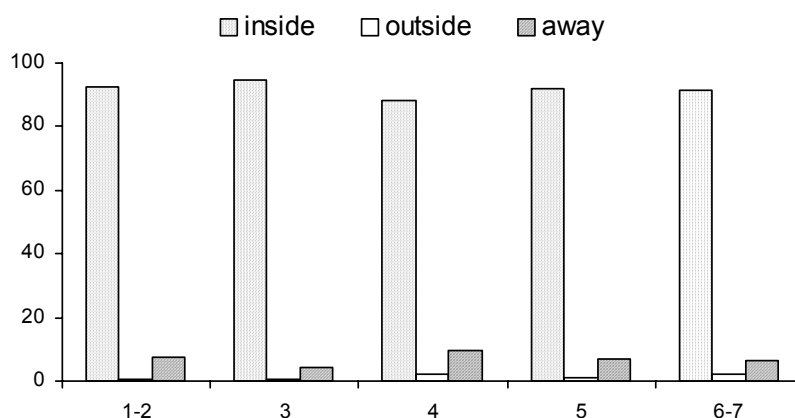


Figure 4: Infant study: Average percent time (24 hours) spent inside, outside or away from home for children aged 1-7 months, stratified by age.

Table 4: Infant study: Average percent time (24 hours) spent inside, outside or away from home for children aged 1-7 months, stratified by age and sex.

Sex	Male						
Age group (months)	Average percent time spent inside		Average percent time spent outside		Average percent time spent away		number of diaries
	mean	SD	mean	SD	mean	SD	
1-2	91	9	<1	1	9	9	14
3	96	7	0	0	4	7	12
4	86	24	2	5	11	21	16
5	97	5	<1	3	2	4	10
6-7	94	9	2	4	4	6	11
ALL	92	14	1	3	7	12	63
Sex	Female						
Age group (months)	Average percent time spent inside		Average percent time spent outside		Average percent time spent away		number of diaries
	mean	SD	mean	SD	mean	SD	
1-2	97	5	<1	0.9	3	5	5
3	93	8	2	3	5	8	9
4	91	8	2	4	7	7	11
5	88	16	2	3	11	14	12
6-7	88	13	2	4	9	12	12
ALL	91	11	2	3	8	11	49

The average percent time spent indoors and outdoors is similar for the different gender and age groups.



Figure 5: Infant study: Average time (24 hours) spent inside, outside or away from home for children aged 1-7 months, stratified by sex.

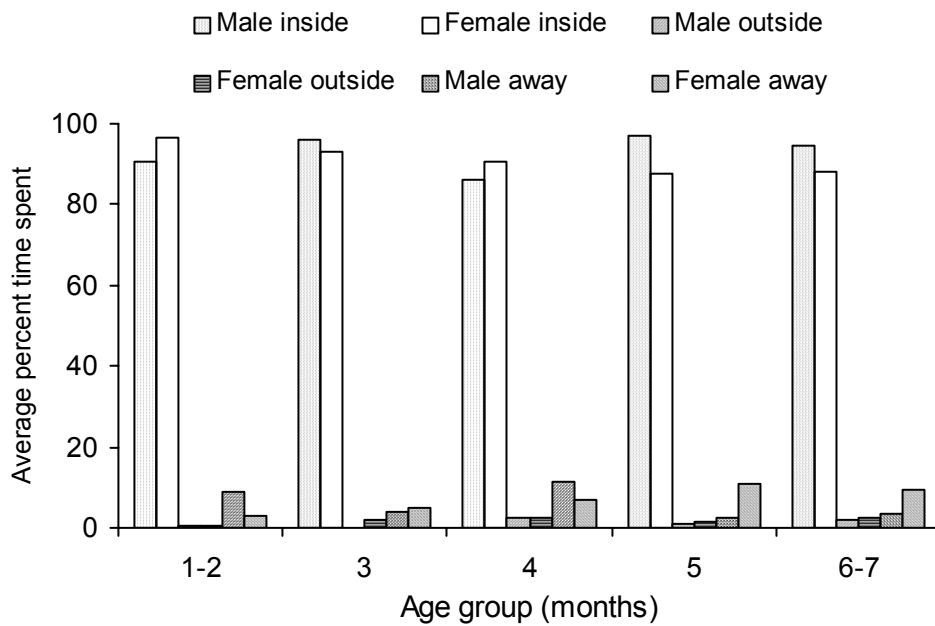


Figure 6: Infant study: Average percent time (24 hours) spent inside, outside or away from home for children aged 1-7 months, stratified by age and sex.

6 Location of children when away from home

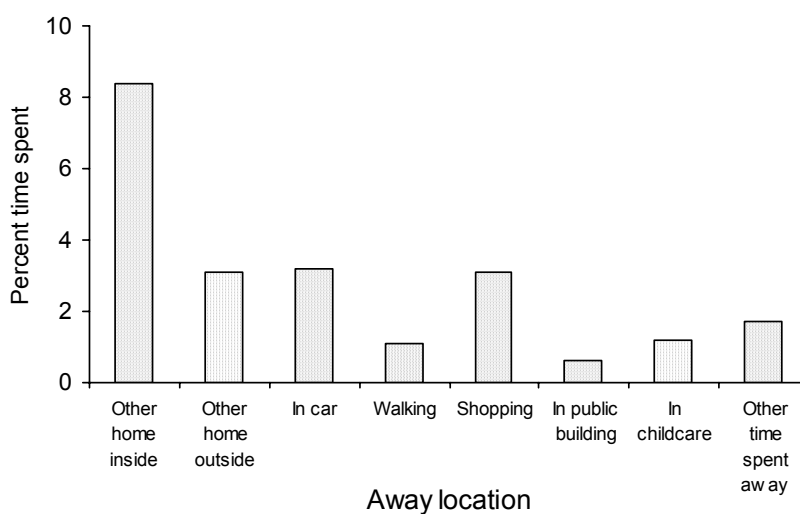
Diary information from the 1996 Risk Factor Study was analysed cross sectionally.

Table 5: 1996 Risk Factor Study: Average percent time spent at locations when away from home, between the hours of 7:30am and 9:30pm, for children aged 11-29 months, stratified by age (standard deviation in parantheses).

Age group (months)	11-12 average percent time	13-18 average percent time	19-24 average percent time	25-29 average percent time	ALL Average percent time
Friends/Relatives home inside	7 (6)	8 (8)	9 (7)	11 (13)	8 (8)
Friends/Relatives home outside	<1 (1)	2 (2)	4 (6)	7 (6)	3 (5)
In car	2 (3)	3 (3)	4 (4)	4 (4)	3 (3)
Walking	<1 (1)	1 (2)	2 (3)	0 (0)	1 (2)
Shopping	5 (6)	3 (3)	3 (3)	3 (3)	3 (3)
In public building	0 (0)	<1 (2)	<1 (2)	1 (2)	<1 (2)
In child care	0 (0)	1 (4)	<1 (3)	2 (6)	1 (4)
Other away location	2 (5)	2 (3)	1 (2)	2 (3)	2 (3)
Inside/Outside own home	83	80	76	71	78
Number of diaries	5	33	23	10	71

For all age groups, these children when away from home spent a majority of their time indoors at relatives' and friends' homes (8%). Time spent outdoors at friends and relatives increased with age. Very little time was spent in public buildings and in childcare for any age group.

Figure 7: 1996 Risk Factor Study: Average percent time spent at away locations, between the



hours of 7:30am to 9:30pm for children aged 11-29 months.

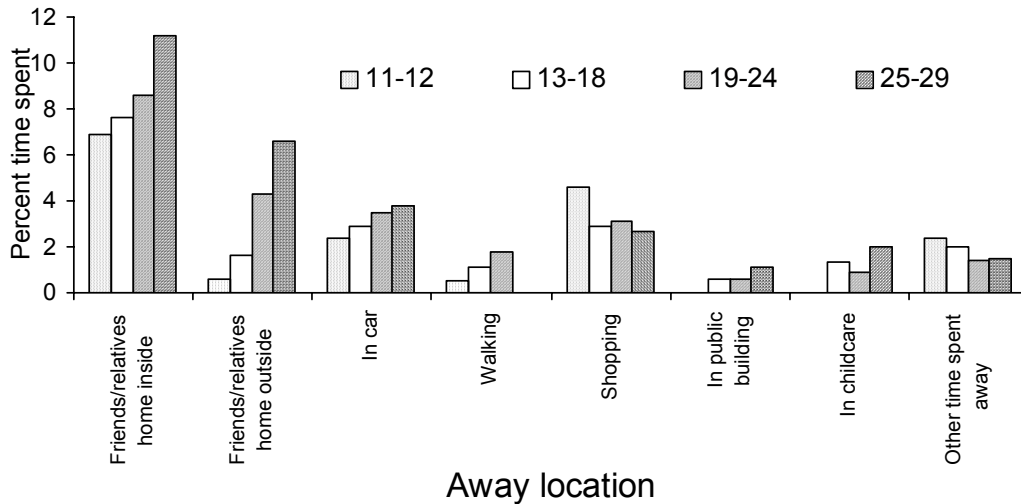


Figure 8: 1996 Risk Factor Study: Average percent time spent at away locations between the hours of 7:30am to 9:30pm for children aged 11-29 months, stratified by age.

Table 6: 1996 Risk Factor Study: Average percent time spent at locations when away from home between the hours of 7:30am to 9:30pm for children aged 11-29 months, stratified by age and sex.

Sex	Male									
Age group (months)	11-12		13-18		19-24		25-29		ALL	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
Friends/Relatives home inside	0		8	7	9	6	12	19	9	9
Friends/Relatives home outside	0		1	2	3	2	6	7	2	4
In car	4		2	2	4	4	2	2	3	3
Walking	2		2	2	2	3	0	0	2	2
Shopping	2		3	3	3	2	4	4	3	3
In public building	0		<1	2	<1	0.9	1	3	<1	2
In childcare	0		0	<1	2	4	0	0	<1	2
Other away location	0		2	3	<1	2	2	4	1	3
Inside/Outside own home	92		82		77		72		79	
number of diaries	1		17		12		5		35	
Sex	Female									
Age Group (months)	11-12		13-18		19-24		25-29		ALL	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
Friends/Relatives home inside	9	5	7	8	8	8	10	5	8	7
Friends/Relatives home outside	<1	1	2	2	6	7	7	5	4	5
In car	2	3	4	4	3	4	6	4	4	4
Walking	0	0	<1	1	1	2	0	0	<1	2
Shopping	5	6	3	3	4	4	1	1	3	4
In public building	0	0	<1	1	<1	2	<1	2	<1	2

In childcare	0	0	3	5	0	0	4	9	2	5
Other away location	3	5	2	3	2	3	1	2	2	3
Inside/Outside own home	80		78		75		70		76	
number of diaries	4		16		11		5		36	

Time spent outdoors when away from home increases with age for boys and girls. There are age and gender differences for average percent time spent in childcare. Average percent time spent in childcare is highest among the 25-29 month old girls.

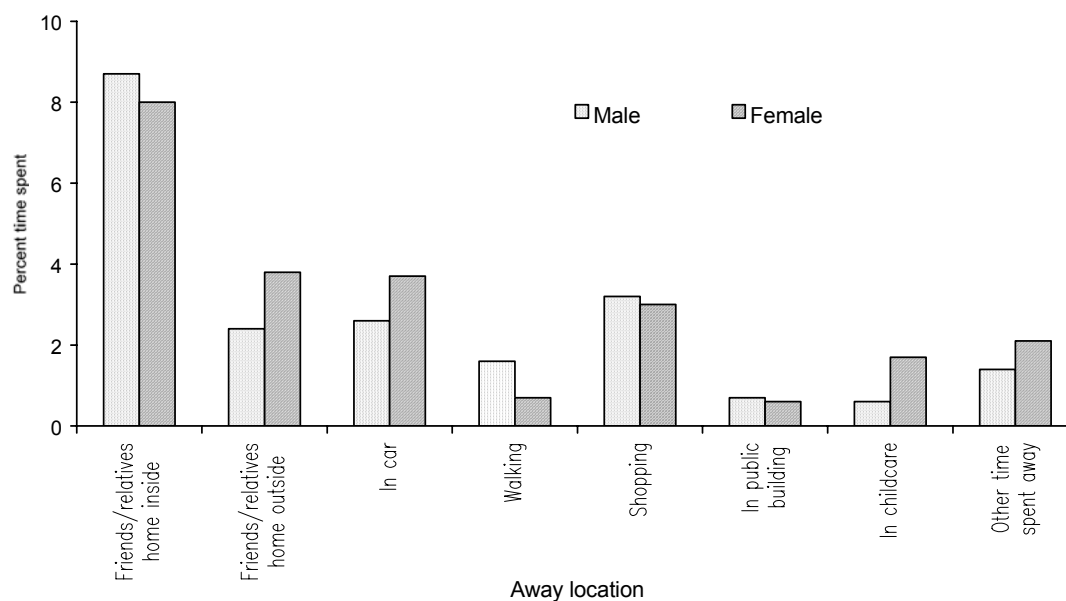


Figure 9: 1996 Risk Factor Study: Average percent time spent at away locations between the hours of 7:30am to 9:30pm for children aged 11-29 months, stratified by sex.

7 Active play, Quiet play, or Sleeping/Napping

Diary information between the hours of 7:30am and 9:30pm from the Behaviour Observation and Risk Factor studies was aggregated and analysed cross sectionally for children aged 7-31 months.

Table 7: Behaviour Observation Study and Risk Factor Studies: Average percent of time spent engaged in active play, quiet play or sleeping/napping for children aged 7-31 months between the hours of 7:30am-9:30pm, stratified by age.

Age Group (months)	Average percent time spent engaged in active play		Average percent time spent engaged in quiet play		Average percent time spent sleeping or napping		Away from home	Number of Diaries
	mean	SD	Mean	SD	mean	SD		
7-9	28	15	29	17	31	5	12	13

10-12	28	13	21	11	33	12	18	64
13-15	27	12	27	14	30	9	16	73
16-18	29	12	29	13	28	9	14	85
19-21	21	11	33	13	23	9	22	39
22-24	25	9	30	11	24	7	21	32
25-27	22	11	35	8	19	5	23	16
28-31	22	11	34	17	21	7	23	29
ALL	26	12	28	14	28	10	18	351

Generally, younger children (between 7-18 months) spend more time sleeping than older children (between 19-31 months).

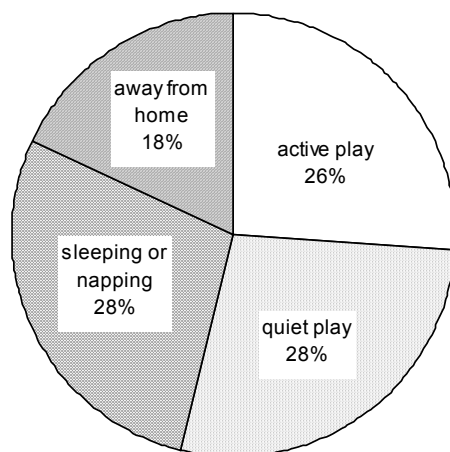


Figure 10: Behaviour Observation and Risk Factor Studies: Average percent of time spent engaged in active play, quiet play or sleeping/napping for children aged 7-31 months between the hours of 7:30am and 9:30pm.

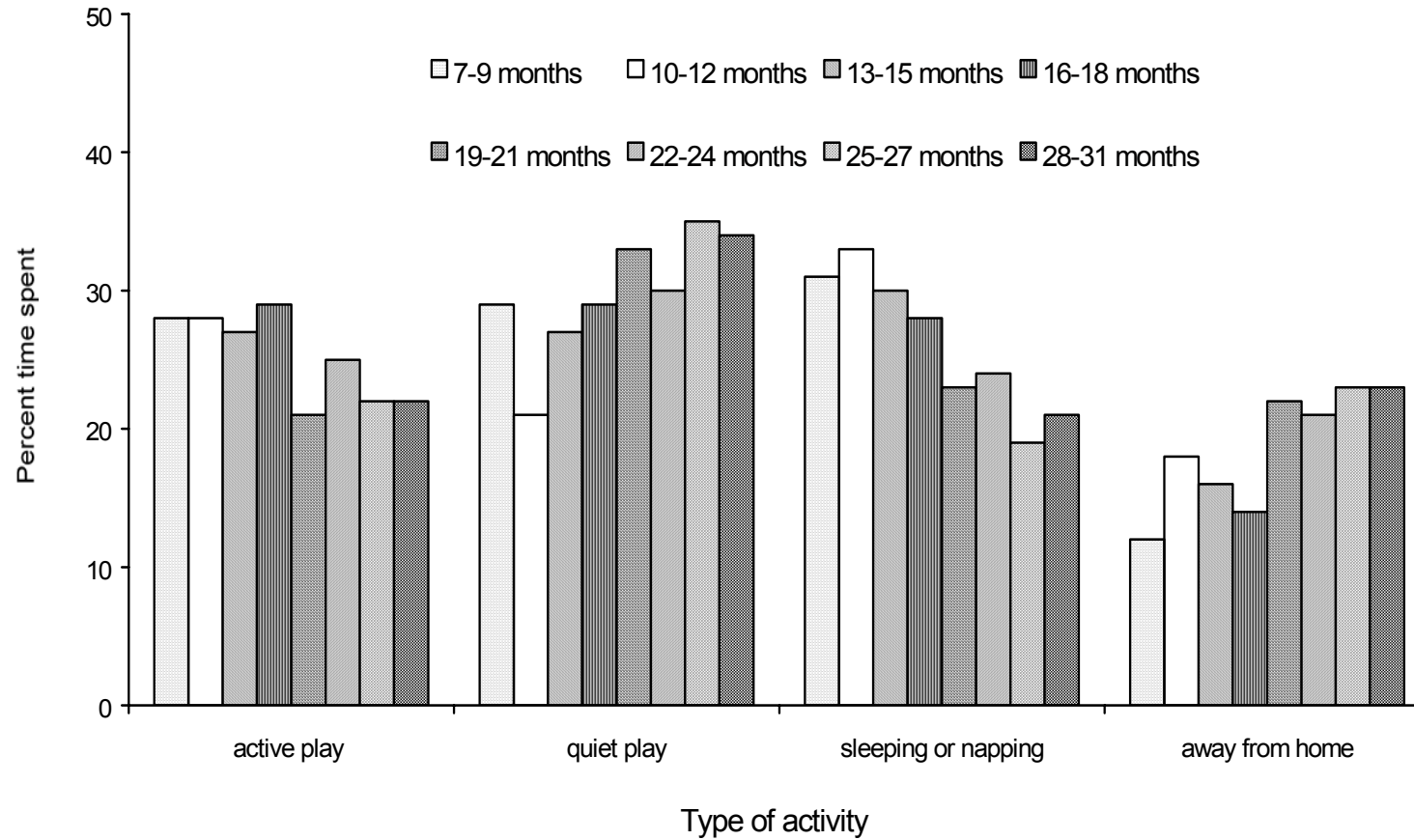


Figure 11: Behaviour Observation and Risk Factor Studies: Average percent day time spent engaged in active play, quiet play or sleeping/napping for children aged 7-31 months, between the hours of 7:30am and 9:30pm, stratified by age.

Table 8: Behaviour Observation and Risk Factor Studies: Average percent time spent in active play, quiet play or sleeping/napping for children aged 7-31 months, between the hours of 7:30am-9:30pm, stratified by age and sex.

Sex	Male							
Age Group (months)	Average percent time spent engaged in active play		Average percent time spent engaged in quiet play		Average percent time spent sleeping or napping		Away from home	Number of Diaries
	mean	SD	mean	SD	mean	SD	mean	
7-9	26	10	31	12	34	4	8	5
10-12	30	14	22	12	34	10	13	29
13-15	29	14	26	16	29	7	15	35
16-18	29	12	31	14	26	9	14	28
19-21	26	12	32	14	26	7	16	17
22-24	25	10	26	11	23	6	26	13
25-27	24	14	35	11	19	5	22	8
28-31	25	11	31	18	21	7	23	11
ALL	28	13	28	14	28	9	16	146
Sex	Female							
Age Group (months)	Average percent time spent engaged in active play		Average percent time spent engaged in quiet play		Average percent time spent sleeping or napping		Away from home	Number of Diaries
	mean	SD	mean	SD	mean	SD	mean	
7-9	29	17	27	21	29	5	15	8
10-12	26	13	20	11	32	14	21	35
13-15	25	10	27	12	31	11	17	38
16-18	30	12	27	13	29	9	14	57
19-21	18	9	34	12	20	9	27	22
22-24	25	8	33	9	24	7	18	19
25-27	20	6	36	4	19	6	24	8
28-31	20	11	36	16	21	8	23	18
ALL	26	12	28	13	27	11	19	205

There are no sizeable differences by age or by gender with regard to average percent time, between 7.30am–9.30pm engaged in active/quiet play or sleeping/napping.

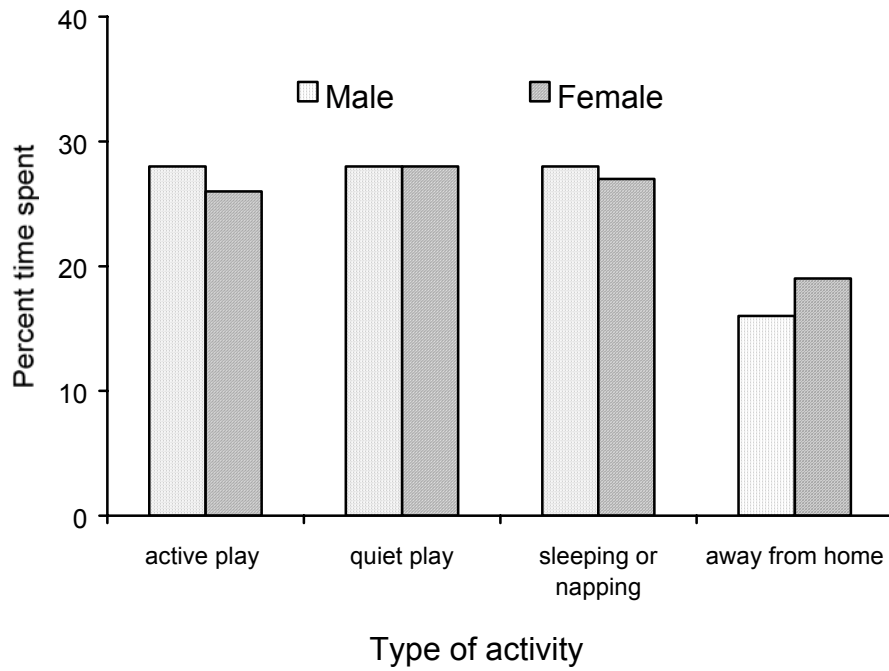


Figure 12: Behaviour Observation and Risk Factor Studies: Average percent day time spent engaged in active play, quiet play or sleeping/napping for children aged 7-31 months, between the hours of 7:30am and 9:30pm , stratified by sex.

Diary information from the Infant Study was analysed cross sectionally for children aged 1-7 months.

Table 9: Infant Study: Average percent time spent sleeping/napping or awake for children aged 1-7 months, over 24 hours and stratified by age.

Age (months)	Average percent time spent awake at home		Average percent time spent sleeping or napping at home		Away from home	Number of Diaries
	mean	SD	mean	SD	mean	
1-2	40	10	53	10	7	19
3	38	13	59	18	3	21
4	38	10	52	18	10	27
5	38	12	55	15	7	22
6-7	41	10	52	15	7	23
ALL	39	11	54	16	7	112

As expected, infants spend a majority of their time sleeping (54%). “Wakefulness” could not be assessed when children were away from home.

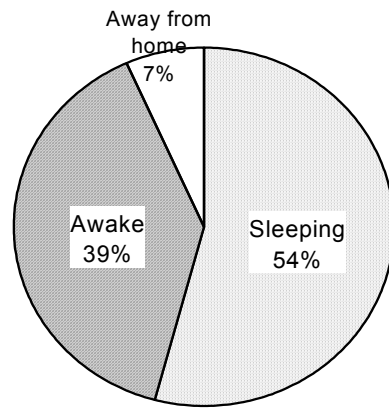


Figure 13: Infant Study: Average percent time (24 hours) spent sleeping or awake for children aged 1-7 months.

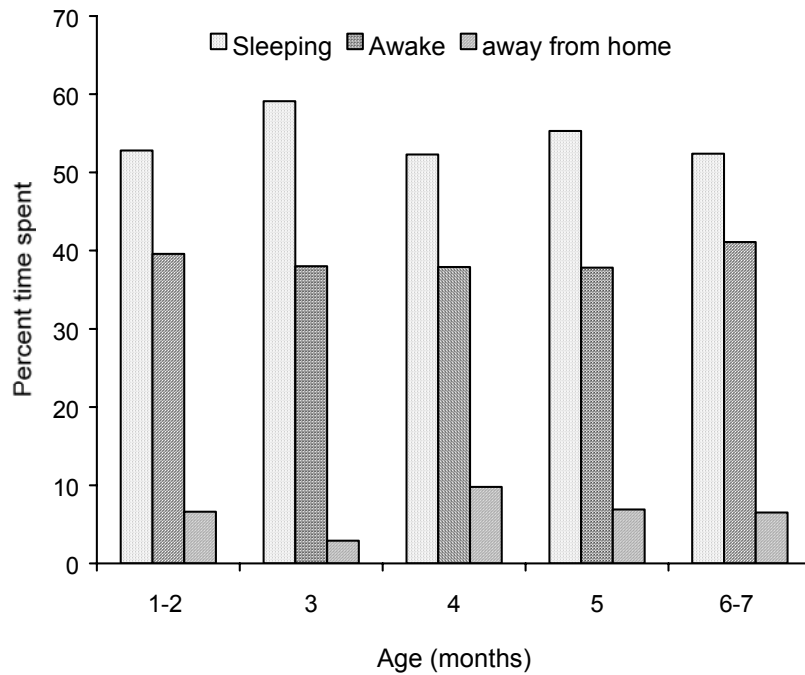


Figure 14: Infant Study: Average percent time (24 hours) spent sleeping or awake for children aged 1-7 months, stratified by age.

Table 10: Infant Study: Average percent time (24 hours) spent sleeping/napping or awake for children aged 1-7 months, stratified by age and sex.

Sex		Male				
Age (months)	Average percent time spent awake		Average percent time spent sleeping or napping		Percent away from home	Number of Diaries
	mean	SD	mean	SD		
1-2	37	9	54	11	9	14
3	35	13	64	20	<1	12
4	36	8	53	20	11	16
5	39	14	59	15	2	10
6-7	38	7	58	9	4	11
ALL	37	10	57	16	6	63
Sex		Female				
Age (months)	Average percent time spent awake		Average percent time spent sleeping or napping		Percent away from home	Number of Diaries
	mean	SD	mean	SD		
1-2	48	4	49	8	3	5
3	42	12	53	13	6	9
4	41	12	52	15	8	11
5	37	10	52	16	11	12
6-7	44	12	47	17	9	12
ALL	42	11	51	14	8	49

Regardless of age, boys spent more time sleeping than girls.

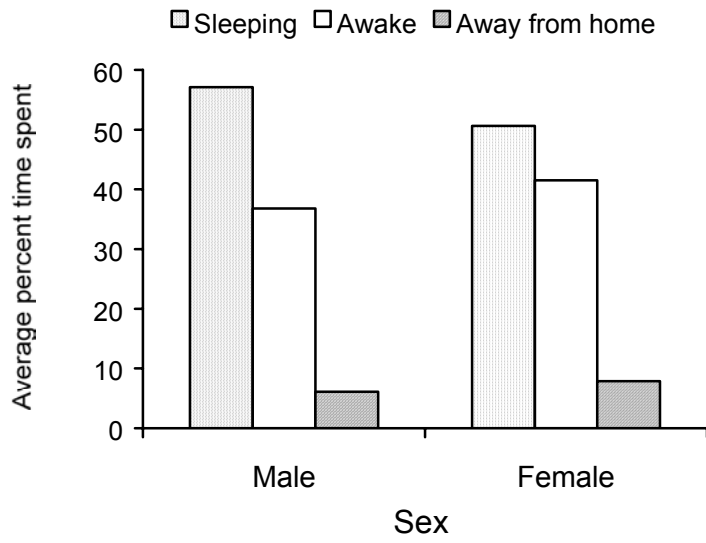
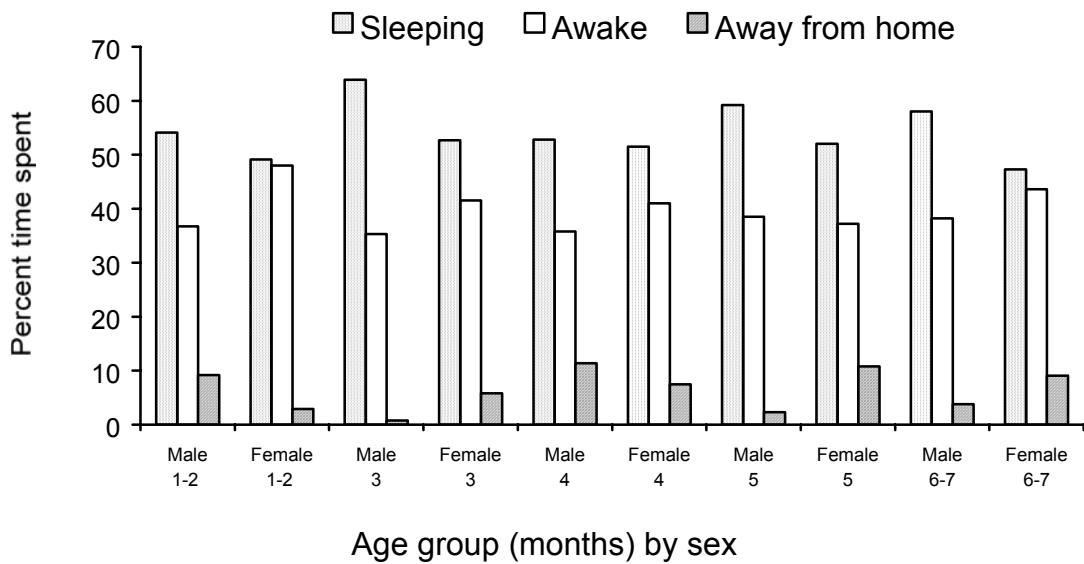


Figure 15: Infant Study: Average percent time (24 hours) spent



sleeping/napping or awake for infants aged 1-7 months, stratified by sex.

Figure 16: Infant Study: Average percent time (24 hours) spent sleeping/napping or awake for infants aged 1-7 months, stratified by sex.

8 Inside Location

Diary information from the Behaviour Observation and Risk Factor studies was aggregated and analysed cross sectionally for children aged 7-31 months.

Table 11: Behaviour Observation and Risk Factor Studies: Average percent day time spent at inside locations by children aged 7-31 months, stratified by age (standard deviation in parenthesis).

Inside Location	Age Group (months)								
	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-31	ALL
Own Bedroom	22% (13)	30% (15)	31% (10)	28% (13)	22% (11)	24% (10)	16% (7)	21% (7)	27% (12)
Family/Lounge/Dining	32% (10)	21% (12)	19% (11)	20% (15)	23% (12)	21% (12)	26% (12)	20% (13)	21% (13)
Kitchen	12% (6)	12% (9)	12% (8)	10% (7)	10% (8)	9% (8)	8% (6)	8% (7)	11% (8)
Hallway	2% (3)	1% (2)	<1% (2)	1% (2)	<1% (.9)	1% (2)	<1% (.2)	<1% (3)	<1% (2)
Bathroom	3% (2)	3% (2)	3% (2)	3% (2)	3% (2)	3% (2)	2% (3)	4% (4)	3% (2)
All over house	6% (6)	10% (13)	10% (9)	13% (9)	7% (8)	6% (8)	8% (10)	9% (7)	10% (10)
Other inside location	10% (10)	2% (4)	<1% (1)	1% (4)	2% (3)	2% (5)	3% (6)	2% (3)	2% (4)
Outside/Away	13%	21%	23%	23%	33%	34%	37%	36%	27%
Diaries	13	64	73	85	39	32	16	29	351

Children spent the largest proportion (27%) of indoor time between 7.30am-9.30pm in their own bedrooms and family/lounge/dining room (21%). On average children spent 11% of their time in the kitchen and 10% of the time children are classified by their parents as being “all over the house”.

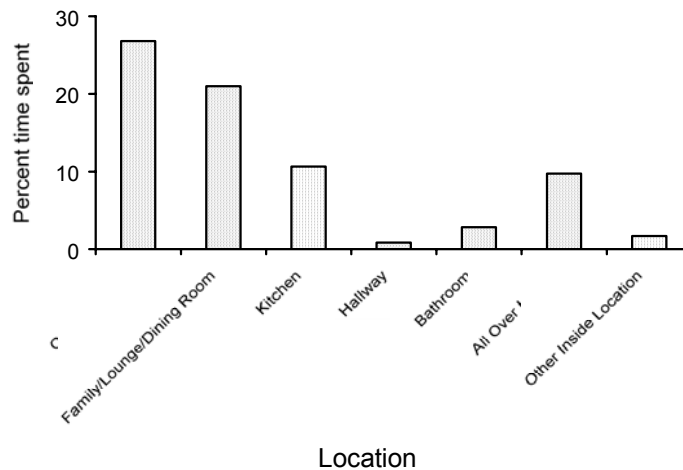


Figure 17: Behaviour Observation and Risk Factor Studies: Average percent day time spent at inside location for children aged 7-31 months.

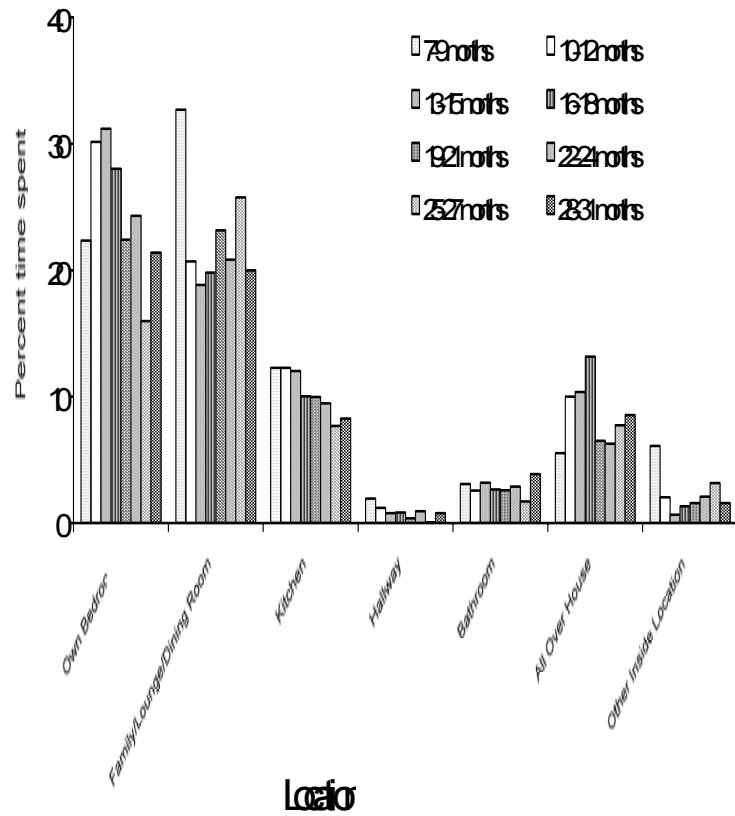


Figure 18: Behaviour Observation and Risk Factor Studies: Average percent day time spent at inside locations for children aged 7-31 months, stratified by age.

Table 12: Behaviour Observation and Risk Factor Studies: Average percent day time spent at inside locations for children aged 7-31 months stratified by age and sex (standard deviation in parenthesis).

Age group	Male								
	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-31	ALL
Own Bedroom	27 (14)	32 (9)	29 (8)	24 (11)	25 (11)	25 (9)	16 (5)	21 (8)	26 (10)
Family/ Lounge/Dining	29 (8)	21 (13)	22 (12)	21 (15)	25 (14)	18 (13)	26 (12)	22 (16)	22 (13)
Kitchen	16 (2)	13 (8)	11 (9)	12 (8)	9 (9)	10 (9)	6 (6)	6 (4)	11 (8)
Hallway	2 (2)	1 (2)	<1 (0.7)	<1 (1)	<1 (1)	1 (3)	0 (0)	<1 (0.7)	<1 (2)
Bathroom	5 (2)	3 (2)	3 (3)	4 (2)	3 (3)	3 (2)	1 (0.8)	5 (4)	3 (3)
All over house	6 (6)	11 (12)	12 (10)	12 (10)	8 (10)	8 (11)	9 (10)	9 (8)	10 (10)
Other inside location	4 (6)	2 (3)	<1 (1)	<1 (2)	1 (3)	2 (5)	2 (5)	1 (1)	1 (3)
Outside/Away	11	17	23	26	29	33	40	36	26
Diaries	5	29	35	28	17	13	8	11	146
Age group	Female								
	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-31	ALL
Own Bedroom	19 (13)	29 (18)	33 (11)	30 (13)	21 (12)	24 (10)	16 (9)	22 (7)	27 (14)
Family/ Lounge/Dining	35 (11)	21 (11)	16 (10)	19 (15)	22 (10)	23 (10)	25 (13)	19 (12)	20 (12)
Kitchen	10 (7)	12 (10)	13 (7)	9 (6)	11 (7)	9 (7)	9 (7)	10 (8)	10 (8)
Hallway	2 (4)	1 (2)	1 (2)	1 (2)	<1 (0.3)	<1 (2)	<1 (0.3)	1 (4)	1 (2)
Bathroom	2 (1)	3 (2)	3 (2)	2 (2)	2 (2)	3 (3)	3 (3)	3 (3)	3 (2)
All over house	5 (6)	9 (14)	9 (7)	14 (9)	6 (6)	5 (5)	7 (10)	8 (7)	9 (9)
Other inside location	8 (12)	2 (5)	<1 (1)	2 (4)	2 (3)	2 (6)	4 (6)	2 (4)	2 (5)
Outside/Away	19	23	24	23	36	33	36	35	28
Diaries	8	35	38	57	22	19	8	18	205

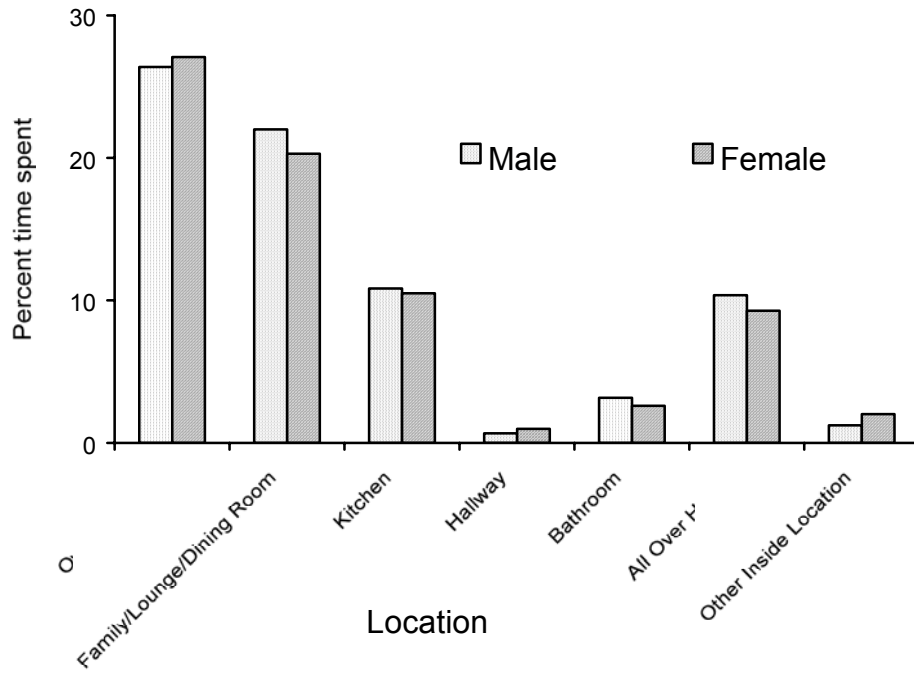


Figure 19: Behaviour Observation and Risk Factor Studies: Average percent day time spent at inside locations for children aged 7-31 months, stratified by sex.

Diary information from the Infant Study was aggregated and analysed cross sectionally for children aged 1-7 months.

Table 13: Infant Study: Average percent time (24 hours) spent at inside locations for children aged 1-7 months, stratified by age.

Age Group (months)	Average percent time spent											
	1-2		3		4		5		6-7		All	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
Parents Bedroom	28	26	25	30	26	30	23	28	21	25	25	28
Own Bedroom	19	28	26	31	28	30	28	32	33	30	27	30
Family/Lounge/ Dining room	42	22	39	25	30	17	30	19	29	20	34	21
Kitchen	3	5	4	6	4	4	6	7	6	6	5	6
Hall	<1	<1	<1	1	0	0	<1	1	<1	1	<1	1
Other inside location	<1	1	1	2	<1	1	4	13	1	2	2	6
Outside/Away	8		5		12		8		9		9	
Diaries	19		21		27		22		23		112	

Infants spent the largest proportion of time (34%) in the family/lounge/dining room. Infants also spent large amounts of time in bedrooms. This is likely to be a reflection of the proportion of time spent sleeping by these infants (on average 54%). Table 13 shows that as infants get older they spend less time in the family/lounge/dining room and parents' bedroom and spend more time in their own bedroom. These children spend very little time in the kitchen or in other inside locations.

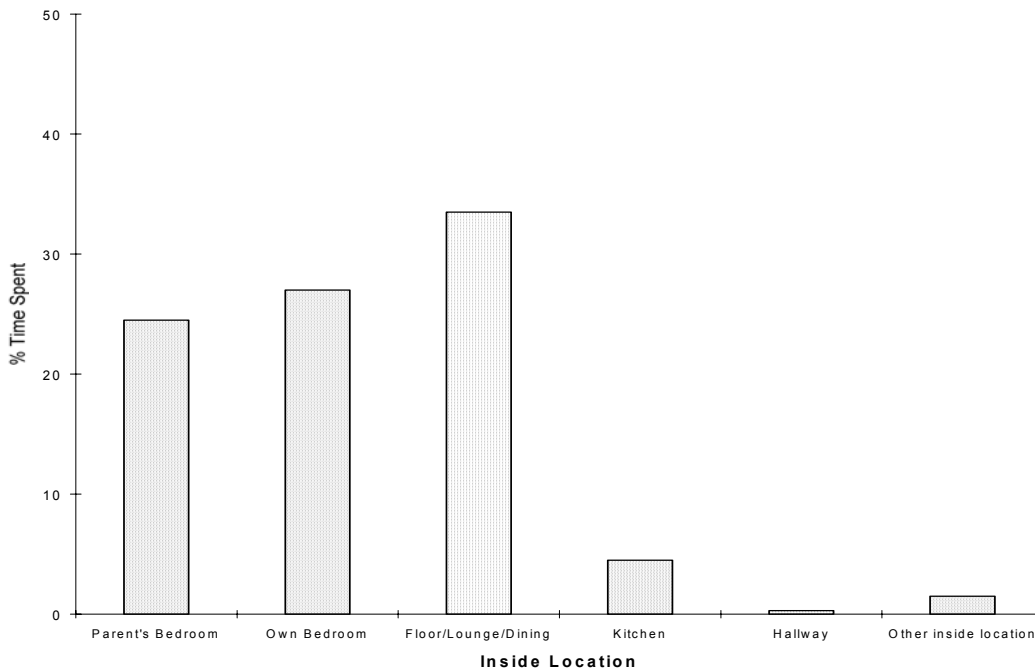


Figure 20: Infant Study: Average percent time (24 hours) spent at inside locations for infants aged 1-7 months.

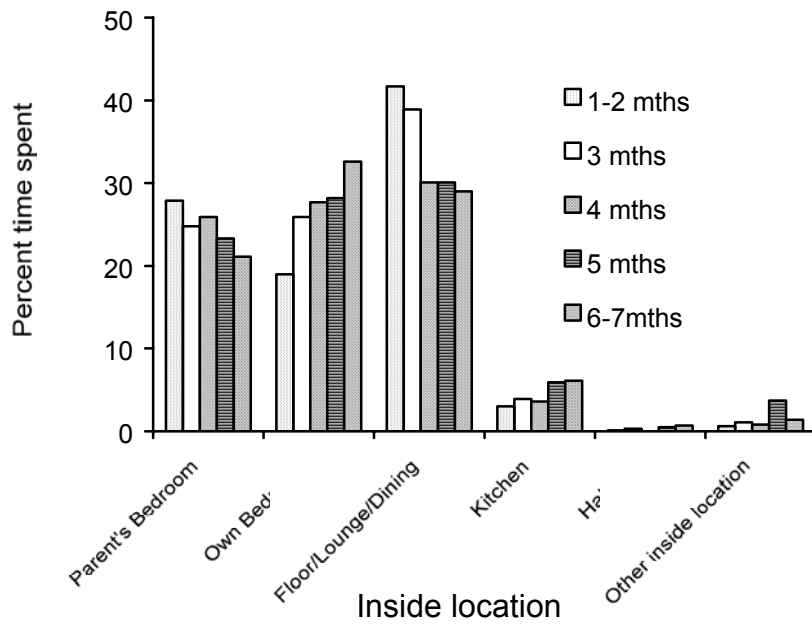


Figure 21: Infant Study: Average percent time (24 hours) spent at inside locations for infants aged 1-7 months, stratified by age.

Table 14: Infant Study: Average percent time (24 hours) spent at inside locations for children aged 1-7 months, stratified by age and sex.

Sex	Male											
Age (months)	1-2		3		4		5		6-7		ALL	
Inside Location	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
Parents	30%	24%	26%	32%	28%	32%	27%	31%	21%	25%	26%	28%
Bedroom	21%	30%	32%	35%	24%	31%	32%	36%	34%	33%	28%	32%
Own Bedroom	35%	16%	33%	21%	30%	20%	32%	23%	32%	27%	32%	21%
Family Lounge	4%	5%	4%	6%	3%	5%	5%	8%	7%	4%	4%	6%
Dining room	<1%	0.2%	0%	0%	0%	0%	<1%	0.7%	<1%	0.8%	<1%	0.4%
Kitchen	<1%	1%	2%	3%	<1%	2%	1%	2%	<1%	1%	1%	2%
Hall	9%		4%		14%		2%		6%		8%	
Other inside location	14		12		16		10		11		63	
Outside/Away												
Diaries												
Sex	Female											
Age (months)	1-2		3		4		5		6-7		ALL	
Inside Location	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
Parents	22%	31%	24%	29%	23%	28%	21%	26%	22%	27%	22%	27%
Bedroom	13%	20%	18%	25%	32%	30%	25%	30%	32%	28%	26%	27%
Own Bedroom	60%	29%	47%	29%	30%	13%	29%	16%	27%	12%	35%	21%
Family Lounge	1%	2%	4%	6%	4%	4%	6%	7%	5%	6%	5%	6%
Dining room	<1%	0.9%	<1%	2%	0%	0%	<1%	2%	<1%	2%	<1%	2%
Kitchen	<1%	1%	<1%	0.8%	<1%	1%	6%	18%	2%	2%	2%	9%
Hall	3%		7%		9%		12%		12%		10%	
Other inside location	5		9		11		12		12		49	
Outside/Away												
Diaries												

For all age groups, infants spent most of their time in the bedroom and living room. For all age groups, boys spent more time indoors in their parents bedroom than girls. For the 1-2 and 3 month age groups boys spent on average more time in their own bedroom than girls. There are gender differences in average time spent in the family/lounge/dining room amongst infants under 2 months.

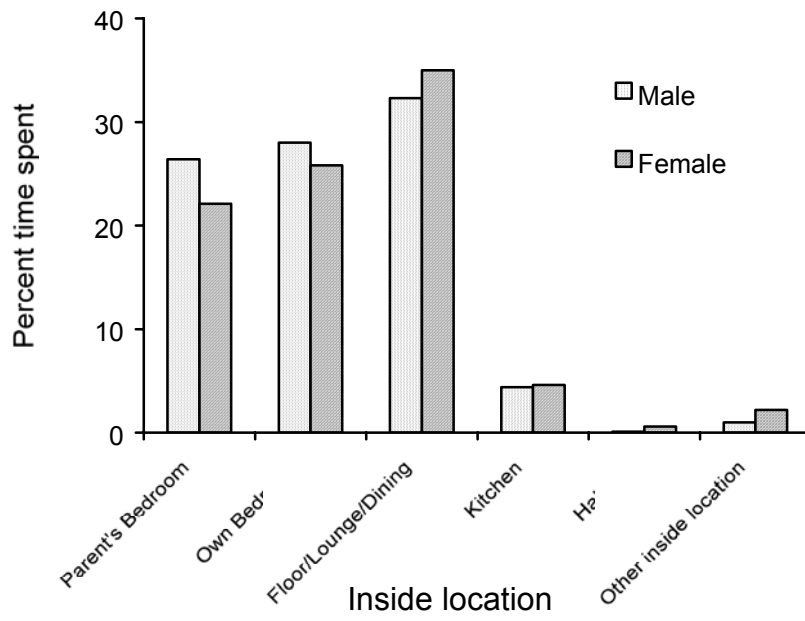


Figure 22: Infant Study: Average percent time spent at inside locations for children aged 1-7 months stratified by sex.

9 Outside Location

Diary information from the Behaviour Observation and Risk Factor studies were aggregated and analysed cross sectionally for children aged 7-31 months. Note that the hours of the diary range from 7.30am – 9.30pm.

Table 15: Behaviour Observation and Risk Factor Studies: Average percent day time spent at outside locations for children aged 7-31 months, stratified by age (standard deviation in parenthesis).

Outside Location		Age Group (months)								
		7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-31	ALL
Backyard	mean	2% (4)	3% (4)	5% (6)	6% (7)	9% (6)	10% (8)	11% (7)	8% (7)	6% (6)
	SD									
Front yard	mean	1% (1)	<1%	1%	2%	1%	<1%	1%	2%	1%
	SD	1%	0.8%	2%	3%	2%	1%	2%	4%	2%
Shed	mean	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
	SD	1%	1%	0.2%	1%	0.6%	0.3%	0.4%	2%	1%
Cubbyhouse	mean	0%	<1%	3%	<1%	<1%	<1%	1%	1%	<1%
	SD	0%	0.1%	0.1%	0.6%	2%	1%	2%	2%	1%
Verandah	mean	<1%	<1%	<1%	<1%	<1%	1%	1%	1%	<1%
	SD	0.6%	0.6%	1%	2%	1%	4%	3%	2%	2%
Other outside location	mean	0%	0%	<1%	<1%	0%	0%	<1%	<1%	<1%
	SD	0%	0%	0.3%	0.7%	0%	0%	0.6%	0.3%	0.4%
Inside/Away		96%	96%	93%	90%	89%	88%	85%	87%	92%
Diaries		13	64	73	85	39	32	16	29	351

Children spent the largest proportion of outdoor time in the back yard (6%). The percentage increases with age from 2% at age 7-9 months to a peak of 11% at 25-27 months.

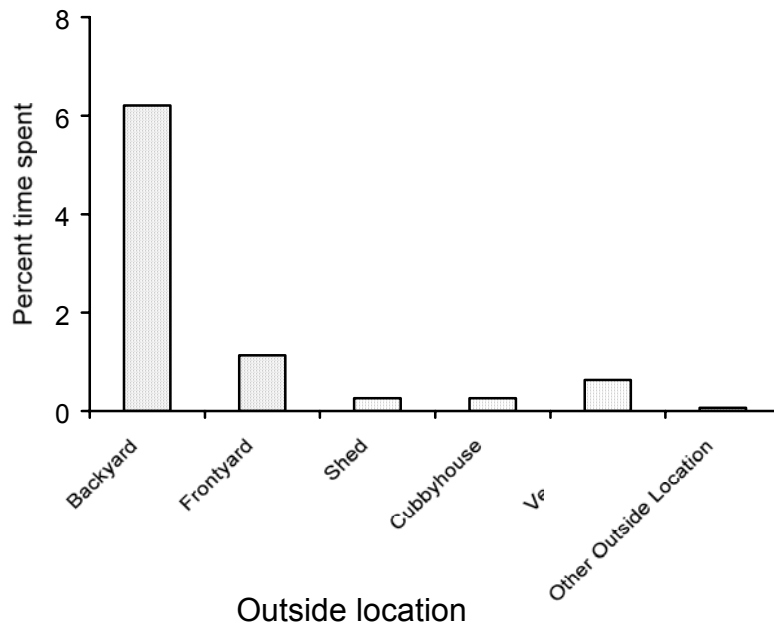


Figure 23: Behaviour Observation and Risk Factor Studies: Average percent day time spent at outside locations for children aged 7-31 months.

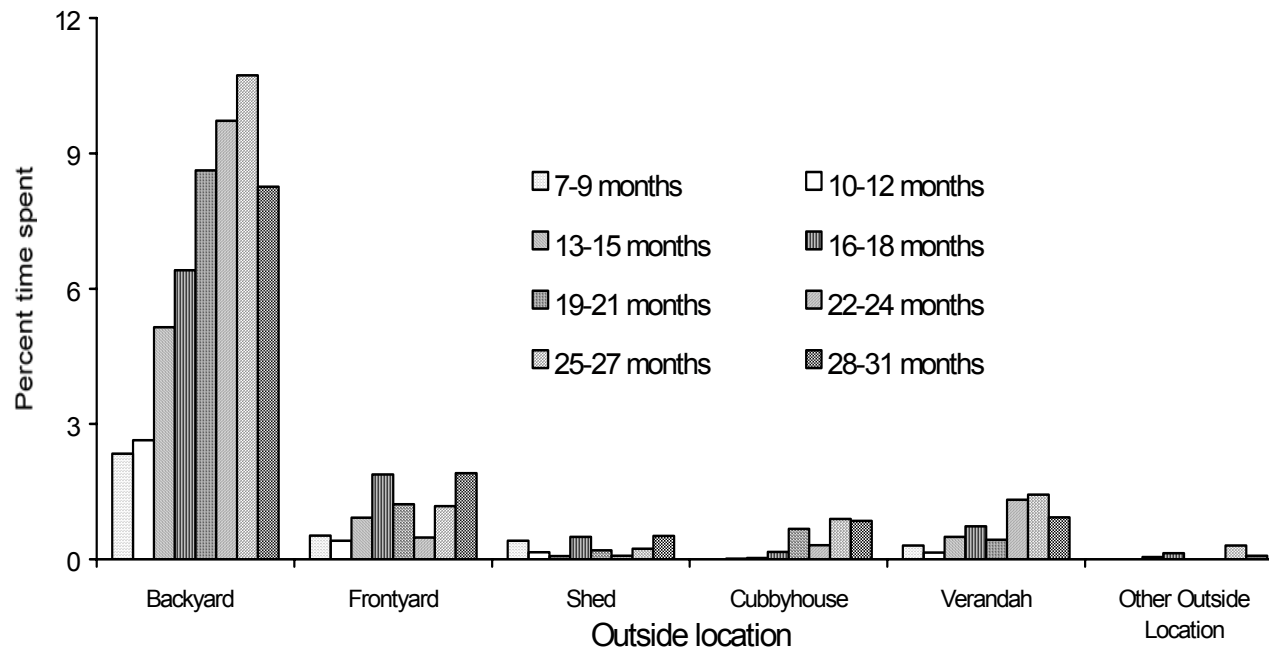


Figure 24: Behaviour Observation and Risk Factor Studies: Average percent day time spent at outside locations for children aged 7-31 months, stratified by age.

Table 16: Behaviour Observation and Risk Factor Studies: Average percent day time spent at outside locations for children aged 7-31 months, stratified by age and sex (standard deviation in parenthesis).

Sex	Male								
	Age Group (months)								
Outside Location	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-31	ALL
Backyard	3% (3)	4% (5)	6% (6)	8% (6)	11%	6% (3)	14% (7)	9% (6)	7% (6)
Front yard	0%	<1% (0.6)	1% (2)	2% (2)	1% (2)	1% (2)	<1% (1)	2% (4)	1% (2)
Shed	0%	<1% (1)	<1% (0.1)	<1% (1)	0%	<1% (0.1)	<1% (0.4)	<1% (1)	<1% (1)
Cubby	0%	<1% (0.1)	0%	<1% (0.2)	<1% (0.2)	<1% (1)	2% (3)	1% (2.5)	<1% (1)
Verandah	<1% (0.5)	<1% (1)	<1% (1)	<1% (1)	<1% (1)	<1% (1)	2% (4)	<1% (1)	<1% (1)
Other outside location	0%	0%	<1% (0.3)	<1% (1)	0%	0%	<1% (1)	<1% (0.4)	<1% (0.5)
Inside/Away	97%	95%	93%	89%	87%	93%	82%	87%	91%
Diaries	5	29	35	28	17	13	8	11	146
Sex	Female								
	Age Group (months)								
Outside Location	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-31	ALL
Backyard	2% (4)	2% (2)	5% (5)	6% (6)	7% (5)	12% (8)	7% (5)	8% (7)	6% (6)
Front yard	1% (2)	<1% (1)	1% (2)	2% (3)	1% (2)	<1% (1)	2% (3)	2% (4)	1% (2)
Shed	<1% (1)	0%	<1% (0.2)	<1% (1)	<1% (1)	<1% (0.3)	<1% (0.4)	<1% (2)	<1% (1)
Cubby	0%	0%	<1% (0.2)	<1% (1)	1% (3)	<1% (1)	0%	1% (1)	<1% (1)
Verandah	<1% (0.6)	<1% (0.4)	<1% (2)	<1% (2)	<1% (1)	2% (5)	1% (3)	1% (2)	<1% (2)
Other outside location	0%	0%	<1% (0.3)	<1% (0.5)	0%	0%	<1% (0.5)	<1% (0.1)	<1% (0.3)
Inside/Away	96%	98%	93%	91%	90%	85%	89%	88%	92%
Diaries	8	35	38	57	22	19	8	18	205

There is a steady increase in time spent in the backyard for both boys and girls with increasing age (peaking at age 25-27 months for boys). On average, girls and boys for all age groups spent little time in other outside locations such as the cubby house, shed or verandah.

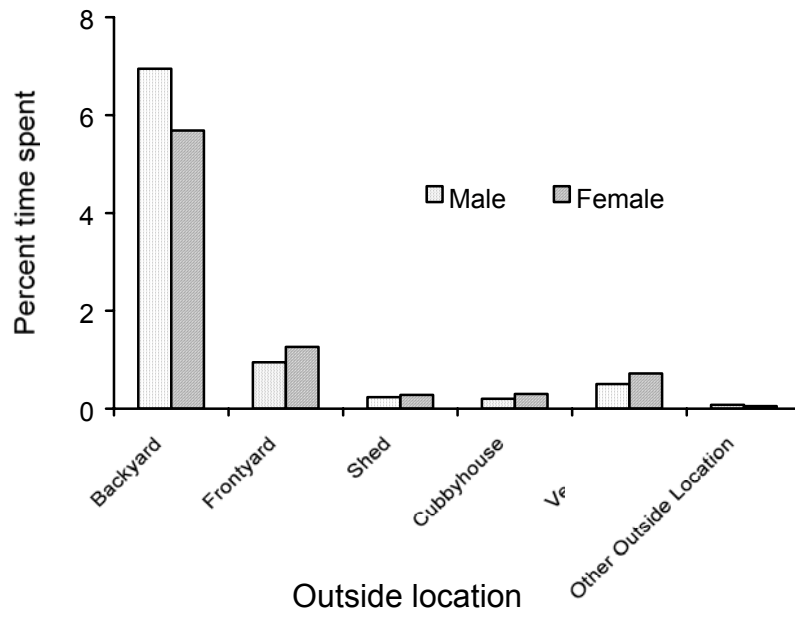


Figure 25: Behaviour Observation and Risk Factor Studies: Average percent day time spent at outside locations for children aged 7-31 months, stratified by sex.

10 Inside Surface Type

The following section describes what surface type the child was in contact with, in other words what the child was in or on during their activity. This includes a walker, chair, the floor, or other surface types.

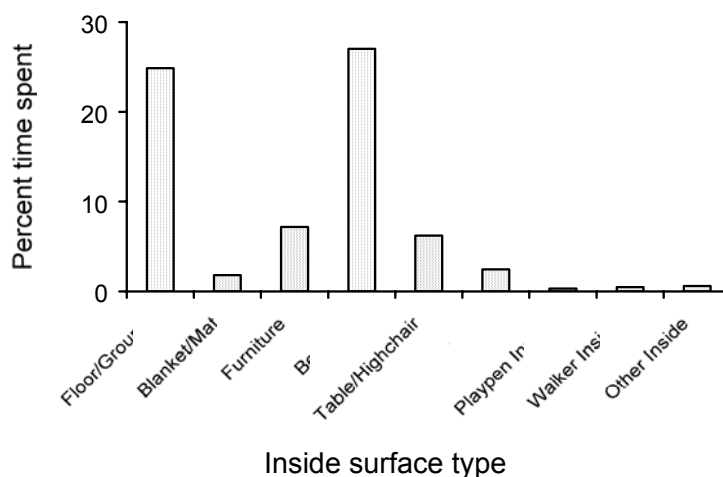
Diary information from the Behaviour Observation and Risk Factor studies was aggregated and analysed cross sectionally for children aged 7-31 months.

Table 17: Behaviour Observation and Risk Factor Studies: Average percent day time spent on inside surface types for children aged 7-31 months, stratified by age (standard deviation in parenthesis).

Age (months)	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-31	All
Floor/Ground	23% (16)	27% (12)	27% (13)	27% (9)	22% (10)	24% (14)	19% (9)	18% (10)	25% (12)
Blanket/Mat	5% (7)	4% (8)	<1% (2)	1% (4)	1% (5)	2% (5)	1% (3)	1% (3)	2% (5)
Furniture	4% (5)	3% (5)	5% (6)	8% (9)	10% (9)	8% (8)	15% (9)	11% (9)	7% (8)
Bed/Cot	31% (5)	31% (14)	30% (10)	28% (12)	22% (11)	24% (8)	17% (5)	22% (10)	27% (11)
Table/Highchair	1% (4)	3% (5)	6% (8)	6% (6)	8% (7)	7% (5)	9% (6)	10% (7)	6% (7)
Bath	3% (2)	3% (2)	3% (2)	2% (2)	2% (2)	2% (2)	1% (2)	2% (3)	2% (2)
Playpen inside	<1% (2)	1% (4)	<1% (2)	<1% (0.3)	<1% (0.2)	<1% (0.3)	0%	0%	<1% (2)
Walker inside	5% (8)	1% (4)	<1% (0.6)	<1% (1)	<1% (0.3)	<1% (1)	0%	0%	<1% (3)
Other inside surface	11% (4)	6% (3)	5% (5)	2% (5)	1% (3)	<1% (2)	<1% (1)	<1% (1)	3% (5)
Outside/Away	16%	21%	23%	24%	33%	31%	38%	36%	26%
Diaries	13	64	73	85	39	32	16	29	351

The surfaces parents most frequently report their children to be in contact with is their bed/cot and the floor/ground. Time spent on furniture also increases with age. The average percent time spent on the blanket/mat is highest for younger children.

Figure 26: Behaviour Observation and Risk Factor Studies: Average percent day time



spent on inside surface types for children aged 7-31 months.

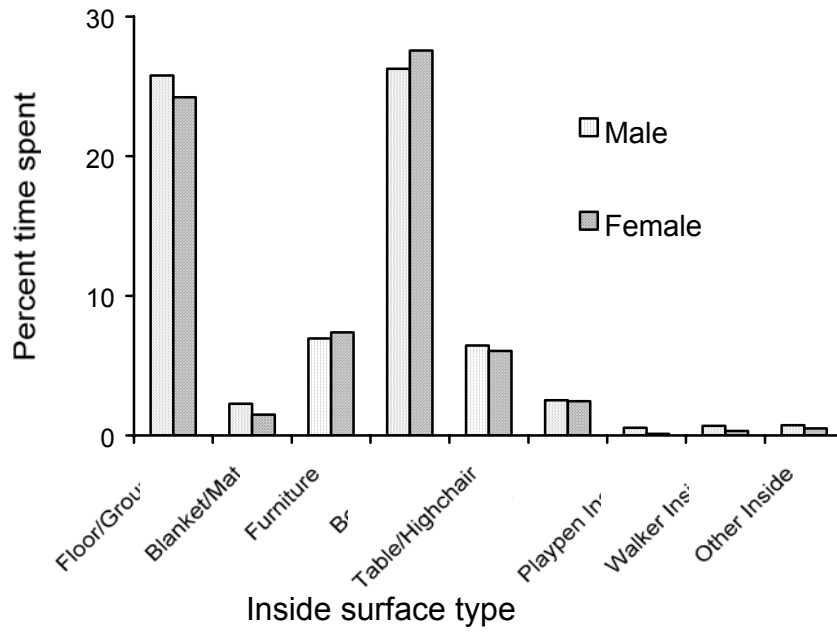


Figure 27: Behaviour Observation and Risk Factor Studies: Average percent day time spent on inside surface types for children aged 7-31 months, stratified by sex.

Table 18: Behaviour Observation and Risk Factor Studies: Average percent day time spent on inside surface types, stratified by age and sex.

Sex	Male								
	Age (months)								
Surface Type	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-31	All
Floor/Ground	16% (14)	26% (11)	30% (13)	28% (8)	23% (10)	27% (16)	16% (10)	19% (9)	26% (12)
Blanket/Mat	8% (11)	5% (9)	<1% (2)	3% (6)	<1% (0.6)	3% (6)	2% (5)	1% (1)	2% (6)
Furniture	3% (4)	3% (6)	5% (6)	7% (9)	12% (11)	7% (8)	15% (9)	14% (9)	7% (9)
Bed/Cot	35% (5)	32% (9)	29% (8)	23% (10)	25% (10)	23% (9)	16% (5)	20% (8)	26% (10)
Table/Highchair	4% (6)	3% (6)	6% (8)	9% (7)	8% (7)	5% (3)	9% (8)	7% (6)	6% (7)
Bath	5% (6)	3% (2)	3% (3)	3% (2)	2% (3)	1% (2)	1% (1)	2% (2)	2% (2)
Playpen inside	0%	2% (6)	<1% (2)	<1% (0.6)	0%	<1% (0.4)	0%	0%	<1% (3)
Walker inside	6% (7)	2% (6)	<1% (0.4)	0%	<1% (0.5)	0%	0%	0%	1% (3)
Other inside surface	13% (8)	7% (6)	4% (6)	2% (6)	0%	<1% (2)	1% (1)	1% (0.7)	3% (6)
Outside/Away	10%	17%	22%	25%	29%	33%	40%	36%	26%
Diaries	5	29	35	28	17	13	8	11	146
Sex	Female								
	Age (months)								
Surface Type	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-31	All
Floor/Ground	28% (16)	27% (13)	24% (12)	27% (9)	20% (9)	22% (12)	21% (8)	17% (10)	24% (11)
Blanket/Mat	3% (4)	3% (6)	1% (2)	<1% (2)	2% (7)	1% (4)	<1% (2)	1% (3)	1% (4)
Furniture	5% (5)	3% (5)	5% (6)	9% (9)	9% (6)	9% (7)	14% (10)	10% (9)	7% (8)
Bed/Cot	29% (4)	31% (16)	32% (11)	30% (12)	20% (11)	24% (8)	18% (6)	22% (12)	28% (12)
Table/Highchair	0%	3% (5)	6% (7)	5% (6)	8% (7)	8% (6)	9% (5)	12% (8)	6% (7)
Bath	2% (1)	3% (2)	3% (2)	2% (2)	2% (2)	2% (2)	2% (3)	2% (3)	2% (2)
Playpen inside	<1% (2)	<1% (0.5)	<1% (3)	<1% (0.1)	<1% (0.1)	0%	0%	0%	<1% (1)
Walker inside	5% (9)	<1% (1)	<1% (0.7)	<1 (1)	0%	<1% (1)	0%	0%	<1% (2)
Other inside surface	9% (7)	6% (6)	5% (6)	2% (5)	1% (4)	<1% (2)	<1% (0.4)	<1% (2)	3% (5)
Outside/Away	19%	24%	24%	24%	37%	33%	35%	35%	27%
Diaries	8	35	38	57	22	19	8	18	205

Younger boys spend more time in the bed/cot than girls. This most likely reflects the greater proportion of time spent sleeping by boys.

Diary information from the Infant Study was aggregated and analysed cross sectionally for children aged 1-7 months.

Table 19: Infant Study: Average percent time (24 hours) spent on inside surfaces for children aged 1-7 months, stratified by age.

Surface Type	Age Group (months)											
	1-2		3		4		5		6-7		All	
	mean	SD	Mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
Bassinette	32%	25%	28%	28%	15%	24%	15%	23%	2%	10%	17%	24%
On parents' bed	5%	9%	3%	5%	5%	8%	4%	8%	4%	8%	4%	7%
Cot	10%	22%	21%	29%	28%	28%	33%	29%	42%	21%	28%	28%
Pram	5%	15%	4%	13%	5%	13%	3%	5%	3%	5%	4%	11%
Bouncinette	9%	11%	6%	9%	9%	16%	7%	9%	8%	13%	8%	12%
Rocker	2%	5%	5%	7%	4%	7%	3%	4%	2%	4%	3%	5%
Blanket on floor	3%	4%	4%	4%	4%	5%	5%	5%	8%	7%	5%	5%
Floor	0%	1%	1%	2%	2%	3%	2%	3%	2%	4%	1%	3%
Nursed	24%	9%	21%	15%	18%	11%	18%	8%	6%	7%	19%	11%
Other inside surface type	2%	1%	2%	2%	3%	3%	5%	8%	16%	5%	4%	5%
Outside/Away	7%		4%		10%		7%		7%		7%	
Diaries	19		21		27		22		23		112	

Infants at the 1-2 month age group spent most of their time in the bassinet (32%) and being nursed (24%). This most likely reflects infants feeding and sleeping patterns at this age. Due to the frequent waking associated with young infants, the bassinet is a portable piece of furniture which keeps the child close to the care-giver. As infants get older less time is spent in the bassinet and increasing time is spent in their own cot. By 6-7 months, infants also spent less time being nursed. On average infants spent little time on the floor without a blanket. Infants spending time on “other” surface types steadily increases with age.

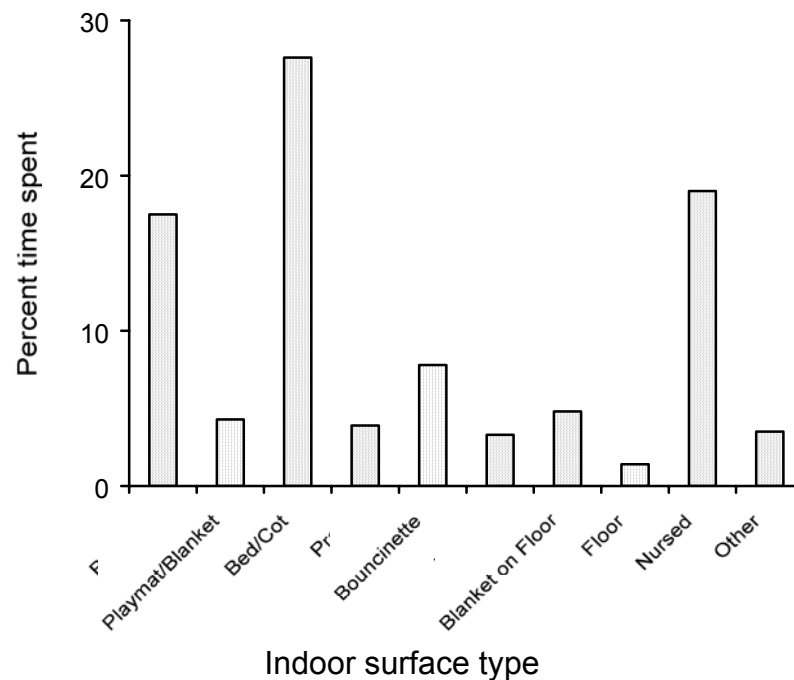


Figure 28: Infant Study: Average percent time (24 hours) spent on inside surface type for children aged 1-7 months.

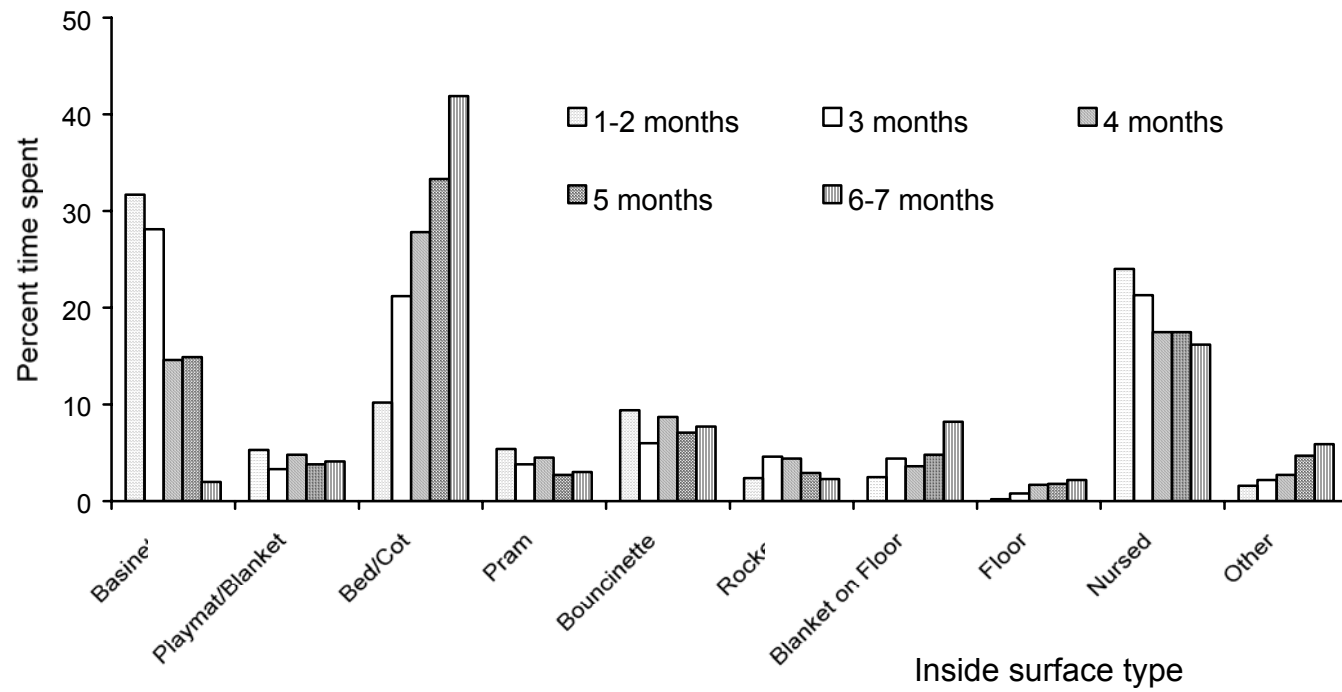


Figure 29: Infant Study: Average percent time (24 hours) spent on inside surface type for children aged 1-7 months, stratified by age.

Table 20: Infant Study: Average percent time (24 hours) spent on inside surface type for children aged 1-7 months, stratified for age and sex.

Sex	Male											
Age (months)	1-2		3		4		5		6-7		ALL	
Inside Surface Type	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
Bassinet	32%	25%	32%	29%	18%	26%	24%	27%	4%	14%	22%	26%
On parent's bed	7%	10%	3%	3%	4%	9%	3%	7%	5%	10%	5%	8%
Cot	9%	23%	22%	33%	23%	31%	32%	35%	41%	26%	24%	31%
Pram	7%	18%	5%	18%	6%	17%	2%	3%	3%	4%	5%	14%
Bouncinette	6%	8%	5%	6%	10%	20%	9%	11%	11%	18%	8%	14%
Rocker	2%	4%	4%	6%	4%	6%	3%	3%	2%	3%	3%	5%
Blanket on floor	3%	4%	5%	5%	3%	4%	4%	4%	10%	8%	4%	5%
Floor	0%	0%	0%	0%	2%	4%	2%	4%	0%	1%	1%	3%
Nursed	23%	17%	19%	7%	16%	6%	18%	8%	14%	4%	18%	7%
Other inside surface type	2%	1%	2%	1%	3%	3%	2%	2%	6%	4%	3%	3%
Outside/Away	9%		3%		12%		2%		4%		6%	
Diaries	14		12		16		10		11		63	
Sex	Female											
Age (months)	1-2		3		4		5		6-7		ALL	
Inside Surface Type	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
Bassinet	32%	27%	23%	27%	10%	19%	7%	16%	0%	0%	11%	21%
On parent's bed	1%	2%	4%	7%	6%	6%	4%	9%	4%	5%	4%	6%
Cot	12%	23%	20%	26%	35%	21%	35%	25%	43%	16%	32%	24%
Pram	1%	2%	2%	4%	2%	4%	3%	7%	3%	5%	3%	5%
Bouncinette	19%	14%	8%	11%	7%	8%	5%	6%	4%	6%	7%	9%
Rocker	3%	6%	5%	8%	4%	7%	3%	4%	3%	5%	3%	6%
Blanket on floor	2%	2%	4%	3%	5%	7%	6%	5%	7%	6%	5%	5%
Floor	1%	2%	2%	3%	1%	1%	2%	3%	4%	5%	2%	4%
Nursed	26%	14%	25%	21%	3%	16%	17%	9%	18%	9%	21%	14%
Other inside surface type	2%	1%	3%	2%	20%	4%	7%	10%	6%	6%	4%	6%
Outside/Away	3%		6		75%		11%		9%		8%	
Diaries	5		9		11		12		12		49	

Regardless of age, boys spent more time in the bassinet than girls. This difference could be explained by the relatively high value of 24% time spent in the bassinet for boys at 5 months of age.

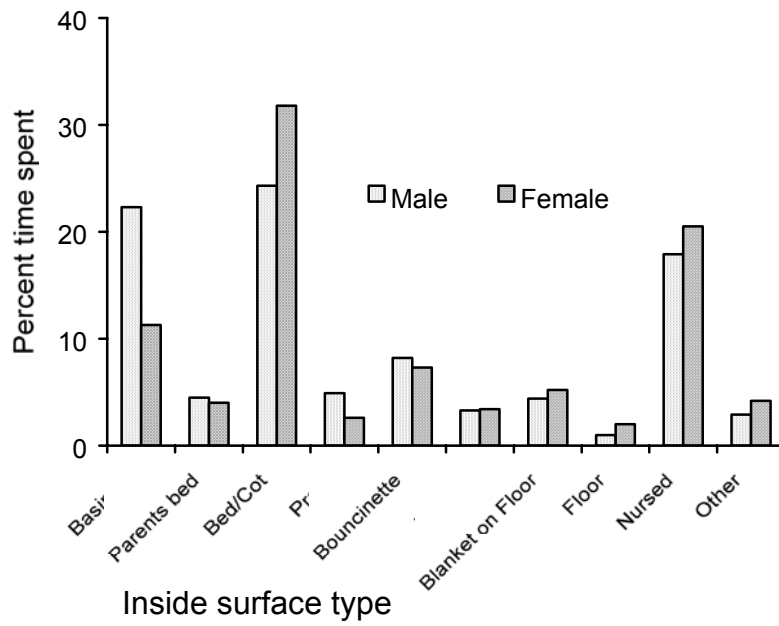


Figure 30: Infant Study: Average percent time (24 hours) spent on inside surface type for children aged 1-7 months, stratified by sex.

11 Outside Surface Type

Diary information from the Risk Factor Studies were aggregated and analysed cross sectionally for children aged 9-31 months.

Table 21: Risk Factor Studies: Average percent day time spent on outside surface type for children aged 9-31 months, stratified by age.

Outside surface type	Age Group (months)									
	9-12		13-18		19-24		25-31		ALL	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
Paved Area	1%	1%	2%	3%	4%	5%	3%	4%	3%	4%
Grassed Area	1%	2%	3%	2%	4%	4%	5%	4%	4%	4%
Dirt/sand area	<1%	1%	2%	2%	2%	4%	4%	5%	2%	3%
Gravelled area	<1%	1%	<1%	0.8%	1%	2%	1%	3%	1%	2%
On blanket/ mat outside	<1%	3%	<1%	0.3%	0%	0%	<1%	0.1%	<1%	1%
In play pen outside	<1%	0.2%	<1%	0.3%	0%	0%	0%	0%	<1%	0.2%
Other outside surface type	1%	3%	<1%	1%	<1%	0.5%	<1%	1%	<1%	1%
Inside/Away	96%		93%		88%		87%		90%	
Diaries	26		101		68		45		240	

There is a steady increase in time spent in paved, grassed and dirt/sand areas with increasing age. Children spent on average the majority of their time outdoors on grassed, paved and dirt/sand surfaces. Even into their third year, children spend only a small proportion of their time outside.

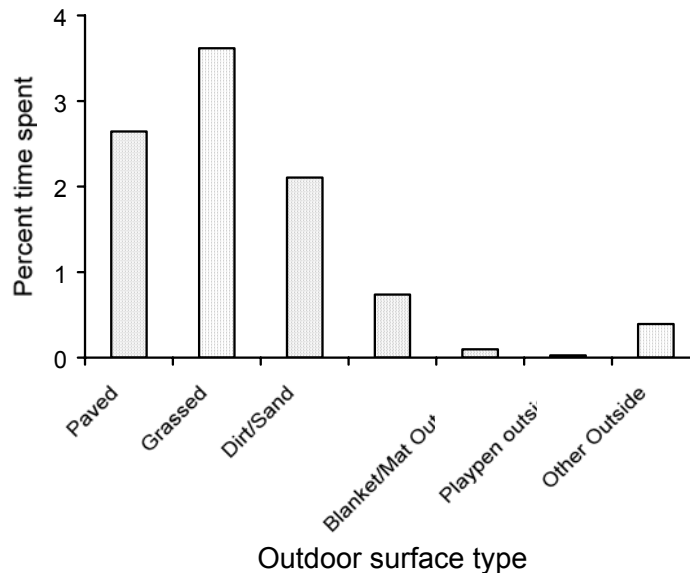


Figure 31: Risk Factor studies: Average percent day time spent on outside surface types for children aged 9-31 months.

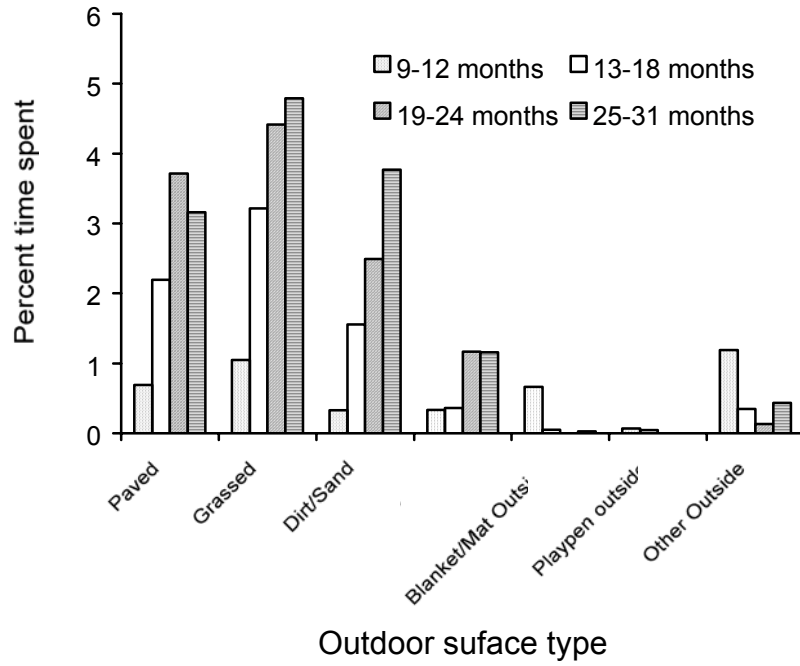


Figure 32: Risk Factor Studies: Average percent day time spent on outside surface types for children aged 9-31 months, stratified by age.

Table 22: Risk Factor Studies: Average percent day time spent on outside surface types for children aged 9-31 months, stratified by age and sex.

Outside surface type	Male									
	9-12 months		13-18 months		19-24 months		25-31 months		ALL	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
Paved Area	1%	2%	3%	3%	3%	4%	4%	4%	3%	3%
Grassed Area	1%	1%	4%	3%	4%	3%	6%	4%	4%	4%
Dirt/sand area	<1%	1%	2%	2%	3%	3%	4%	5%	2%	3%
Gravelled area	1%	1%	<1%	1%	<1%	2%	1%	3%	1%	2%
On blanket/mat outside	1%	5%	<1%	0.3%	0%	0%	0%	0%	<1%	2%
In play pen outside	<1%	0.3%	<1%	0.3%	0%	0%	0%	0%	<1%	0.2%
Other outside surface type	2%	4%	<1%	2%	<1%	0.4%	<1%	2%	<1%	2%
Inside/Away	93%		91%		89%		85%		89%	
Diaries	13		45		30		19		107	
Age group (months)	Female									
	9-12		13-18		19-24		25-31		ALL	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
Paved Area	<1%	0.4%	2%	2%	5%	5%	3%	4%	3%	4%
Grassed Area	1%	2%	3%	3%	5%	5%	4%	4%	4%	4%
Dirt/sand area	<1%	0.6%	2%	3%	2%	4%	4%	5%	2%	4%
Gravelled area	<1%	0.6%	<1%	0.5%	1%	3%	1%	3%	<1%	2%
On blanket/mat outside	0%	0%	<1%	0.4%	0%	0%	<1%	0.2%	<1%	0.2%
In play pen outside	0%	0%	<1%	0.3%	0%	0%	0%	0%	<1%	0.2%
Other outside surface type	<1%	0.9%	<1%	0.7%	<1%	0.6%	<1%	0.7%	<1%	0.7%
Inside/Away	98%		93%		87%		88%		90%	
Diaries	13		56		38		26		133	

Boys spent more time on grassed, dirt/sand and “other” outside surface types than girls.

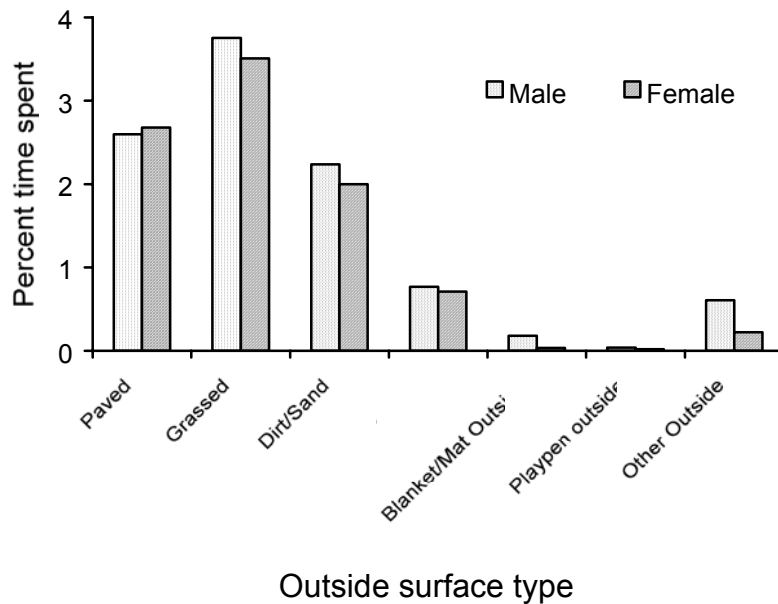


Figure 33: Risk Factor Studies: Average percent day time spent on outside surface types for children aged 9-31 months, stratified by sex.

12 Eating and Mouthing Behaviour

Diary information from the Behaviour Observation Study was aggregated and analysed cross sectionally for children aged 5-20 months.

12.1 Activity Diaries

Information obtained in the 14 hour Activity Diary included whether a meal or snack was eaten at any time within the hour. The number of hours the child was reported as eating was aggregated over.

Table 23: Behaviour Observation study: Number of hourly intervals that recorded specific eating behaviours one or more times for children aged 5-20 months, stratified by age. (NOTE: 14 hour day diary)

Age (months)	5-9	10	11	12	13	14	15	16	17-20	All
Breastfed	2.25	1.66	2.58	1.08	2.07	0.00	1.16	0.63	1.35	1.45
Milk bottle fed	3.58	3.80	3.00	3.50	1.42	2.50	2.00	3.72	3.70	3.09
Drink bottle fed	1.08	0.66	1.25	1.75	1.50	3.25	6.16	5.63	6.76	3.00
Meal	5.66	5.40	5.50	5.41	4.85	4.66	4.50	5.18	4.00	5.00
Snack	1.25	1.66	1.16	1.75	1.92	2.50	2.83	3.18	3.29	2.16
Ate at table	0.02	0.00	0.16	0.16	0.35	0.00	0.16	0.27	0.02	0.13
Ate at highchair	1.00	1.80	1.25	1.16	2.57	1.00	1.66	1.36	2.23	1.61
Ate on floor	0.02	0.60	0.25	1.08	0.85	0.16	0.16	0.90	0.52	0.54
Ate on lap	1.41	2.00	0.83	1.25	0.64	0.25	0.33	0.81	0.82	0.98
Ate outside	0.16	0.00	0.02	0.25	0.35	0.25	0.50	0.72	0.35	0.27
Diaries	12	15	12	12	14	12	6	11	17	111

Children aged 5-9 months are fed more frequently than children aged 17-20 months. However, eating a snack and having a bottled drink is more frequent as children get older. The highchair and on a parents' lap is reported as being the most common location for a snack/meal for all age groups with the floor, table and outside locations rarely recorded.

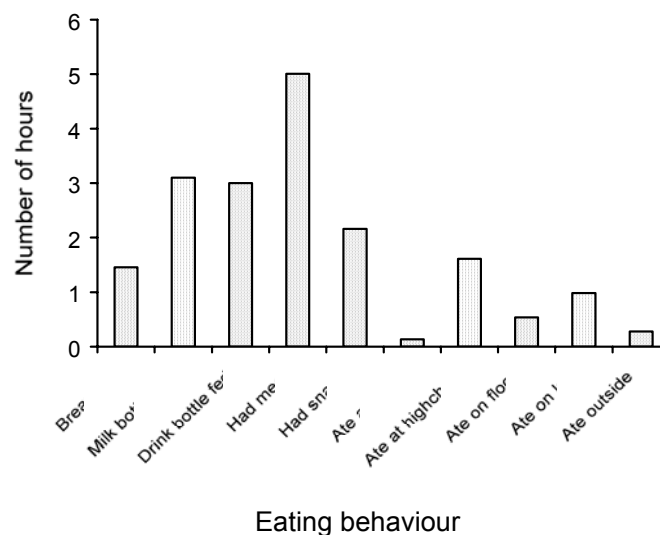


Figure 34: Behaviour Observation Study: Number of hourly intervals that recorded eating behaviours for children aged 5-20 months (NOTE: 14 hour day diary).

Table 24: Behaviour Observation Study: Number of hourly intervals that recorded eating behaviours one or more times for children aged 5-20 months, stratified by age and sex (NOTE: 14 hour day diary).

Sex	Male									
Age (months)	5-9	10	11	12	13	14	15	16	17-20	ALL
Breastfed	2.25	4.16	4.00	3.25	3.22	0.00	7.00	3.00	5.00	3.25
Milk bottle fed	3.75	1.83	1.57	3.50	0.77	1.25	0.00	2.00	0.50	1.74
Drink bottle fed	2.00	0.83	1.42	0.25	1.00	1.25	0.00	0.00	0.00	0.97
Meal	6.25	6.00	5.57	6.25	5.00	4.00	5.00	6.00	5.00	5.46
Snack	1.25	2.16	0.42	0.00	1.22	1.00	2.00	2.00	3.00	1.23
Ate at table	0.00	0.00	0.28	0.00	0.33	0.00	1.00	0.00	0.50	0.17
Ate at highchair	0.75	0.83	1.71	1.50	3.22	1.50	3.00	5.00	5.00	2.15
Ate on floor	0.00	1.16	0.00	0.25	0.66	0.25	0.00	0.50	0.00	0.41
Ate on lap	1.25	0.83	1.28	2.50	0.88	0.00	1.00	0.50	1.00	1.05
Ate outside	0.00	0.00	0.14	0.25	0.11	0.00	1.00	0.50	0.00	0.12
Diaries	4	6	7	4	9	4	1	2	2	39
Sex	Female									
Age (months)	5-9	10	11	12	13	14	15	16	17-20	ALL
Breastfed	2.25	0.00	0.60	0.00	0.00	0.00	0.00	0.11	0.86	0.48
Milk bottle fed	3.50	5.11	5.00	3.50	2.60	3.12	2.40	4.11	4.13	3.83
Drink bottle fed	0.62	0.55	1.00	2.50	2.40	4.25	7.40	6.88	7.66	4.09
Meal	5.37	5.00	5.40	5.00	4.60	5.00	4.40	5.00	3.86	4.76
Snack	1.25	1.33	2.20	2.62	3.20	3.25	3.00	3.44	3.33	2.66
Ate at table	0.12	0.00	0.00	0.25	0.40	0.00	0.00	0.33	0.00	0.11
Ate at highchair	1.12	2.44	0.60	1.00	1.40	0.75	1.40	0.55	1.86	1.31
Ate on floor	0.12	0.22	0.60	1.50	1.20	0.12	0.20	1.00	0.60	0.61
Ate on lap	1.50	2.77	0.20	0.62	0.20	0.37	0.20	0.88	0.80	0.94
Ate outside	0.25	0.00	0.00	0.25	0.80	0.37	0.40	0.77	0.40	0.36
Diaries	8	9	5	8	5	8	5	9	15	72

This data suggests boys are more frequently breast fed while girls are more frequently bottle fed and given a snack.



Figure 35: Behaviour Observation Study: Number of hourly intervals that recorded eating behaviours for children aged 5-20 months, stratified by sex.

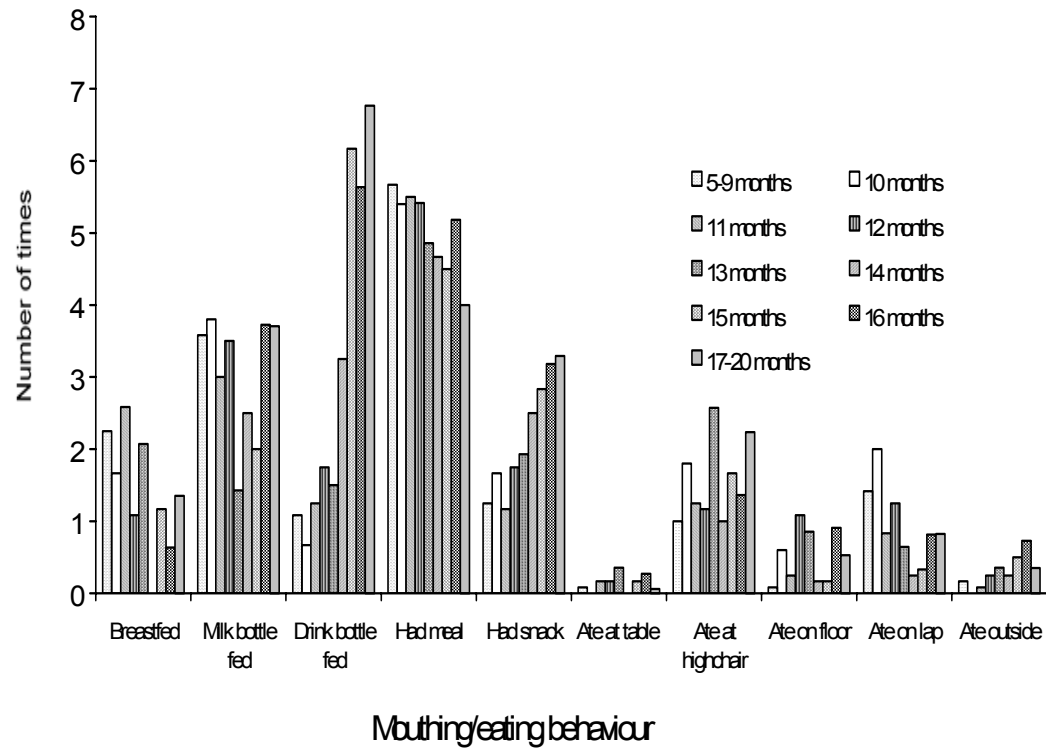


Figure 36: Behaviour Observation Study: Number of hourly intervals that recorded eating behaviours for children aged 5-20 months, stratified by age.

12.2 Child Questionnaires:

The following tables use information from the child questionnaires asked of each subjects parent or guardian. Where possible child questionnaire information from the Infant, Behaviour Observation and Risk Factor studies were aggregated and analysed.

Table 25: Infant Study, 1995 Risk Factor, Follow up and Behaviour Observation Study: Do 1-31 month old children place non food items in their mouth? Stratified by age. (sample size in parenthesis).

Age Group (months)	Yes	No	Don't know	Total
1-6	30% (9)	70% (21)		30
7-12	90% (35)	10% (4)		39
13-18	94% (58)	1% (1)	5% (3)	62
19-24	96% (27)	4% (1)		28
25-31	71% (24)	29% (10)		34
ALL	79% (153)	19% (37)	2% (3)	193

Only 30% of infants aged 1-6 months were reported to place non-food items in their mouth. In comparison, 90-96% of older children (7-24 months) were reported to place non-food items in their mouth.

Table 26: 1995 Risk factor, Follow up and Behaviour Observation Study: Percent frequency that 7-31 month old children place non-food items in their month, stratified by age. (sample size in parenthesis).

Age Group (months)	Always	Often	Sometimes	Rarely	Never	Don't Know	Total
7-12	33% (13)	28% (11)	21% (8)	5% (2)	3% (1)	10% (4)	39
13-18	3% (2)	35% (22)	18% (11)	32% (20)	5% (3)	7% (4)	62
19-24	21% (6)	21% (6)	36% (10)	18% (5)		4% (1)	28
25-31	3% (1)	32% (11)	24% (8)	12% (4)		29% (10)	34
ALL	13% (22)	31% (50)	23% (37)	19% (31)	2% (4)	12% (19)	163

The frequency with which mouthing non-food items were reported was highly variable and not age dependent.

Table 27: All Studies: Do 1-31 month old children suck their fingers or thumbs? Stratified by age. (sample size in parenthesis).

Age Group (months)	Yes	No	Don't know	Total
1-6	77% (23)	23% (7)		30
7-12	48% (21)	41% (18)	11% (5)	44
13-18	51% (48)	46% (44)	3% (3)	95
19-24	57% (29)	43% (22)		51
25-31	52% (23)	48% (21)		44
ALL	55% (144)	42% (112)	3% (8)	264

Infants aged 1-6 months had the highest frequency of finger/thumb sucking although this behaviour was still common into the third year of life.

Table 28: All Risk Factor, and Behaviour Observation Studies: Percent frequency that 7-31 month old children place their finger or thumb in their mouth's stratified by age. (sample size in parenthesis).

Age Group (months)	Always	Often	Sometimes	Rarely	Never	Don't Know	Total
7-12	5% (2)	13% (6)	25% (11)	7% (3)		50% (22)	44
13-18	3% (3)	12% (11)	23% (22)	13% (12)	2% (2)	48% (45)	95
19-24	4% (2)	20% (10)	25% (13)	8% (4)	12% (6)	31% (16)	51
25-31	9% (4)	9% (4)	18% (8)	16% (7)	5% (2)	43% (19)	44
ALL	5% (11)	13% (31)	23% (54)	11% (26)	4% (10)	44% (102)	234

Children were reported to place their fingers/thumbs in their mouth infrequently.

Table 29: All Studies: Do 1-31 month old children use a dummy? Stratified by age. (sample size in parenthesis).

Age Group (months)	Yes	No	Don't know	Total
1-6	87% (26)	13% (4)		30
7-12	64% (28)	27% (12)	9% (4)	44
13-18	59% (56)	37% (35)	4% (4)	95
19-24	41% (21)	59% (30)		51
25-31	34% (15)	66% (29)		44
ALL	55% (146)	42% (110)	3% (8)	264

87% of children aged 1-6 months were reported to use a dummy. Use of a dummy steadily decreases with age, but is still common into the third year.

Table 30: All Risk Factor and the Behaviour Observation Studies: The percent frequency that 7-31 month old children place a dummy in their mouth's, stratified by age (sample size in parenthesis).

Age Group (months)	Always	Often	Sometimes	Rarely	Never	Don't Know	Total
7-12	11% (5)	34% (15)	23% (10)		5% (2)	27% (12)	44
13-18	6% (6)	18% (17)	33% (31)	3% (3)	18% (17)	22% (21)	95
19-24	4% (2)	22% (11)	16% (8)		25% (13)	33% (17)	51
25-31	11% (5)	9% (4)	14% (6)		11% (5)	55% (24)	44
ALL	8% (18)	20% (47)	23% (55)	1% (3)	16% (37)	32% (74)	234

Children were reported to place a dummy in their mouth infrequently. However, dummy use is reported to be a frequent behaviour for all age groups.

Table 31: All Risk Factor and Behaviour Observation Studies: Do 7-31 month old children mouth security blankets or soft toys? Stratified by age. (sample size in parenthesis).

Age Group (months)	Yes	No	Don't know	Total
7-12	18% (8)	73% (32)	9% (4)	44
13-18	15% (14)	62% (59)	23% (22)	95
19-24	8% (4)	61% (31)	31% (16)	51
25-31	20% (9)	64% (28)	16% (7)	44
ALL	15% (35)	64% (150)	21% (49)	234

A child mouthing a security blanket or soft toy is reported by parents as an infrequent activity.

Table 32: 1995 and 1996 Risk Factor Studies: Do 7-31 month old children take any vitamin supplements? Stratified by age. (sample size in parenthesis).

Age Group (months)	Yes	No	Don't know	Total
7-12	8% (2)	88% (23)	4% (1)	26
13-18	3% (3)	91% (77)	6% (5)	85
19-24	4% (2)	96% (49)		51
25-31	9% (4)	82% (36)	9% (4)	44
ALL	5% (11)	90% (185)	5% (10)	206

90% of all children were not taking any vitamin supplement at the time of the survey.

Table 33: All Risk Factor and Behaviour Observation Studies: Percent frequency that 7-31 month old children put dirt in their mouths, stratified by age. (sample size in parenthesis).

Age Group (months)	Always	Often	Sometimes	Rarely	Don't Know	Total
7-12	2% (1)	12% (5)	43% (19)	2% (1)	41% (18)	44
13-18	9% (9)	12% (11)	46% (44)	13% (12)	20% (19)	95
19-24	12% (6)	12% (6)	33% (17)	16% (8)	27% (14)	51
25-31	2% (1)	18% (8)	16% (7)	18% (8)	46% (20)	44
ALL	7% (17)	13% (30)	37% (87)	13% (29)	30% (71)	234

Children were reported to mouth dirt, infrequently. Interestingly, a large proportion of parents did not know how often a child mouthed such items which probably represents the variability of when these events occur.

Table 34: Infant, Behaviour Observation and 1995 Risk Factor Studies: Average number of times per day 1-31 month old children wash their hands, stratified by age.

Age Group (months)	Mean	Percentiles					Total
		5th	25th	50th	75th	95th	
1-6	2	1	1	1	2	8	29
7-12	4	2	3	3	5	10	27
13-18	5	2	3	4	6	8	55
19-24	5	2	3	5	6	11	27
25-31	6	2	4	5	6	21	34
ALL	4.5	1	2	4	6	10	172

The average number of times hands are washed increases with age.

Table 35: All Risk Factor and Behaviour Observation Studies: Percent frequency that 7-31 month old children wash their hands before a meal, stratified by age.

Age Group (months)	Always	Sometimes	Rarely	Never	Don't Know	Total
7-12	27% (12)	41% (18)	18% (8)	2% (1)	12% (5)	44
13-18	49% (46)	36% (34)	7% (7)	5% (5)	3% (3)	95
19-24	49% (25)	33% (17)	16% (8)		2% (1)	51
25-31	66% (29)	27% (12)	7% (3)			44
ALL	48% (112)	35% (81)	11% (26)	2% (6)	4% (9)	234

Table 36: All Risk Factor and Behaviour Observation Studies: Percent frequency that 7-31 month old children wash their hands before a snack, stratified by age. (sample size in parenthesis).

Age Group (months)	Always	Sometimes	Rarely	Never	Don't Know	Total
7-12	16% (7)	43% (19)	23% (10)	7% (3)	11% (5)	44
13-18	20% (19)	52% (49)	19% (18)	5% (5)	4% (4)	95
19-24	24% (12)	41% (21)	24% (12)	10% (5)	1% (1)	51
25-31	20% (9)	57% (25)	18% (8)	5% (2)	-	44
ALL	20% (47)	48% (114)	21% (48)	6% (15)	4% (10)	234

Children were reported to wash their hands before a meal frequently, which increased with age. In contrast, hand washing before snacks was reported less frequently.

Table 37: All Risk Factor and Behaviour Observation Studies: Non-food items that children aged 7-31 months were reported to mouth in declining ranked order.

Non-Food Item
Toys
Anything
Stones
Dummy, Pencil/Pens
Bottle
Dirt
Keys
Paper, Blocks
Money
Fingers
Bark, Pegs
Spoons/Cutlery, Hairbrush, Clothes, Toothbrushes, Utensils
Books, Pet Food
Shoes, Furniture, Legs/Feet, Plants
Flannel/Washer, cigarette lighter, Balloons, Plastic
Containers, Pets
Teddy, Hair, Things from the floor, Cassettes, Teether,
Nappies, Food Tins, Magazines, Grout from the tiles,
Musical Instruments, Balls, Pots and Pans, Cigarettes, Bottle
Lids, Tools, Lawn, Bird Droppings, Everything, All new
objects, Rocks, Door Stopper, Sticks, Jars, Horse Manure
Other

Two hundred and thirty four parents were asked what non-food items their child mouthed and the following table lists those in ranked order. Toys accounted for one third of the non-food items listed. From this table it is clearly seen that children mouth many different types of objects.

13 Longitudinal Data

Diary information from the Behaviour Observation Study was analysed longitudinally for children aged 5-20 months. Each observation is displayed against age, with a different symbol representing each child, thereby indicating the magnitude and pattern of individual variability.

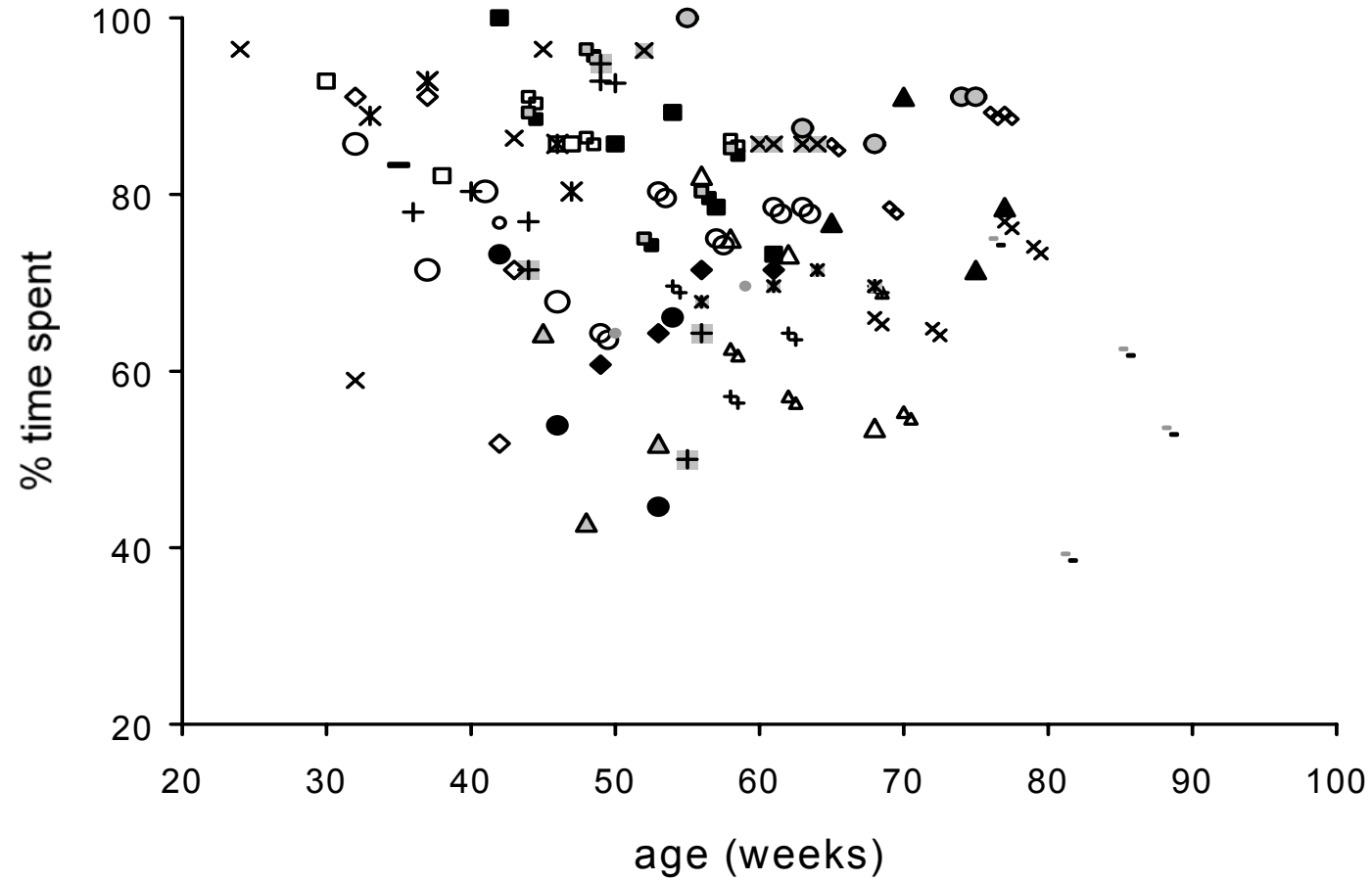


Figure 37: Behaviour Observation Study: Average percent time children spent inside the home between the hours of 7:30am and 9:30pm (n=29)

Table 40: Behaviour Observation Study: Average percent time children spent inside the home between the hours of 7:30am and 9:30pm, stratified by age (n=29).

	Age (weeks)							
Child	22-29	30-37	38-45	46-53	54-61	62-69	70-77	78-88
1						85.71	89.29	
1						78.57	89.29	
2			100.00	85.72	89.29			
2					78.57			
2					73.21			
3						76.79	91.07	
3							71.43	
3							78.57	
4			71.43	90.48	50.00			
4					64.29			
5			76.79					
6					69.64	64.29		
6					57.14	69.64		
7		91.07	51.79					
7		91.07	71.43					
8					82.14	73.21		
8					75.00	53.57		
9				64.29	75.00	78.57		
9				80.36	78.57			
10			91.07	96.43	80.36			
10				75.00	86.21			
11			89.29	96.43	80.36			
11				75.00	85.19			
12					62.50	57.14	55.36	
12						69.64		
13	96.43	58.93	86.36					
13		92.86	96.43					
14				60.71	71.43			
14				64.29	71.43			
15				64.29	69.64			
16		85.71	80.36	67.86				
16		71.43						
17						66.00	64.81	76.92
17								74.07
18		83.33						
19					67.86	71.43		
19					69.64	69.64		
20		92.86	82.14	85.71				
20				85.71				
21			64.29	42.86				
21				51.79				
22				96.30	85.71	85.71		
22					85.71			
23		88.89		85.71				
23		92.86		80.36				
24			73.21	53.85	66.07			
24				44.64				
25		78.00	80.36	92.86				
25			76.92	92.59				
26							75.00	39.29
26								62.50
26								53.57
27					100	87.50	91.07	
27						85.71	91.07	
28					100	87.50	91.07	
28						85.71	91.07	
29					100	87.50	91.07	
29						85.71	91.07	

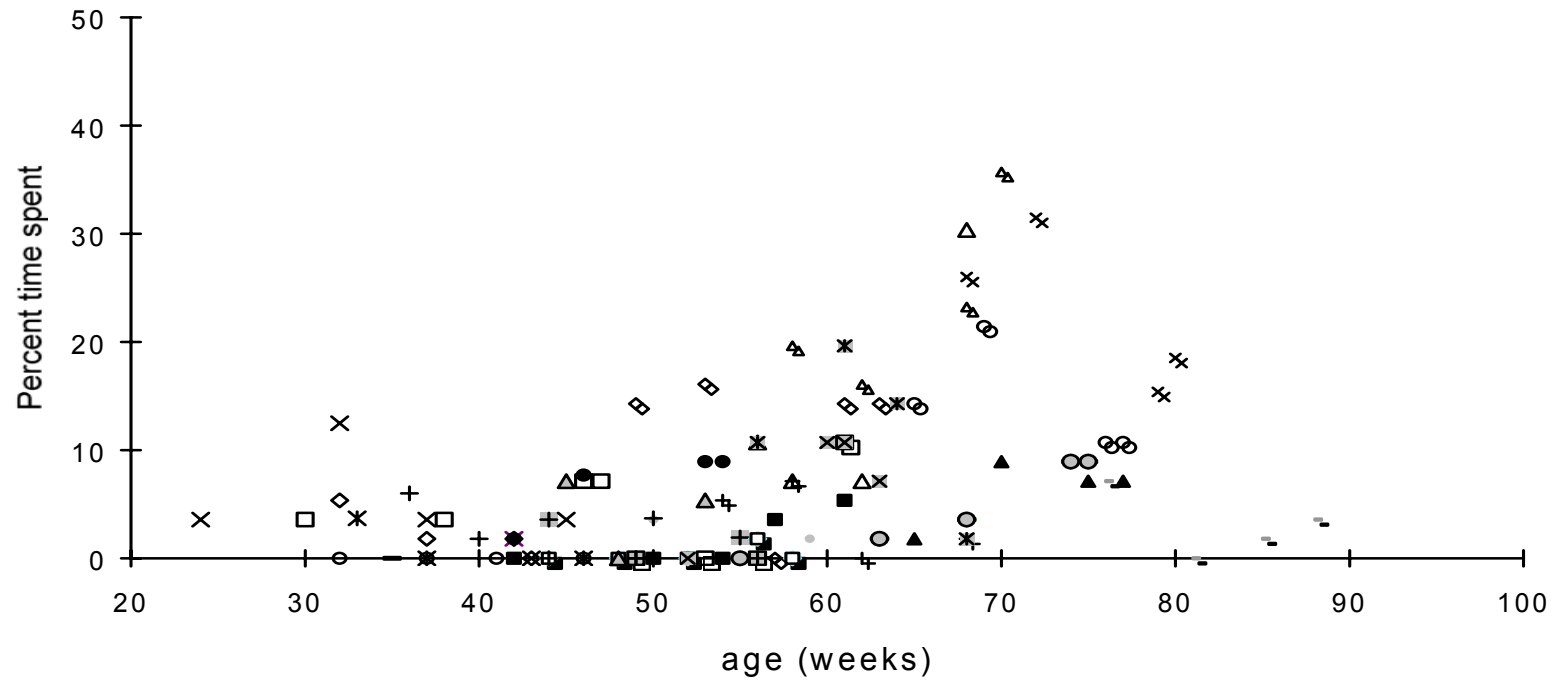


Figure 38: Behaviour Observation Study: Average percent time children spent outside the home between the hours 7:30am and 9:30pm (n=29).

Longitudinal analysis shows that with increasing age children still spend the largest proportion of their time indoors but spend increasing amounts of time outdoors.

Table 41: Behaviour Observation Study: Average percent time children spent outside the home between the hours 7:30am and 9:30pm, stratified by age (n=29).

Child	Age (weeks)							
	22-29	30-37	38-45	46-53	54-61	62-69	70-77	78-88
1						14.29	10.71	
1						21.43	10.71	
2			0.00	0.00	0.00			
2					3.57			
2					5.36			
3						1.79	8.93	
3							7.14	
3							7.14	
4			3.57	0.00	1.92			
4					0.00			
5			1.79					
6					5.36	0.00		
6					7.14	1.79		
7		5.36	1.79					
7		1.79	0.00					
8					10.71	7.14		
8					7.14	30.36		
9				14.29	0.00	14.29		
9				16.07	14.29			
10			0.00	0.00	1.79			
10				0.00	0.00			
11			0.00	0.00	1.79			
11				0.00	0.00			
12					19.64	16.07	35.71	
12						23.22		
13	3.57	12.50	0.00					
13		3.57	3.57					
14				0.00	0.00			
14				0.00	10.71			
15				3.57	1.79			
16		0.00	0.00	0.00				
16		0.00						
17						26.00	31.48	15.38
17								18.52
18		0.00						
19					10.71	14.29		
19					19.64	1.79		
20		3.57	3.57	7.14				
20				7.14				
21			7.14	0.00				
21				5.36				
22				0.00	10.71	7.14		
22					10.71			
23		3.70		0.00				
23		0.00		0.00				
24			1.79	7.69	8.93			
24				8.93				
25		6.00	1.79	0.00				
25			0.00	3.70				
26							7.14	0.00
26								1.79
26								3.57
27					0.00	1.79	8.93	
27						3.57	8.93	
28					0.00	1.79	8.93	
28						3.57	8.93	
29					0.00	1.79	8.93	
29						3.57	8.93	

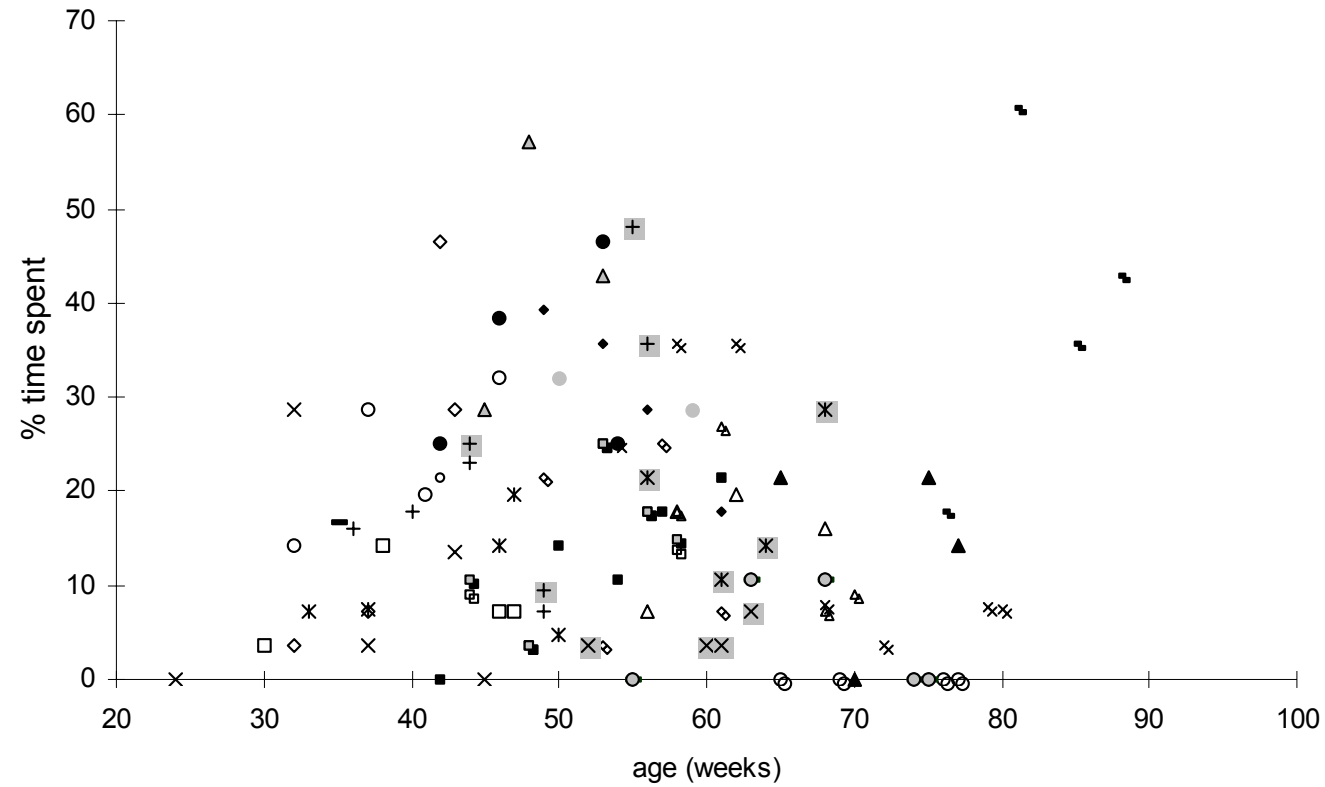


Figure 39: Behaviour Observation Study: Average percent time children spent away from home between the hours 7:30am – 9:30pm (n=29).

Table 42: Behaviour Observation Study: Average percent time children spent away from the home between the hours 7:30am and 9:30pm, stratified by age (n=29).

Child	Age (weeks)							
	22-29	30-37	38-45	46-53	54-61	62-69	70-77	78-88
1						0.00	0.00	
1						0.00	0.00	
2			0.00	14.29	10.71			
2					17.86			
2					21.43			
3						21.43	0.00	
3							21.43	
3							14.29	
4			25.00	9.52	48.08			
4					35.71			
5			21.43					
6					25.00	35.71		
6					35.71	28.57		
7		3.57	46.43					
7		7.14	28.57					
8					7.14	19.64		
8					17.86	16.07		
9				21.43	25.00	7.14		
9				3.57	7.14			
10			8.93	3.57	17.86			
10				25.00	13.79			
11			10.71	3.57	17.86			
11				25.00	14.81			
12					17.86	26.79	8.93	
12						7.14		
13	0.00	28.57	13.64					
13		3.57	0.00					
14				39.29	28.57			
14				35.71	17.86			
15				32.14	28.57			
16		14.29	19.64	32.14				
16		28.57						
17						8.00	3.70	7.69
17								7.41
18		16.67						
19					21.43	14.29		
19					10.71	28.57		
20		3.57	14.29	7.14				
20				7.14				
21			28.57	57.14				
21				42.86				
22				3.70	3.57	7.14		
22					3.57			
23		7.41		14.29				
23		7.14		19.64				
24			25.00	38.46	25.00			
24				46.43				
25		16.00	17.86	7.14				
25			23.08	3.70				
26							17.86	60.71
26								35.71
26								42.86
27					0.00	10.71	0.00	
27						10.71	0.00	
28					0.00	10.71	0.00	
28						10.71	0.00	
29					0.00	10.71	0.00	
29						10.71	0.00	

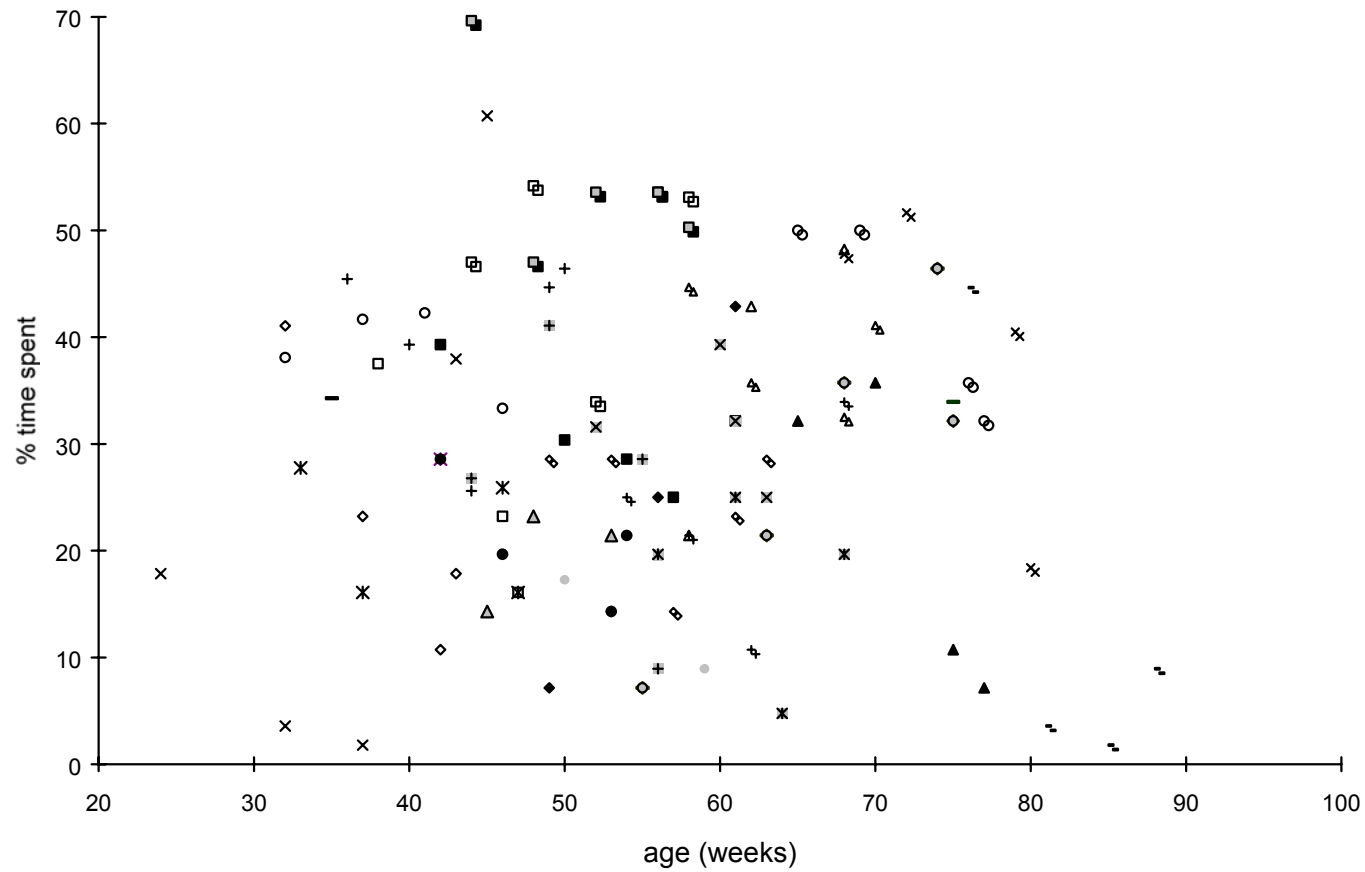


Figure 40: Behaviour Observation Study: Average percent time children spent engaged in active play between the hours 7:30am and 9:30pm (n=29).

Table 43: Behaviour Observation Study: Average percent time children spent engaged in active play between the hours 7:30am and 9:30pm, stratified by age (n=29).

Child	Age (weeks)							
	22-29	30-37	38-45	46-53	54-61	62-69	70-77	78-88
1						50.00	35.71	
1						50.00	32.14	
2			39.29	30.36	28.57			
2					25.00			
2					32.14			
3						32.14	35.71	
3							10.71	
3							7.14	
4			26.79	40.48	26.92			
4					8.93			
5			28.57					
6					25.00	10.71		
6					21.43	33.93		
7		41.07	10.71					
7		23.21	17.86					
8					19.64	42.86		
8					21.43	48.21		
9				28.57	14.29	28.57		
9				28.57	23.21			
10			46.43	53.57	53.57			
10				33.93	53.45			
11			69.64	46.43	53.57			
11				53.57	50.00			
12					44.64	35.71	41.07	
12						32.14		
13	17.86	3.57	36.36					
13		1.79	60.71					
14				7.14	25.00			
14				14.29	42.86			
15				17.26	8.93			
16		38.09	42.26	33.33				
16		41.66						
17						48.00	51.85	40.38
17								18.52
18		35.42						
19					19.64	4.76		
19					25.00	19.64		
20		37.50	16.07	23.21				
20				16.07				
21			14.29	23.21				
21				21.43				
22				31.48	39.29	25.00		
22					32.14			
23		27.78		25.89				
23		16.07		16.07				
24			28.57	19.23	21.43			
24				14.29				
25		44.00	39.29	44.64				
25			25.00	48.15				
26							12.50	3.57
26								1.79
26								8.93
27					7.14	21.43	46.43	
27						35.71	33.93	
28					7.14	21.43	46.43	
28						35.71	32.14	
29					7.14	21.43	46.43	
29						35.71	32.14	

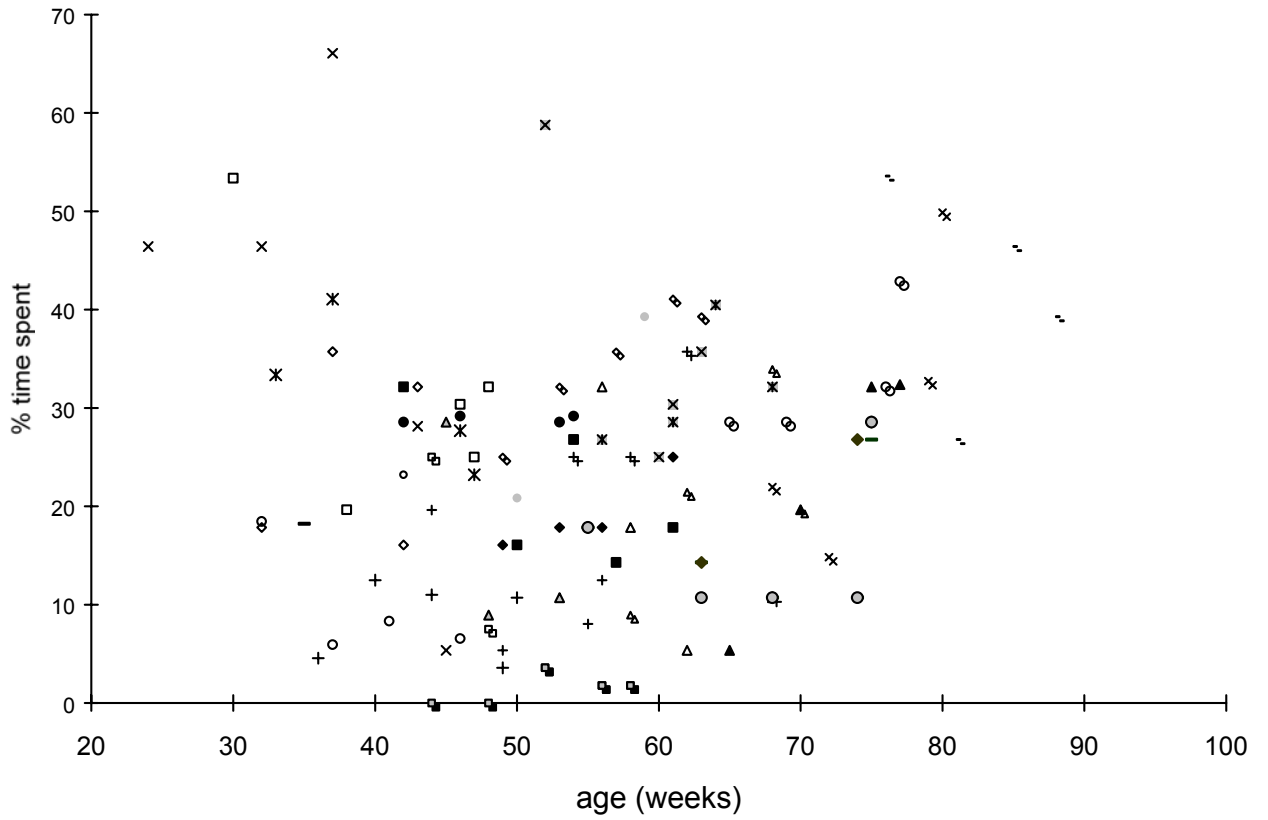


Figure 41: Behaviour Observation Study: Average percent time spent engaged in quiet play between the hours 7:30am and 9:30pm (n=29).

Table 44: Behaviour Observation Study: Average percent time children spent engaged in quiet play between the hours 7:30am and 9:30pm, stratified by age (n=29).

Child	Age (weeks)							
	22-29	30-37	38-45	46-53	54-61	62-69	70-77	78-88
1						28.57	32.14	
1						28.57	42.86	
2			32.14	16.07	26.79			
2					14.29			
2					17.86			
3						5.36	19.64	
3							32.14	
3							32.14	
4			21.43	4.76	5.77			
4					12.50			
5			23.21					
6					25.00	35.71		
6					25.00	10.71		
7		17.86	16.07					
7		35.71	32.14					
8					33.93	5.36		
8					17.86	10.71		
9				25.00	35.71	39.29		
9				32.14	41.07			
10			25.00	7.14	1.79			
10				3.57	1.72			
11			0.00	0.00	1.79			
11				3.57	1.85			
12					8.93	21.43	19.64	
12						33.93		
13	46.43	46.43	27.27					
13		66.07	5.36					
14				16.07	17.86			
14				17.86	25.00			
15				20.83	39.29			
16		18.45	8.33	6.55				
16		5.95						
17						22.00	14.81	32.69
17								50.00
18		18.75						
19					26.79	40.48		
19					28.57	32.14		
20		19.64	32.14	26.79				
20				32.14				
21			28.57	8.93				
21				10.71				
22				29.63	25.00	35.71		
22					30.36			
23		33.33		27.68				
23		41.07		23.21				
24			28.57	28.85	28.57			
24				28.57				
25		12.00	12.50	3.57				
25			11.54	7.41				
26							53.57	26.79
26								46.43
26								39.29
27					17.86	14.29	10.72	
27						10.71	26.79	
28					17.86	14.29	26.79	
28						10.71	28.57	
29					17.86	10.72	10.72	
29						10.71	28.57	

Table 45: Behaviour Observation Study: Average percent time children spent on the floor or ground while inside the home between the hours 7:30am and 9:30pm, stratified by age (n=29).

Child	Age (weeks)							
	22-29	30-37	38-45	46-53	54-61	62-69	70-77	78-88
1						42.86	30.36	
1						30.36	25.00	
2			17.86	26.78	35.12			
2					30.96			
2					36.90			
3						21.13	16.37	
3							10.71	
3							19.34	
4			26.49	18.25	25.00			
4					8.93			
5			21.43					
6					32.14	26.79		
6					23.21	35.71		
7		0.00	4.16					
7		5.65	22.32					
8					17.85	18.15		
8					16.36	11.31		
9				19.64	17.86	17.86		
9				21.43	23.21			
10			7.74	37.50	57.14			
10				33.33	49.42			
11			5.36	30.35	57.14			
11				51.79	49.38			
12					17.56	22.91	16.07	
12						22.02		
13	0.00	31.25	50.75					
13		44.05	57.14					
14				7.14	21.43			
14				14.29	41.07			
15				18.15	29.16			
16		41.37	35.11	27.38				
16		36.31						
17						33.00	25.93	28.85
17								27.78
18		8.33						
19					6.84	16.36		
19					17.85	19.33		
20		32.44	23.50	24.10				
20				21.42				
21			3.57	12.50				
21				8.93				
22				25.93	15.18	17.26		
22					8.93			
23		3.09		20.83				
23		4.76		16.96				
24			32.56	32.69	30.06			
24				28.57				
25		28.33	35.71	30.36				
25			26.92	48.15				
26							27.67	20.24
26								18.44
26								27.08
27					14.29	8.93	35.71	
27						26.19	25.29	
28					14.29	8.93	35.71	
28						26.19	25.29	
29					14.29	8.93	35.71	
29						26.19	25.29	

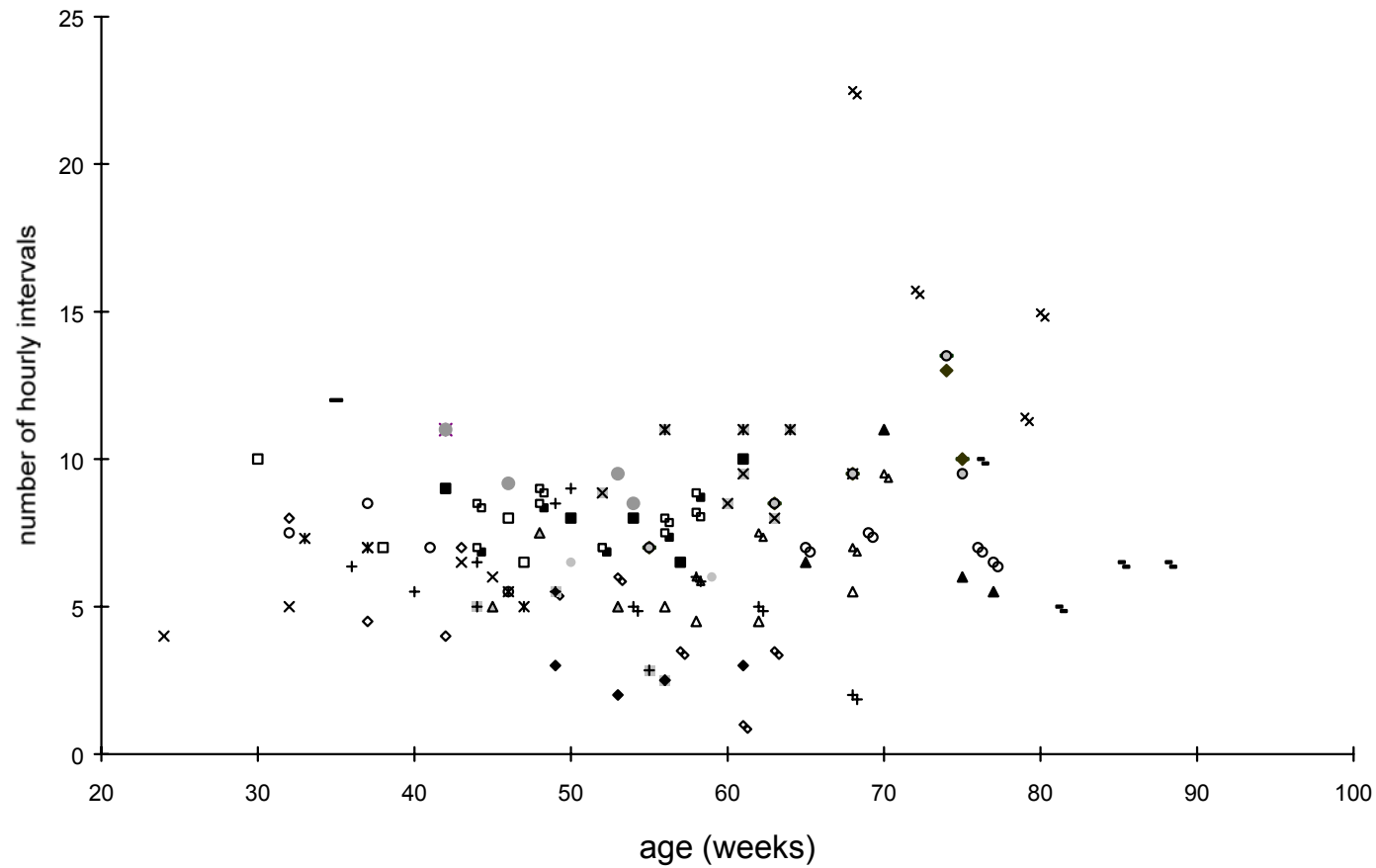


Figure 43: Behaviour Observation Study: Average number of hours that a child was reported to eat at some stage during the hour (n=29). Note: 14 hour Activity Diary.

Table 46: Behaviour Observation Study: Average number of hours that a child was reported to eat at some stage during the hour, stratified by age (n=29). Note 14 hour Activity Diary.

Child	Age (weeks)							
	22-29	30-37	38-45	46-53	54-61	62-69	70-77	78-88
1						7	7	
1						7.5	6.5	
2			9	8	8			
2					6.5			
2					10			
3						6.5	11	
3							6	
3							5.5	
4			5	5.5	2.84			
4					2.5			
5			11					
6					5	5		
6					6	2		
7		8	4					
7		4.5	7					
8					5	4.5		
8					4.5	5.5		
9				5.5	3.5	3.5		
9				6	1			
10			8.5	9	8			
10				7	8.2			
11			7	8.5	7.5			
11				7	8.85			
12					6	7.5	9.5	
12						7		
13	4	5	6.5					
13		7	6					
14				3	2.5			
14				2	3			
15				6.5	6			
16		7.5	7	5.5				
16		8.5						
17						22.5	15.73	11.42
17								14.96
18		7.15						
19					11	11		
19					11	9.5		
20		10	7	8				
20				6.5				
21			5	7.5				
21				5				
22				8.85	8.5	8		
22					9.5			
23		7.31		5.5				
23		7		5				
24			11	9.17	8.5			
24				9.5				
25		6.36	5.5	8.5				
25			6.5	9				
26							10	5
26								6.5
26								6.5
27					7	8.5	13.5	
27						9.5	10	
28					7	8.5	13	
28						9.5	10	
29					7	8.5	13.5	
29						9.5	9.5	

14 Video Data

Video data from the Behaviour Observation Study was analysed longitudinally to produce the following graphs. Each child is represented by a different symbol, with each child's video session displayed against age.

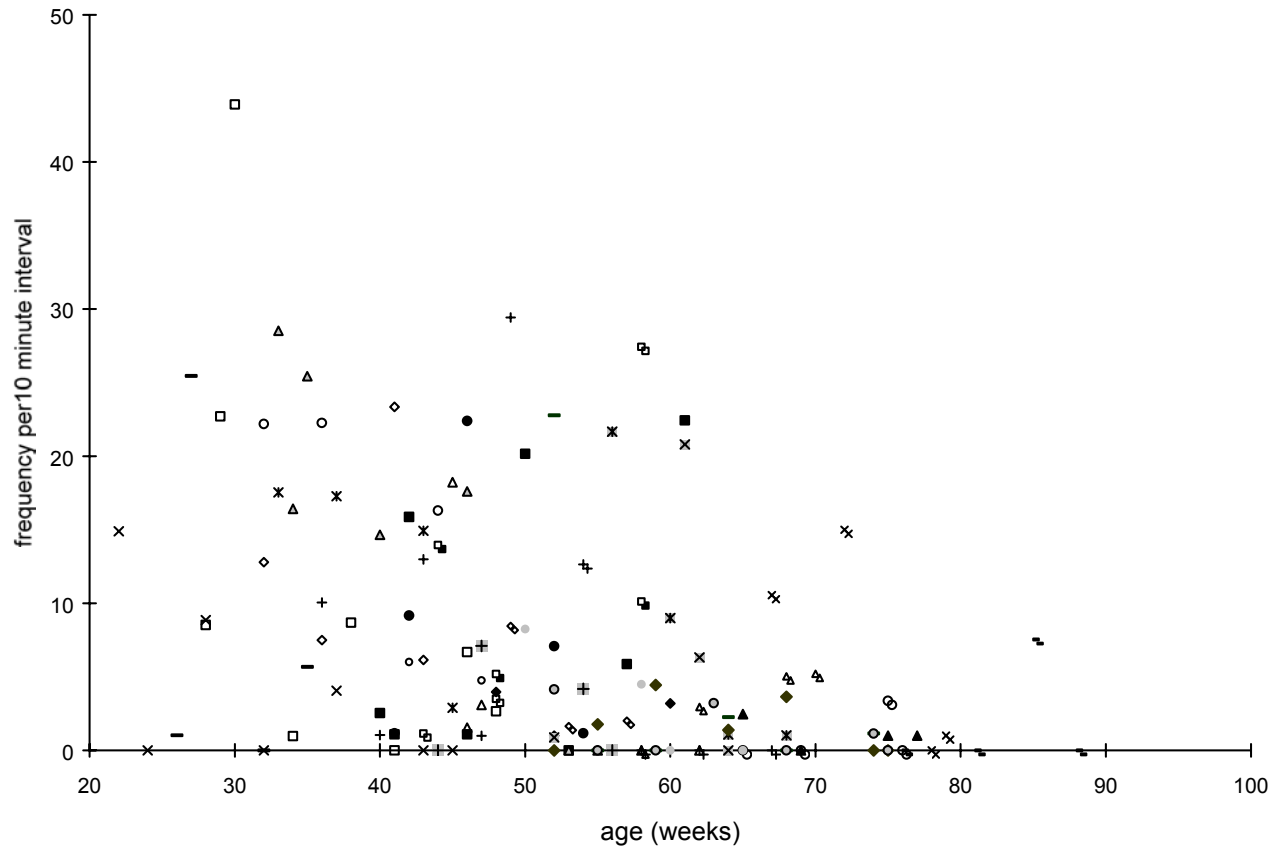


Figure 44: Behaviour Observation Study: Frequency that children mouth non-food items per 10 minute interval (n=29).

The most frequently observed behaviour in ten minutes is mouthing non-food items. The graph also indicates a steady decline in this behaviour with age. The frequency with which mouthing non-food items occurred was highly variable.

Table : Behaviour Observation Study: Frequency that children mouth non-food items per ten minute interval, stratified by age (n=29). Most children are represented more than once in the same age category.

Child	Age (weeks)							
	22-29	30-37	38-45	46-53	54-61	62-69	70-77	78-88
1						0.00	3.37	
1						0.00	0.00	
2			2.54	1.10	5.86			
2			1.09	20.15	22.43			
2			15.87	0.00				
3						2.47	1.00	
3						0.00	1.00	
4			0.00	7.1	4.18			
4					0.00			
5			6.01	4.75				
6					12.64	0.00		
6					0.00	0.00		
7			18.23	1.54	0.00	0.00		
7				3.09	0.00			
8		12.79	23.35					
8		7.50	6.15					
9				8.46	2.02			
9				1.65				
10			1.14	3.51	27.43			
11			13.95	5.19	10.12			
12					0.00	2.95	5.21	
12						5.04		
13	15.00	0.00	0.00					
13	0.00	4.07	0.00					
13	8.85							
14				3.97	3.19			
14				1.00				
15				8.25	4.50	0.00		
15					0.00			
16		22.18	1.16					
16		22.26	16.3					
17						10.56	15.00	0.00
17								1.01
18	1.03	0.00						
18	25.46	5.67						
19					21.66	1.08		
19					8.99	1.02		
20	8.52	43.90	8.68	6.68				
20	22.70	0.98	0.00	2.66				
21		28.52	14.66	17.61				
21		16.42		0.00				
21		25.44						
22				0.88	20.80	6.32		
22						0.00		
23		17.54	14.93					
23		17.28	2.90					
24			9.17	22.40	1.16			
24				7.09				
25		10.05	1.05	0.99				
25			12.98	29.42				
26							0.00	0.00
26								7.53
26								0.00
27				22.78	0.00	2.25	1.15	
27					0.00	0.00		
28				0.00	1.77	1.39	0.00	
28					4.45	3.64	0.00	
29				4.15	0.00	3.22	1.15	
29					0.00	0.00	0.00	

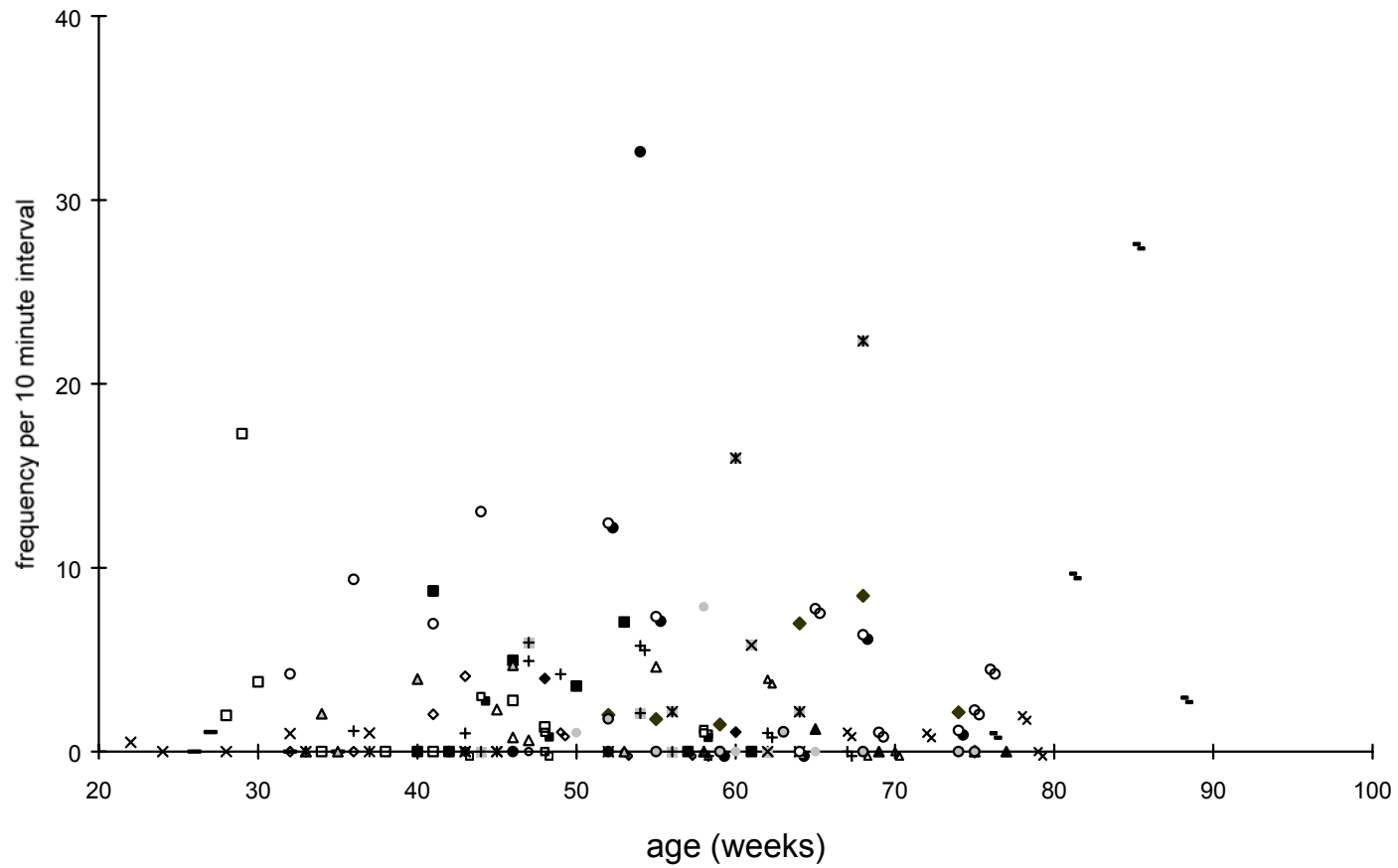


Figure 45: Behaviour Observation Study: Frequency that children mouthed fingers or thumbs per 10 minute interval (n=29).

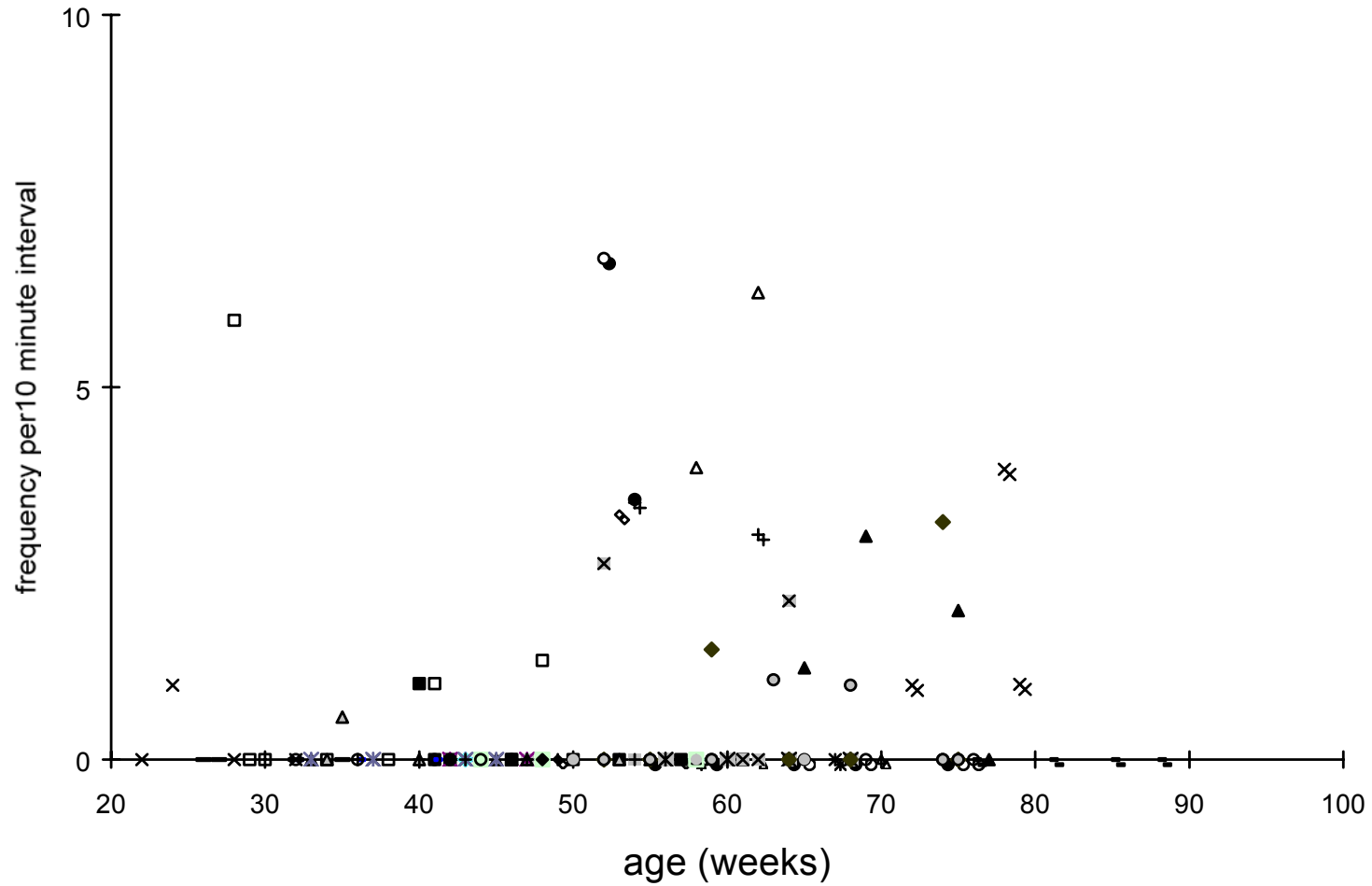


Figure 46: Behaviour Observation Study: Frequency that children mouth dummies per 10 minute interval (n=29).

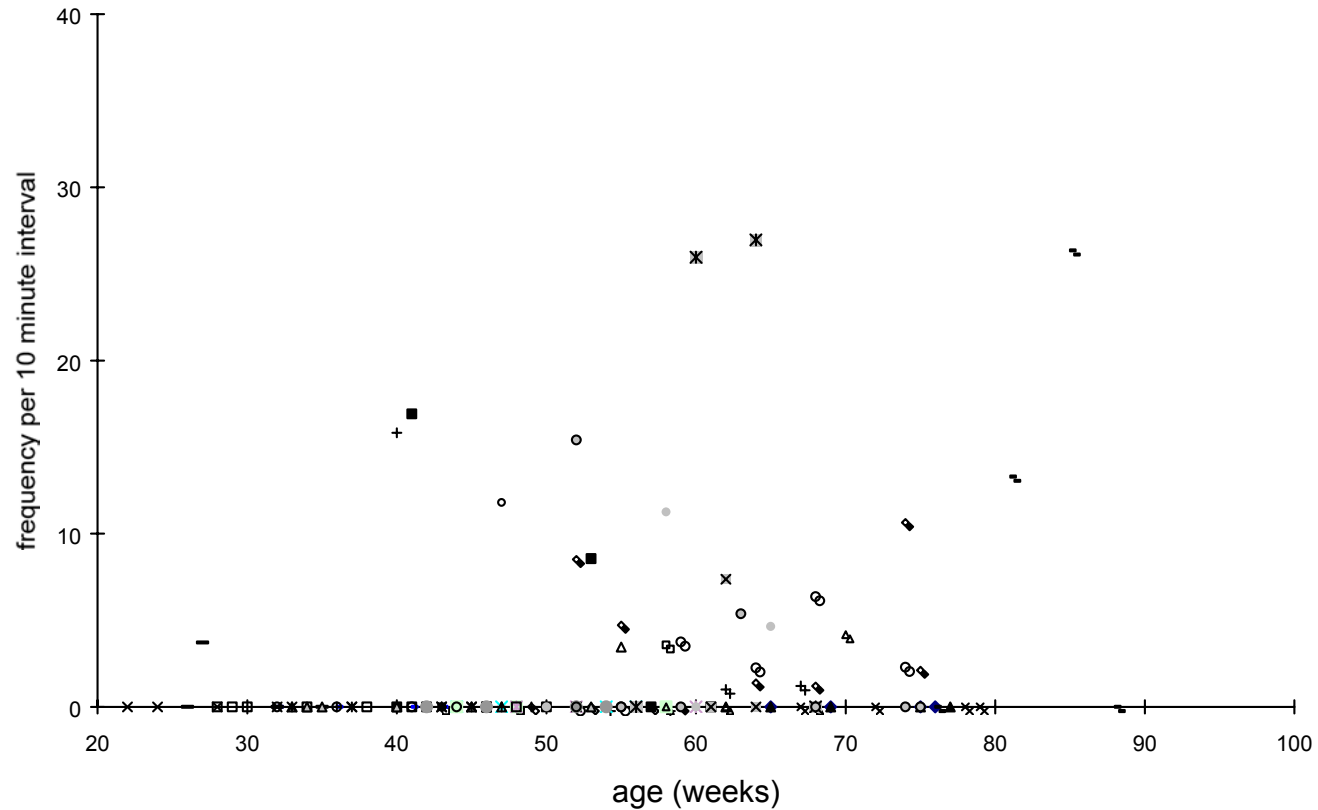


Figure 47: Behaviour Observation Study: Frequency that children mouth food items per 10 minute interval (n=29).

The next 3 graphs show that in 10 minutes children mouth fingers/thumbs, dummies and food items infrequently. Questionnaire data in this monograph shows that 55% of children mouth fingers/thumbs and dummies. The video data indicates that the frequency of these behaviours in 10 minutes is low indicating the highly variable nature of these activities.

Table : Behaviour Observation Study: Frequency that children mouth fingers or thumbs per ten minute interval, stratified by age (n=29). Most children are represented more than once in the same age category.

Child	Age (weeks)							
	22-29	30-37	38-45	46-53	54-61	62-69	70-77	78-88
1						7.76	2.25	
1						1.05	4.47	
2			0.00	4.96	0.00			
2			8.73	3.56	0.00			
2			0.00	7.05				
3						1.23	0.00	
3						0.00	0.00	
4			0.00	5.92	2.09			
4					0.00			
5			0.00	0.00				
6					5.75	1.01		
6					0.00	0.00		
7			2.28	0.77	4.60	0.00		
7				0.62	0.00			
8		0.00	2.03					
8		0.00	4.10					
9				1.06	0.00			
9				0.00				
10			0.00	0.00	1.19			
11			2.99	1.04	1.01			
12					0.00	3.93	0.00	
12						0.00		
13	0.50	0.99	0.00					
13	0.00	1.02	0.00					
13	0.00							
14				3.97	1.06			
14				0.00				
15				1.03	7.88	0.00		
15					0.00			
16		4.22	6.95					
16		9.37	13.04					
17						1.06	1.00	1.95
17								0.00
18	0.00	0.00						
18	1.06	0.00						
19					2.17	2.16		
19					15.97	22.33		
20	1.97	3.79	0.00	2.78				
20	17.29	0.00	0.00	1.33				
21		0.00	3.95	4.70				
21		2.05		0.00				
21		0.00						
22				0.00	5.78	0.00		
22						0.00		
23		0.00	0.00					
23		0.00	0.00					
24			0.00	0.00	32.61			
24				0.00				
25		1.12	0.00	4.93				
25			1.00	4.20				
26							1.00	9.67
26								27.60
26								2.93
27				12.42	7.34	0.00	1.15	
27					0.00			
28				2.00	1.77	6.97	2.13	
28					1.48	8.48	0.00	
29				1.78	0.00	1.07	0.00	
29					0.00	0.00	0.00	

Table : Behaviour Observation Study: Frequency that children mouth dummies per ten minute interval, stratified by age (n=29). Most children are represented more than once in the same age category.

Child	Age (weeks)							
	22-29	30-37	38-45	46-53	54-61	62-69	70-77	78-88
1						0.00	0.00	
1						0.00	0.00	
2			1.02	0.00	0.00			
2			0.00	0.00	0.00			
2			0.00	0.00				
3						1.23	2.00	
3						3.00	0.00	
4			0.00	0.00	0.00			
4					0.00			
5			0.00	0.00				
6					3.45	3.02		
6					0.00	0.00		
7			0.00	0.00	0.00	6.27		
7				0.00	3.92			
8		0.00	0.00					
8		0.00	0.00					
9				0.00	0.00			
9				3.29				
10			0.00	0.00	0.00			
11			0.00	0.00	0.00			
12					0.00	0.00	0.00	
12						0.00		
13	0.00	0.00	0.00					
13	1.00	0.00	0.00					
13	0.00							
14				0.00	0.00			
14				0.00				
15				0.00	0.00	0.00		
15					0.00			
16		0.00	0.00					
16		0.00	0.00					
17						0.00	1.00	3.90
17								1.01
18	0.00	0.00						
18	0.00	0.00						
19					0.00	0.00		
19					0.00	0.00		
20	5.90	0.00	0.00	0.00				
20	0.00	0.00	1.02	1.33				
21		0.00	0.00	0.00				
21		0.00		0.00				
21		0.57						
22				2.63	0.00	0.00		
22						2.13		
23		0.00	0.00					
23		0.00	0.00					
24			0.00	0.00	3.49			
24				0.00				
25		0.00	0.00	0.00				
25			0.00	0.00				
26						0.00	0.00	
26							0.00	
26							0.00	
27				6.73	0.00	0.00	0.00	
27					0.00	0.00		
28				0.00	0.00	0.00	3.19	
28					1.48	0.00	0.00	
29				0.00	0.00	1.07	0.00	
29					0.00	1.00	0.00	

Table : Behaviour Observation Study: Frequency that children mouth food items per ten minute interval, stratified by age (n=29). Most children are represented more than once in the same age category.

Child	Age (weeks)							
	22-29	30-37	38-45	46-53	54-61	62-69	70-77	78-88
1						0.00	0.00	
1						0.00	0.00	
2			0.00	0.00	0.00			
2			16.91	0.00	0.00			
2			0.00	8.56				
3						0.00	0.00	
3						0.00	0.00	
4			0.00	0.00	0.00			
4					0.00			
5			0.00	11.80				
6					0.00	1.01		
6					0.00	1.21		
7			0.00	0.00	3.45	0.00		
7				0.00	0.00			
8		0.00	0.00					
8		0.00	0.00					
9				0.00	0.00			
9				0.00				
10			0.00	0.00	3.58			
11			0.00	0.00	0.00			
12					0.00	0.00	4.17	
12						0.00		
13	0.00	0.00	0.00					
13	0.00	0.00	0.00					
13	0.00							
14				0.00	0.00			
14				0.00				
15				0.00	11.25	4.64		
15					0.00			
16		0.00	0.00					
16		0.00	0.00					
17						0.00	0.00	0.00
17								0.00
18	0.00	0.00						
18	3.71	0.00						
19					0.00	26.97		
19					25.96	0.00		
20	0.00	0.00	0.00	0.00				
20	0.00	0.00	0.00	0.00				
21		0.00	0.00	0.00				
21		0.00		0.00				
21		0.00						
22				0.00	0.00	7.37		
22						0.00		
23		0.00	0.00					
23		0.00	0.00					
24			0.00	0.00	0.00			
24				0.00				
25		0.00	15.82	0.00				
25			0.00	0.00				
26							0.00	13.30
26								26.35
26								0.00
27				0.00	0.00	2.25	0.00	
27					3.74	6.36	2.29	
28				8.51	4.72	1.39	10.64	
28					0.00	1.21	2.11	
29				15.41	0.00	5.37	0.00	
29					0.00	0.00	0.00	

Household Questionnaire

Table 38: 1995 and 1996 Risk Factor Studies: Selected Household Questionnaire items related to inside and outside the house.

Household questionnaire	Yes	No	Don't know	Total
Has the soil in the yard been disturbed?	77% (128)	24% (40)	1	169
Has the outside of the house been renovated?	40% (67)	59% (99)	3	169
Has the inside of the house been renovated?	54% (92)	45% (76)	1	169
Is there carpet inside the house?	99% (168)	1% (1)	0	169
Are there hard floors inside the house?	90.5% (153)	9.5% (16)	0	169

Table 39: 1995 and 1996 Risk Factor Studies: Average number of days since floors and window sills were or dry cleaned.

Household Questionnaire	Mean (days)	Percentiles					Total (n)	No. of people that never performed task
		5th	25th	50th	75 th	95th		
Last time carpets were dry vacuumed	5	0	1	2	3	14	163	1
Last time carpets were wet vacuumed	261	0	60	180	365	803	55	109
Last time hard floors were cleaned with a wet mop, vacuum or sponge	5	0	1	3	6.5	14	149	15
Last time hard floors were cleaned with a broom or dry vacuum	1	0	0	1	2	6	143	21
Last time inside of house was dusted	7	0	1	3	7	21	164	0
Last time window sills inside house were cleaned	20	1	3	7	30	90	154	10

The home environment is very important for young children particularly when the majority of their time is spent inside a home. Surface type can be an important indicator of exposure. This can be used to link the amount of time spent on particular surfaces and exposure to pollutants incorporated in house dust. In these studies, carpet is present in 99% of homes. Cleaning practices are also important in reducing exposure, particularly areas where a child spends time in indoor activities. Not surprisingly, this data shows that the interval between cleaning hard floors is less than for cleaning carpets.

15 Hand Lead

Hand Lead data from the Infant, Behaviour Observation and Risk Factor studies was aggregated and analysed cross sectionally. These values represent lead from wiping all of both hands.

Table 40: Infant, Behaviour Observation and 1996 Risk Factor Studies: Median hand wipe lead results for children aged 1-31 months, stratified by age.

Age Groups (months)	Median hand lead (μ)	Percentiles				number of hand wipes
		5th	25th	75th	95th	
1-3	9.3	4.2	7.2	13	22.7	21
4-6	14.2	4.8	10.9	14.2	14.2	8
7-9	12.9	3	7.1	17	17	13
10-12	20.5	3.9	10.4	32.8	74.9	40
13-15	23.9	2.9	11.6	44.7	222.1	49
16-18	11.8	1.8	7.5	25	53.6	40
19-21	14.6	1.8	5.1	25.6	25.6	15
22-24	9	4.2	5.2	37.9	37.9	10
25-27	38.6	14.6	15.6	50.1	50.1	6
28-31	12.1	5.3	6.9	90.5	90.5	4
ALL	14.8	3.6	8.4	29.9	70.1	206

These hand lead results represent a casual observation of a child's exposure to a variety of lead sources. In general, the range of results indicates large differences within and between age groups.

Total dust loadings can be estimated by applying lead in dust concentrations that are common in indoor dusts in Port Pirie ie 2000 – 7500 $\mu\text{g/g}$.

Ten minute hand lead wipe data from the Behaviour Observation Study was analysed longitudinally for the following graphs.

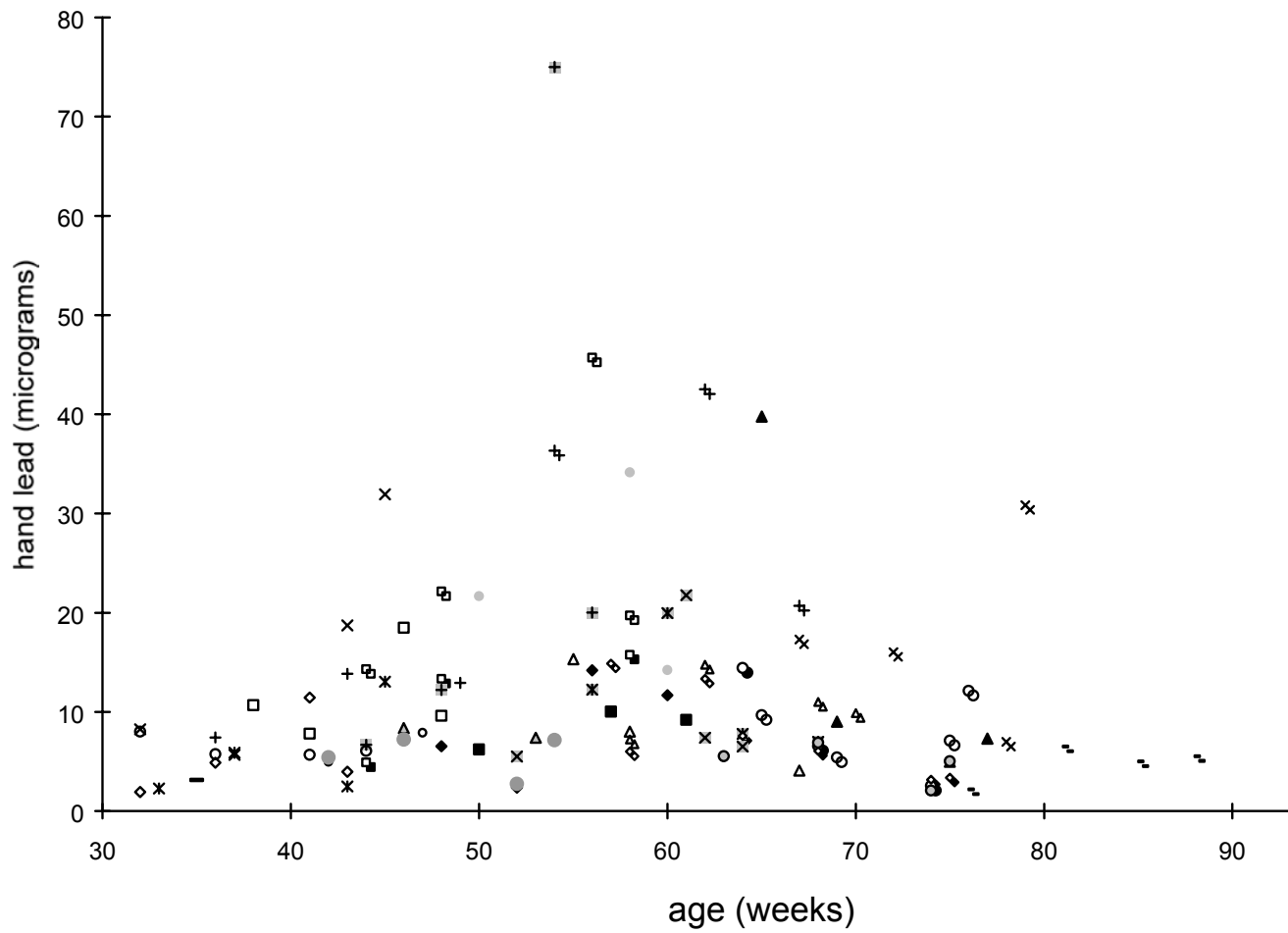


Figure 48: Behaviour Observation Study: Child hand lead results after 10 minutes of unobstructed indoor activity (n=29).

After only 10 minutes of indoor play the accumulation of lead on a child's hand is rapid.

Table : Behaviour Observation Study: Child hand lead results after 10 minutes of being inside the home, stratified by age (n=29). Most children are represented more than once in the same age category.

	Age (weeks)							
Child	22-29	30-37	38-45	46-53	54-61	62-69	70-77	78-88
1						9.67	7.10	
1						5.41	12.11	
2				6.22	10.03			
2					9.20			
3						39.76	4.96	
3						9.01	7.30	
4			6.68	12.22	75.00			
4					20.01			
5			4.98	7.89				
6					36.34	42.51		
6						20.70		
7		1.93	11.45					
7		4.87	3.95					
8					15.31	4.09		
8					8.02			
9					14.87	13.33		
9					6.00			
10			14.32	22.14	45.70			
10					19.71			
11			4.90	13.33	15.75			
12					7.20	14.76	9.86	
12						11.01		
13		8.26	18.72					
13		5.67	31.94					
14				6.53	14.20			
14				2.36	11.67			
15				21.66	34.14			
15					14.21			
16		8.02	5.69					
16		5.75	6.05					
17						17.30	16.01	6.99
17								30.84
18		3.14						
18								
19					12.24	7.78		
19					19.97	6.99		
20			10.66	18.49				

20		7.80	9.60		
21			8.37		
21			7.40		
22			5.51	21.76	7.40
22					6.50
23		2.28	2.47		
23		5.88	13.03		
24		5.42	7.20	7.15	
24			2.75		
25		7.42	13.83	12.93	
26				2.09	6.50
26					4.99
26					5.52
27				14.42	2.55
27				6.57	
28				7.58	3.15
28				6.07	3.36
29				5.53	2.07
29				6.88	5.04

Table : Behaviour Observation Study: Child hand lead results after 10 minutes of being outside the home, stratified by age (n=8). Most children are represented more than once in the same age category.

	Age (weeks)							
Child	22-29	30-37	38-45	46-53	54-61	62-69	70-77	78-88
1						16.96	9.61	
1							56.39	
2				10.52	64.65			
2				61.50				
3						147.57	15.97	
3						150.11	166.85	
12					11.01	16.41	20.09	
12						11.78		
17							40.75	62.77
17								42.95
19					32.49	33.04		
19					71.58			
24		99.12	9.86	34.14				
26							5.22	20.07
26								22.03
26								27.53

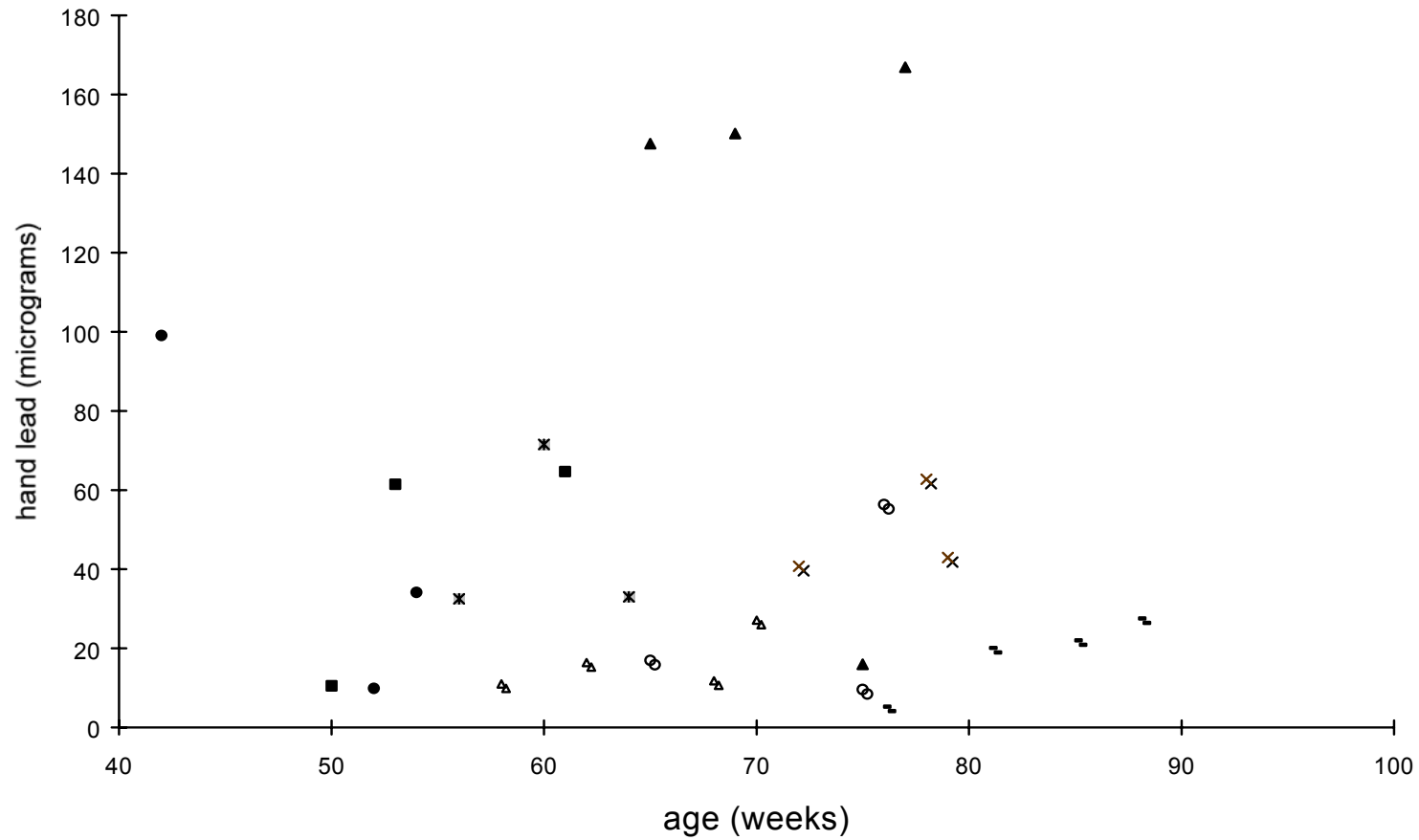


Figure 49: Behaviour Observation Study: Child hand lead results after 10 minutes of unobstructed outdoor activity (n=8)

Hand leads of children are much higher after 10 minutes of outdoor play than after playing inside for 10 minutes.

16 1997 Intake Study

The following tables use information from the 1997 Intake Study questionnaire.

Table 41: 1997 Intake Study: “Does anyone smoke regularly inside the house where the child resides or visits regularly?”, stratified by age.

Age (mths)	Smoking at home or elsewhere			Total
	Yes	No	Missing	
9-12	26% (21)	74% (61)		(82)
13-18	21% (22)	79% (81)		(103)
19-24	25% (23)	75% (68)		(91)
25-30	25% (21)	75% (63)		(84)
31-36	30% (31)	70% (71)		(102)
37-42	29% (26)	71% (65)		(91)
43-48	37% (34)	62% (58)	1% (1)	(93)
49-53	21% (15)	79% (56)		(71)
54-60	41% (43)	58% (60)	1% (1)	(104)
Total	29% (236)	71% (583)	0% (2)	(821)

The results of this questionnaire have indicated that the majority of young children (71%) live in homes where occupants do not smoke. Children tend to be older when anyone smokes in their home. In children aged 54-60mths, 41% have someone smoking where they normally reside compared with 26% or less in all age groups less than 30 months.

Table 42: 1997 Intake Study; “Where does a child eat a snack generally?”, stratified by age.

Location of snacks	Age in years					Total
	< 1yr	1yr	2yrs	3yrs	4yrs	
Table	82% (54)	72% (142)	60% (110)	66% (123)	71% (136)	69% (565)
Everywhere	14% (9)	19% (37)	23% (41)	20% (38)	17% (32)	19% (157)

Floor	3% (2)	7% (14)	12% (21)	11% (20)	8% (16)	9% (73)
Outside			1% (2)	0.5% (1)	0.5% (1)	<1% (4)
Other			3% (6)	2% (3)	2% (3)	2% (12)
Lounge		0.5% (1)	0.5% (1)		1% (2)	<1% (4)
While walking		0.5% (1)	0.5% (1)			0% (2)
Missing	2%(1)	0.5% (1)		0.5% (1)	0.5% (1)	<1%(4)
Total	(66)	(196)	(182)	(186)	(191)	(821)

Most children in the 9 to 59 month age group eat snacks at the table (69%). Children 2 to 3 yrs appear more likely to eat snacks on the floor, outside or at another location (for example in a bean bag). Children this age are more mobile, asserting independence and can no longer be easily confined to a high chair.

Table 43: 1997 Intake Study: “Is the child ever allowed to carry his/her bottle around with them?”, stratified by age and sex.

		Carrying and Use of bottle				
Age (mths)	Gender	Yes	No	Not used	Missing	Total
9-12	Girls	30% (13)	61% (26)	9% (4)		(43)
	Boys	31% (12)	64% (25)	3% (1)	3% (1)	(39)
	All	31% (25)	62% (51)	6% (5)	1% (1)	(82)
13-18	Girls	47% (23)	27% (13)	25% (12)	2% (1)	(49)
	Boys	41% (22)	41% (22)	19% (10)		(54)
	All	44% (45)	34% (35)	21% (22)	1% (1)	(103)
19-31	Girls	29% (22)	27% (20)	44% (33)		(75)
	Boys	24% (27)	32% (36)	41% (46)	2% (2)	(111)
	All	26% (49)	30% (56)	43% (79)	2% (1)	(186)
32-60	Girls	6% (13)	10% (22)	84% (192)	1% (3)	(230)
	Boys	3% (7)	8% (17)	87% (192)	2% (4)	(220)
	All	4% (20)	9% (39)	85% (384)	2% (7)	(450)
Total		17% (139)	22% (181)	60% (490)	1% (11)	(821)

The use of a bottle is a highly age-related activity as shown in the following table. Overall, 39% of children use a bottle with 17% carrying a bottle around with them.

Table 44: 1997 Intake Study: “Do you open the window in the child’s bedroom during the night?”, stratified by age and sex.

Age in years	Gender	Windows open at night		Missing	Total
		Yes	No		
<1 year	Girls	38% (12)	63% (20)		(32)
	Boys	44% (15)	56% (19)		(34)
	All	41% (27)	59% (39)		(66)
1 year	Girls	43% (38)	56% (49)	1% (1)	(88)
	Boys	38% (41)	61% (66)	1% (1)	(108)
	All	40% (79)	59% (115)	1% (2)	(196)
2 years	Girls	47% (42)	53% (47)		(89)
	Boys	38% (35)	62% (58)		(93)
	All	42% (77)	58% (105)		(182)
3 years	Girls	44% (41)	55% (51)	1% (1)	(93)
	Boys	51% (47)	47% (44)	2% (2)	(93)
	All	47% (88)	51% (95)	2% (3)	(186)
4 years	Girls	50% (47)	50% (47)		(95)
	Boys	50% (48)	50% (48)		(96)
	All	50% (95)	50% (95)		(191)
Total		44% (366)	55% (449)	1% (6)	(821)

More children in Port Pirie have their windows closed at night (55%). There is some variation in the opening of windows at night relating to age of the child and gender.

Table 45: 1997 Intake Study: “What type of surface does the child have as a main play area?”, stratified by age.

Surface of child’s main play area	Age in years					Total
	< 1yr	1yr	2yrs	3yrs	4yrs	
Carpet	59% (39)	54% (105)	57% (104)	50% (93)	53% (102)	54% (443)
More than one surface	30% (20)	28% (55)	25% (46)	34% (64)	29% (56)	29% (241)
Hard floor surface	9% (6)	16% (31)	14% (26)	11% (21)	10% (19)	13% (103)
Outside			2% (4)	2% (4)	6% (11)	2% (19)
Other floor surface	2% (1)	3% (5)	1% (2)	2% (4)	2% (3)	2% (15)
Missing						
Total	(66)	(196)	(182)	(186)	(191)	(821)

Carpet is by far the most popular main play surface for children 1 to 4 years of age in Port Pirie. Also very common was a combination of two or more play surfaces. For example, a hard floor rumpus room and a carpeted lounge or bedroom. Hard floor surfaces (defined as tile, lino or wood) alone were generally fairly uncommon as a main play surface for these children. Playing outside as a main play area was infrequent and confined to older children. Other floor surfaces included concrete, slate and floor mats on hard surfaces.

Table 46: 1997 Intake Study: “How many cats and dogs do you have?”, stratified by age.

Age in years	Cats and dogs in the household					Total
	None	Cats	Dogs	Both	Missing	
<1 year	35% (23)	11% (7)	46% (30)	9% (6)		(66)
1 year	44% (86)	10% (19)	28% (55)	18% (36)		(196)
2 years	36% (66)	13% (24)	36% (66)	14% (26)		(182)
3 years	44% (81)	11% (21)	27% (50)	18% (33)	0.5% (1)	(186)
4 years	32% (61)	9% (17)	36% (69)	23% (44)		(191)
Total	39% (317)	11% (88)	33% (270)	18% (145)	0% (1)	(821)

Nearly two thirds of children lived with cats, dogs or both. Dogs are the most common (33%), cats the least (11%) and one or more of both occurring in 18% of the children in the screening. There is some variation in the table according to the age of the children (older siblings were not considered). The question inquired specifically about cats and dogs and not other household pets.

17 Conclusions

Very few reports are available which present data on children's activity and location patterns. The data in this monograph has presented general patterns of time use by age and sex using activity time diaries and children's behaviour using questionnaire data and video taped observations. It provides a comprehensive source of data on children's activity patterns in which exposure assessment can be applied. As an overview, the results from the activity diaries highlight that children spend the majority of their time indoors which systematically decreases with age. There were only small differences between sexes for location and activity. Questionnaire data indicates that a large proportion of children display mouthing behaviour. When children are observed longitudinally (videotaped observations) for 10 minutes the frequencies of these behaviours are highly variable demonstrating the nature of mouthing activities.

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