

# **THE ALSPAC STUDY**

## **F07 FILE**

**Focus @ 7**

**At around 7 years**

**Prepared by**

**The ALSPAC Study Team**

**Documentation giving frequencies, background and instructions for use.**

**Last updated for version 5a of the RELEASE file.**

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# 1. Organisation of Focus @ 7

## 1.1. Space and Time for Observations

In order that each child can be seen by trained assessors with specialized equipment for a variety of different observations, each child needs to rotate from one to another. The most practical way to do this, within a 2½ -3 hour half-day visit, was to have a series of 20 minute sessions. We were able to see 8 children for 8 sessions in a morning or afternoon. Each of the children went through the sessions in a different order and that order was recorded and kept with the data so that any order effect can be identified (see section 2.8).

One factor which restricted the flexibility of this arrangement was the blood-taking. This required an anaesthetic cream to be put on the child's arm at least one hour before the venepuncture. The same phlebotomist put the cream on and took the blood, taking 10 minutes of one session and then 10 minutes of another an hour later to take the blood. The other 10 minutes of each of these sessions is usually a relaxation period for the child. (Figure 2.1).

It was therefore possible to see 16 children per day. In practice we saw over 13 a day out of the 16 booked 2 weeks before the visit. Although the cohort due dates spread over 21 months, a number were born prematurely in Jan-March 1991. Similarly a proportion were born post-term in January and February 1993. Sufficient capacity could not be provided to see all the children in 24 months on one site seeing 16 children a day 5 days a week. A similar clinic was therefore set up on another site for part of that period.

**F7009 Clinic site: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Hampton House	5493	66.2	66.2	66.2
	2 Park Row	2804	33.8	33.8	100.0
	Total	8297	100.0	100.0	

Overleaf: Figure 1.1: Schematic representation of testing 16 children per day in each of the 2 separate clinics, the letters represent the sessions as known within the clinics:

- M: Measures session
- A: Allergy session
- W: Word session
- C: Coordination session
- B1: First blood session
- B2: Second blood session
- V: Vision session
- H: Hearing session

Child →	1	2	3	4	5	6	7	8
App't time →	9.30	9.30	9.30	9.40	9.50	9.50	9.50	10.00
9.40	W	C	B <sub>1</sub>					
9.50				B <sub>1</sub>				
10.00	C	W	H	V	B <sub>1</sub>	M	A	
10.10								B <sub>1</sub>
10.20	M	A	V	H	C	B <sub>1</sub>	B <sub>1</sub>	W
10.30								
10.40	B <sub>1</sub>		M	A	V	C	W	H
10.50		B <sub>1</sub>						
11.00	V	H	B <sub>2</sub>		M	W	C	A
11.10				B <sub>2</sub>				
11.20	A	M	C	W	B <sub>2</sub>	V	H	
11.30								B <sub>2</sub>
11.40	H	V	A	M	W	B <sub>2</sub>		C
11.50							B <sub>2</sub>	
12.00	B <sub>2</sub>		W	C	A	H	V	M
12.10		B <sub>2</sub>						
12.20					H	A	M	V
12.30								
Likely to → leave	12.20	12.30	12.30	12.30	12.50	12.50	12.50	12.50

Child →	9	10	11	12	13	14	15	16
App't time →	13.20	13.20	13.20	13.30	13.40	13.40	13.40	13.50
13.30	W	C	B <sub>1</sub>					
13.40				B <sub>1</sub>				
13.50	C	W	H	V	B <sub>1</sub>	M	A	
14.00								B <sub>1</sub>
14.10	M	A	V	H	C	B <sub>1</sub>		W
14.20							B <sub>1</sub>	
14.30	B <sub>1</sub>		M	A	V	C	W	H
14.40		B <sub>1</sub>						
14.50	V	H	B <sub>2</sub>		M	W	C	A
15.00				B <sub>2</sub>				
15.10	A	M	C	W	B <sub>2</sub>	V	H	
15.20								B <sub>2</sub>
15.30	H	V	A	M	W	B <sub>2</sub>		C
15.40							B <sub>2</sub>	
15.50	B <sub>2</sub>		W	C	A	H	V	M
16.00		B <sub>2</sub>						
16.10					H	A	M	V
16.20								
Likely to → leave	16.10	16.20	16.20	16.20	16.40	16.40	16.40	16.40

## 1.2. Other Space Requirements

The parents were invited to bring their children. They often also brought siblings. Both clinics therefore had a suitable reception room with play area and activities for siblings as well as for the study children, and a kitchen area in which to prepare drinks and refreshments for the families.

## 1.3. Creating the Atmosphere

This cohort of children has been meticulously documented throughout life and is a rare and valuable resource. It is essential for the research that as many children as possible are seen by the study. We aimed not only to persuade the parents to bring their children to be tested, but to make their visit so enjoyable that they would encourage their friends to come if they were eligible.

Mothers (fathers or other carers) brought their children to be tested voluntarily. The children were not ill, and they did not get treatment. The child was brought to help with research with the aim of helping to make children healthier in the future. The only benefit to the child was that his/her vision, hearing and haemoglobin levels were screened and any potential problems identified to the parent, along with any case of significant spinal curvature ( $\geq 7^\circ$ ) or high blood pressure ( $\geq 140/90$ ).

Staff were selected who had a warm and understanding approach as well as the skills required for their role. Initial and on-going training and supervision ensured the standards were maintained.

All letters, forms and questionnaires which were sent to children and parents were written in a friendly and sympathetic way, and a similar approach was taken in telephone conversations. Every effort was made to accommodate the parents' wishes as to times and dates of appointments if those originally offered were inconvenient, and understanding was shown when parents had difficulties. Parents were sent a letter for the child's teacher asking for leave of absence for the visit, and also one for the employer asking for leave of absence for the parent to accompany the child. If a child did not arrive for an appointment the family received a friendly telephone call or letter expressing concern that there may have been a problem and offering another appointment.

Because of the way in which the slots interlinked with one another it became important to have a number of rules that ensured that no one child or slot could upset the system. The following were therefore integral to the way in which the study proceeds:

- a) A 3-minute turn-round time in each slot so that a '20-minute' slot actually meant 17 minutes.

- b) Anyone arriving late missed the first slot they were scheduled for and went on to the second.
- c) If the clinic was running late, each tester tried to reduce what was attempted in the slot.
- d) If the morning session threatened to overrun with any child, the last test(s) was missed out, unless it was venepuncture and the child had already been given the anaesthetic cream.

#### **1.4. Definition of the Study Sample**

We regard as eligible all children born to mothers resident in the former Avon area at the time they were born with the expected dates of delivery between 1.4.91 and 31.12.92. All children were invited to Focus @ 7 regardless of where they currently lived. They were invited to attend at about age 7½ .

#### **1.5. Twins, Triplets and Quadruplets**

Each member of a multiple pregnancy was given an appointment, and generally treated in the same way as singletons provided enough carers accompanied them. If less than one carer per child came, then a member of staff was provided to ensure that each child could be accompanied to each test. In the event one set of quads, two sets of triplets and 109 sets of twins came to Focus@7

#### **1.6. Repeated Sampling**

Random error in the measurement of exposures weakens associations between possible explanatory variables and disease (DeKlerk *et al*, 1989; Philips & Davey Smith, 1993). Such errors may arise as a result of observer, subject or instrument variability. Attempts were made to limit such variability as much as possible through staff training, strict protocols for recording measurements, and regular quality control assessments. In addition, to allow assessment of, and adjustment for, regression dilution bias in analysis, 3% of the study sample were invited back for repeat measures (including blood samples, anthropometry and BP) within 3 months of the initial examination. These may be used to conduct sensitivity analyses using a variety of techniques for assessing and correcting measurement error (Bashir & Duffy, 1997).

In order to identify children to be invited back to the clinic, each child and parent were asked at the end of the clinic if they would be prepared to come back. From those that were happy to do so, a random sample of one per day was identified and invited back for the same time slot as his/her original visit. In the event 2.8% (n=234) returned for a second visit (see section 2.4).

## **1.7. The Child's Booklet**

In advance of the 7-year visit, each child was sent a booklet which included descriptions of each test, with space for 'results', stickers or other input from each assessment. The child was asked to bring the booklet to the clinic. See Appendix 1.

## **1.8. Children with Special Needs**

It was envisaged that some children with special needs would find some of the tests extremely difficult. Having had a leaflet describing the visit, each parent/carer was asked if there was anything that would be likely to present a problem for the child. If so, they were telephoned by the senior psychologist to thank them for their work for the study and to discuss whether a visit to the clinic was feasible; if not, then other possibilities for assessment were discussed.

## **1.9. Child Behaviour**

At the end of every test session each tester rated the child on a number of behaviour attributes during that session. These are as follows:

- Cooperative
- Shy
- Fidgety
- Active
- Attention problem
- Responsiveness
- Unusual child behaviour
- Avoidance of eye contact
- Tics
- Rocking
- Asked odd questions
- Made personal comments
- Making faces
- Made odd noises
- Talking to self
- Swearing
- Other unusual behaviour

## 2. Invitation and Attendance

### 2.1. Eligibility

Families were eligible to be invited to Focus @ 7 if, on the ALSPAC database, they were flagged as:

- 1) Child alive,
- 2) Address not recorded as unknown,
- 3) Participating in the study (Not having refused the whole study; these families may have refused questionnaires).

In addition a number of 'new cases' were also invited to attend (see section 2.4).

### 2.2. Invitation and Attendance

The parents of the children who were eligible to be invited to Focus @ 7 were sent an initial letter, explaining about Focus @ 7. These were sent three months before the ideal date of attendance for the child (i.e. when they were 7 ½). Parents were asked to return a form giving their personal details (such as the child's name and which school they attended) and indicating whether they would like to come or not. If no response to the initial letter was received within 3 weeks a postal reminder was sent. If there was still no response after a further 2 weeks, the names were referred and some were contacted by phone or personal visit. After approximately three months, those still on the referral lists, who had not been contacted were sent a 'last-chance' letter.

A number of families did not receive an initial letter but did have appointments made for them. For example, friends and colleagues may have told them about Focus @ 7 and as a result they contacted us expressing an interest in attending before we had the opportunity to contact them.

The families who were flagged on the ALSPAC database as not receiving any questionnaires were still invited to attend Focus @ 7 but were sent a slightly different initial letter.

For the people who did not respond to the first invitation we frequently had no confirmation that they were still at the address we had used which may affect future follow-up.

A slightly different system was used for those families who were living a distance away from the clinic. If the time taken for a family to travel to Focus @ 7 was deemed to be more than two hours (making it difficult for the family to do the visit in a day), that family was given a special invitation letter at an earlier stage (four months before the child's ideal attendance date) than the rest of the cohort. This gave them the opportunity to coordinate their Focus @ 7 visit with one to Bristol for other reasons, such as visiting relatives.

Using the 13971 children alive at 1 year of age (i.e. excluding the 'new cases') as the baseline for attendance to focus @ 7. A total of 825 (5.9%) were no longer eligible, using the definition in section 2.1 and were therefore not approached. Of those eligible, 3483 (26.5%) did not respond to the initial letter, despite follow-up (it is likely that many of these had moved away and had not yet informed us of their new details). 976 (7.4%) responded to the initial letter stating that they did not want to attend Focus @ 7. 806 had appointments made for them but failed to attend on the day.

**Reason Child did not attend F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not eligible for invite	825	13.5	13.5	13.5
	2 Invited/no response	3483	56.9	56.9	70.3
	3 Invited/refused	976	15.9	15.9	86.3
	4 Appt made, DNA	806	13.2	13.2	99.4
	6 Appt made, clinic ended	35	.6	.6	100.0
	Total	6125	100.0	100.0	

A total of 8299 children attended the Focus @ 7 clinic, it is important to note that this includes 456 'new cases', however, two children were ill on the day and did not complete any sessions. As a result, no data was collected and they are not included on the release file. Therefore, the release file contains 8297 cases populated with clinic data.

In addition, there were 35 families who were willing to come but were unable to do so before the clinic finished.

### **2.3. Re-invites**

It was originally anticipated that approximately 3% of attendees would come back for a second visit to check reliability. A total of 234 (2.8%) children did so. In order to be eligible to be asked to return the families had to live locally, went through their first visit in a standard order (this order had to be repeated at the second visit) and most importantly they had to have enjoyed themselves!

The data collected during the child's second visit is not held on the release file, however, there is a flag which indicates those children who returned for such a visit (F7030).

**F7030 Child returned as a reinvite: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	234	2.8	2.8	2.8
	2 No	8063	97.2	97.2	100.0
	Total	8297	100.0	100.0	

Please note the difference between reinvites and revisits (see section 2.9).

## 2.4. New Cases

When preparing for the Focus @ 7 visit, it was decided that all those who were eligible for ALSPAC but who, for one reason or another had not been included to date should be invited to join. There were a number of reasons for this – 1) it was seen that this may give a handle on some of the children that had been missed from the original study, 2) word of mouth indicated that there were a number of children who felt that it was unfair that they could have been part of the study and were not, 3) it seemed beneficial in regard to relations with the general public.

The child health database was therefore searched for all children born to mothers resident in Avon who would have been eligible for the study. Thus, we did not rely on the dates of birth but rather on the expected dates of birth as near as we could get them. A letter then went out to the 3000 or so identified, inviting them to take part. It was recognised that the addresses we were using were old, and we only confined ourselves to children who we believed according to records were still living in the Avon area.

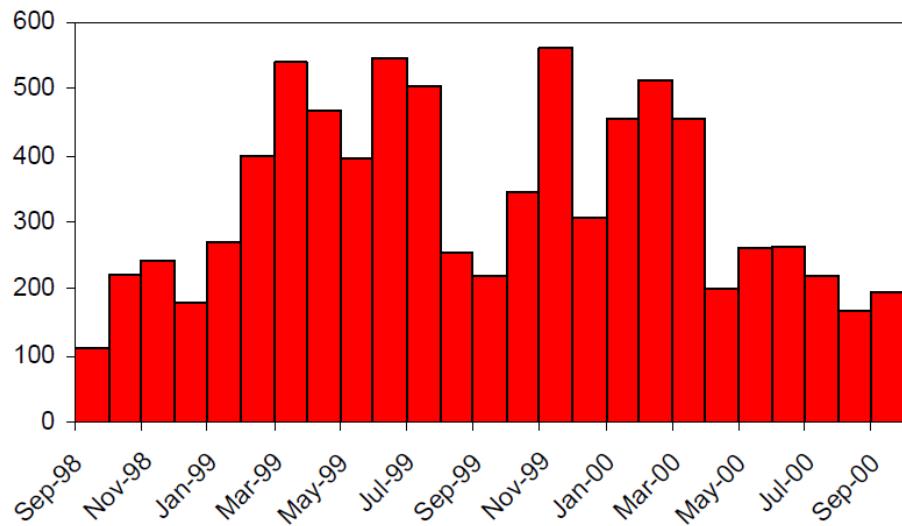
It is important to note, regarding the enrolment of these new cases, that it is very likely that we have biological samples for them and we will be able to abstract obstetric information. Their inclusion will allow to a certain extent a comparison of the study children who have been part of ALSPAC from birth and earlier with those who have not – particularly looking at features of the child's outcomes. In the event 456 new cases attended Focus @ 7. A variable is included on the release file flagging those cases who are new to ALSPAC ([F7010](#)).

#### F7010 Ch is new case: F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	456	5.5	5.5	5.5
	2 No	7841	94.5	94.5	100.0
	Total	8297	100.0	100.0	

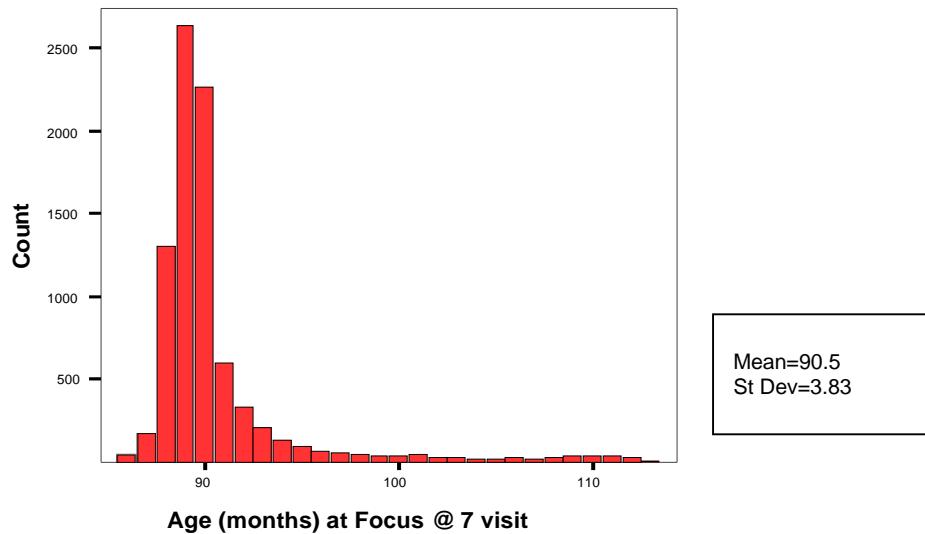
#### 2.5. Month and year of attendance

The Focus @ 7 clinics ran from September 1998 through till September 2000. Month and year of visit are included on the release files (F7001 and F7002 respectively). The chart below shows the attendance throughout this period.



#### 2.6. Age at attendance

The age of the child at attendance was calculated from the date of the visit and the child's date of birth. This is included on the release files in days (F7003a), weeks (F7003b) and months (F7003c), enabling the user to be as accurate as they choose. The chart below shows the distribution of age in months. The long upper tail (children attending at around 9 years old) is due to new cases who attended their visit at the end of the clinic. It took several months to determine whether new cases were indeed eligible, information for many was sparse and for example, we had to ensure the child was still alive.



## 2.7 Session Order

The order in which the child went through the sessions was recorded by the receptionist, this was based on the grid number that the child followed (see Figure 1.1). If the order had to be changed for any reason the new order was recorded. Variables have been calculated to indicate the first session that the child did, the second and so on (please see F7020 to F7027). This may help researchers to determine whether any previous sessions had an effect on the child's performance or behaviour in a later session.

## 2.8 Revisits

In the event that a child did not complete their visit they were offered the chance to return on another day to go through the sessions they may have missed. This included those children who were deemed to be high risk for the skin prick tests and needed a Doctor present (see section 3.2). Flags have been calculated to indicate these children (F7004) and details of which sessions they returned for are given in F7005.

### F7004 Child came back for revisit to complete sessions: F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	249	3.0	3.0	3.0
	2 No	8048	97.0	97.0	100.0
	Total	8297	100.0	100.0	

**F7005 Sessions Child revisited to complete: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Allergy	189	2.3	76.2	76.2
	2 Allergy & Samples	2	.0	.8	77.0
	3 Allergy & Hearing	2	.0	.8	77.8
	4 Samples	2	.0	.8	78.6
	5 Samples & Vision	1	.0	.4	79.0
	6 Hearing	30	.4	12.1	91.1
	7 Vision	22	.3	8.9	100.0
	Total	248	3.0	100.0	
Missing	-2 No revisit	8048	97.0		
	-1 Missing	1	.0		
	Total	8049	97.0		
Total		8297	100.0		

Additional age, month and year have been provided for these revisits (F7006a-c, F7007 and F7008).

Please note the difference between revisit and reinvite (section 2.4).

## 2.9 Biases in attendance

Table 2.9.1 gives an indication of the differences in the demographic characteristics of those children who attended Focus@7 compared to the remaining ALSPAC sample who did not attend who were a) All those alive at 1 year and b) Still active in the study at the time of invitation

The 456 new cases have not been included here since the majority of information is not available for these cases (leaving 7841 cases for comparison)

**Table 2.9.1: Differences in characteristics of Focus@7 attendees compared to non-attendees**

	Attendees (n=7841)	Non-attendees alive at 1 year (n=6130)	Non-attendees, active at time of invite (n=5303)
<b>Gender</b>			
Boy	3988 (50.9%)	3226 (52.6%)	2805 (52.9%)
Girl	3853 (49.1%)	2902 (47.4%)	2498 (47.1%)
		$\chi^2=4.38$ (p=0.036)	$\chi^2=5.20$ (p=0.023)
<b>Maternal education</b>			
< O level	1650 (21.9%)	2074 (42.5%)	1870 (42.9%)
O level	2673 (35.5%)	1627 (33.4%)	1472 (33.7%)
A level or higher	3217 (42.7%)	1174 (24.1%)	1022 (23.4%)
		$\chi^2=714.10$ (p<0.0001)	$\chi^2=702.46$ (p<0.0001)
<b>Maternal age</b>			
< 20	253 (3.2%)	749 (12.2%)	621 (11.7%)
21-24	970 (12.4%)	1362 (22.2%)	1152 (21.7%)
25-29	3099 (39.5%)	2300 (37.5%)	2013 (38.0%)
30-34	2560 (32.6%)	1296 (21.1%)	1145 (21.6%)
35+	959 (12.2%)	423 (6.9%)	372 (7.0%)
		$\chi^2=855.17$ (p<0.0001)	$\chi^2=735.93$ (p<0.0001)
<b>Housing tenure</b>			
Owner-occupier	6278 (82.6%)	3284 (60.6%)	2937 (61.8%)
Council/HA	729 (9.6%)	1348 (24.9%)	1177 (24.8%)
Other	591 (7.8%)	791 (14.6%)	725 (13.4%)
		$\chi^2=810.18$ (p<0.0001)	$\chi^2=696.45$ (p<0.0001)
<b>Ethnicity of child</b>			
White	7122 (95.9%)	4350 (93.4%)	3921 (93.8%)
Non-white	301 (4.1%)	308 (6.6%)	260 (6.2%)
		$\chi^2=39.10$ (p<0.0001)	$\chi^2=27.09$ (p<0.0001)
<b>Mean maternal age</b>	29.05 (sd=4.6)	26.65 (sd=5.1) $t=82.82$ (p<0.0001)	26.73 (sd=5.1) $t=27.21$ (p<0.0001)
<b>Mean birthweight</b>	3417 (sd=559)	3358 (sd=562) $t=2.03$ (p=0.154)	3362 (sd=557) $t=5.64$ (p<0.0001)
<b>Mean gestation</b>	39.44 (sd=1.9)	39.41 (sd=1.9) $t=2.57$ (p=0.109)	39.41 (sd=1.9) $t=1.13$ (p=0.260)

It can be seen that a significantly greater proportion of children with higher educated and older mothers attended F7 as did those living in owner-occupied housing. A slightly smaller proportion of boys attended compared to non-attendees as did non-white children. Children who attended had a slightly higher mean birthweight but this was not statistically significant. There was no difference in mean gestation.

## Release file version history

### Release version 4a – November 2017

- Addition of this section ‘Release file version history’ to the release file documentation
- Addition of 151 nutrition variables derived from the dietary diaries collected during this clinic session (f7dd100 - f7dd512), including dietary patterns
- Addition of three variables capturing a derived measure of development coordination disorder (DCD) using primarily data collected at F7 and F8 clinics and associated parental questionnaires (f7cr500, f7cr501 and f7cr502)
- Removal of the following text from section 2.4 New cases: *“However, we recommend that these cases [phase II enrolment] be dropped from any major analyses as there is little information currently available for them and they will naturally fall out of the majority of multivariate analyses”*.

### Release version 4b – May 2019

- String variables have been removed from this file and replaced with numeric variables. As all the previous string variables were time data, these have been split into separate ‘hour’ and ‘minutes’ variables. The affected variables are: f7ms002, f7bs002, f7bs012, f7bs014, f7bs016, f7bs018, f7bs020, f7bs022, f7bs024, f7bs026, f7bs028, f7bs030, f7bs032, f7bs034, f7bs036, f7bs038, f7bs040, f7bs042, f7bs044, f7bs046, f7bs048, f7bs101, f7bs104, f7bs107, f7bs110, f7bs113, f7bs116, f7bs119, f7bs122, f7bs141, f7al002, f7al032, f7hs002, f7ws002, f7sa002, f7sa053, f7sa065, f7cr002 and f7vs002. These original variables have been dropped, and replaced with time in hours (previous variable name, but now ending in ‘a’ – e.g., f7ms002a, for the starting hour of the measurement session) and time in minutes (previous variable name, but now ending in ‘b’ – e.g., f7ms002b, for the starting minute of the measurement session).
- Additionally, the value labels and missing values for variable f7ws003 have been updated.

### Release version 5a – July 2019

- Height, weight and BMI z-scores based on 1990 British Growth Reference charts have been derived (using the ‘zanthro’ function in Stata) and added to the release file. Variables are: f7ms100 (for height); f7ms101 (for weight); and f7ms102 (for BMI).
- Addition of further dietary pattern variables derived using reduced rank regression: f7dd600 and f7dd601.

### 3. THE DATA AND OBSERVATIONS

For each session a variable has been created which indicates whether or not the child began that session, with a further variable giving reasons why this may not have happened wherever possible. This information was gathered from comments recorded by the receptionists. Unfortunately it is missing for many cases. The remaining documentation details the data collected in each session indicating the methods used, recommendations for using the data and frequencies of the key variables.

Within each session, specifically designed data sheets are used to record the data. The datasheets are filed into folders and sent for double-keying on a weekly basis. The folders are returned with an electronic version of the data. A member of the research computing team performs a variety of error checks on the data and error reports are sent to the Focus teams responsible for that data. Corrections are made and an unclean file is made available to a member of the statistics team, who performs the final stage of the cleaning process.

Comments recorded on the data sheet are keyed separately, anonymised by the research computing team and sent to the appropriate member of staff for coding. The codes only are then matched to the main dataset and incorporated into the final data file.

With the exception of the measures session, there was one datasheet for each session at Focus @ 7. Within measures the bodystat was recorded on a separate datasheet.

There is a standard variable naming system throughout Focus @ 7:

Variables relevant to the whole session are named F7\*\*\*, where \*\*\* is a three digit number.

The remaining data is named according to the datasheet it was collected on using the format F7xx\*\*\*, where xx is a two letter abbreviation for that datasheet (e.g. ms for measures) and \*\*\* is again a 3 digit number. This system ensures that every variable is uniquely defined. For ease of use, wherever possible, consistency is maintained in naming variables, both between and within Focus visits. For example F7xx004 represents the tester within each session.

### 3.1 Measurements and bodystat

**F7MS001 Child entered Measuring session: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	8234	99.2	99.2	99.2
	2 No	63	.8	.8	100.0
	Total	8297	100.0	100.0	

**F7MS001A Reason Child did not do Measuring session**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 No staff	6	.1	.1	.1
	2 Ch left early	12	.1	.1	.2
	3 Ch arrived late	2	.0	.0	.2
	5 Ch did session	8234	99.2	99.8	100.0
	Total	8254	99.5	100.0	
Missing	-1 Missing	43	.5		
	Total	8297	100.0		

**F7MS002a and F7MS002b: Measurement session start time: F7 – not summarised**

Measurement session tester:

**F7MS004 Measurement tester: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	1300	15.8	15.8	15.8
	2.00	828	10.1	10.1	25.8
	3.00	1480	18.0	18.0	43.8
	4.00	2528	30.7	30.7	74.5
	5.00	782	9.5	9.5	84.0
	6.00	71	.9	.9	84.9
	7.00	462	5.6	5.6	90.5
	8.00	783	9.5	9.5	100.0
	Total	8234	100.0	100.0	

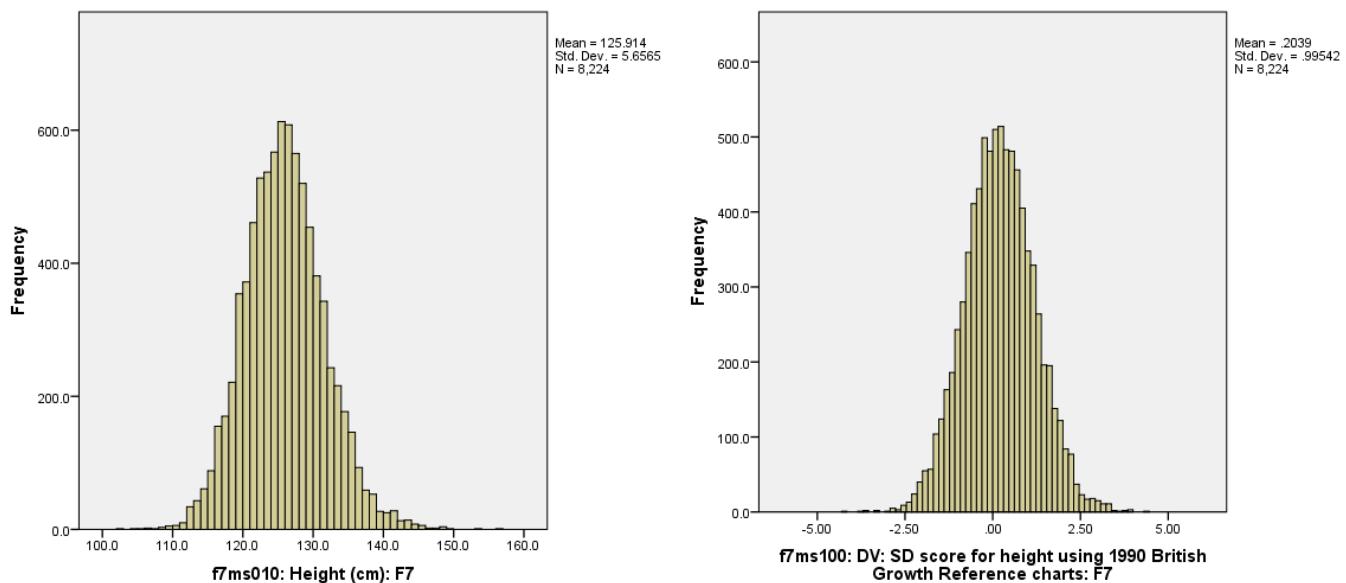
As far as possible all children were measured in their underclothes with their shoes removed.

For all measurements taken, the tester recorded any problems that may have affected accuracy examples of these include: Child had difficulty keeping still; whether the child had an intricate hairstyle or if the Child was partly clothed.

### 3.1.1 Anthropometric Measures

#### Height

Height was measured to the last complete mm using the Harpenden Stadiometer. Children were positioned with their feet flat and heels together, standing straight so that their heels, calves, buttocks and shoulders came into contact with the vertical backboard of the stadiometer. The headboard was lowered down the backboard until it touched the child's head and a 1 Kg weight was placed on the headboard to ensure head contact and to minimise the effect of hair thickness. Any problems with measuring were noted.

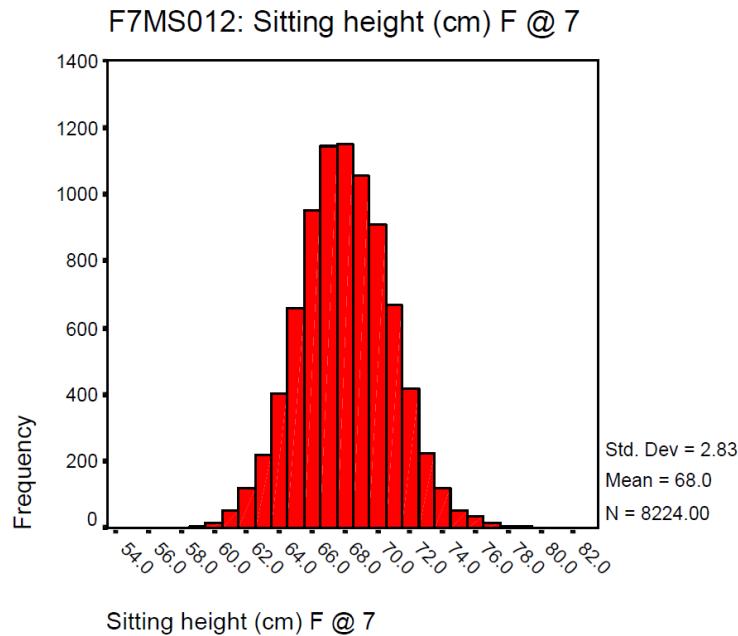


**F7MS011 Problems measuring Height: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Done/no probs	7760	93.5	94.2	94.2
	3 would not keep still	20	.2	.2	94.5
	10 inaccurate-see comms	440	5.3	5.3	99.8
	12 not done/unable to do	3	.0	.0	99.9
	13 intricate hair	11	.1	.1	100.0
	Total	8234	99.2	100.0	
Missing	-9 Did not do measures	63	.8		
Total		8297	100.0		

## Sitting Height

Sitting height was measured using the Harpenden sitting height table anthropometer to the last complete mm. The child was positioned on the table with back straight and thighs horizontal. Feet were supported on the footrest so that the knees were at right angles. The same process was used to take the measure, as described above.

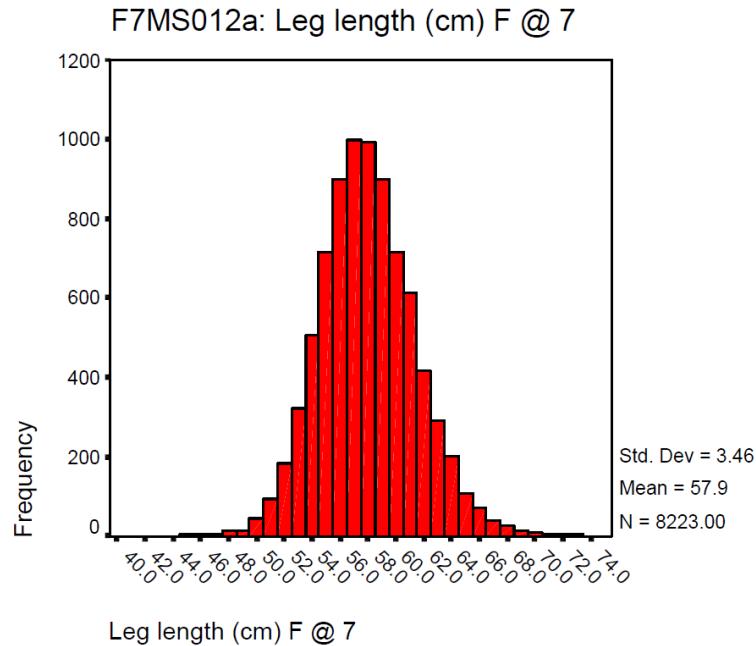


### F7MS013 Problems measuring Sitting height : F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Done/no probs	7986	96.3	97.0	97.0
	3 would not keep still	14	.2	.2	97.2
	10 inaccurate-see comms	214	2.6	2.6	99.8
	12 not done/unable to do	10	.1	.1	99.9
	13 intricate hair	10	.1	.1	100.0
	Total	8234	99.2	100.0	
Missing	-9 Did not do measures	63	.8		
Total		8297	100.0		

## Leg length

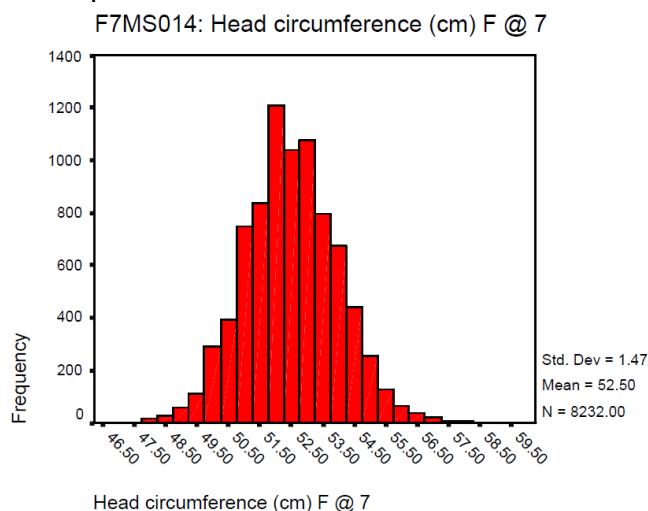
Leg length was calculated as F7MS010-F7MS012.



All circumferences were measured to the nearest mm using the Harpenden anthropometric tape.

## Head Circumference

Head circumference was measured to the nearest mm at the widest horizontal circumference of the head as the child looked straight ahead. The tape was pulled tight to compress the hair.

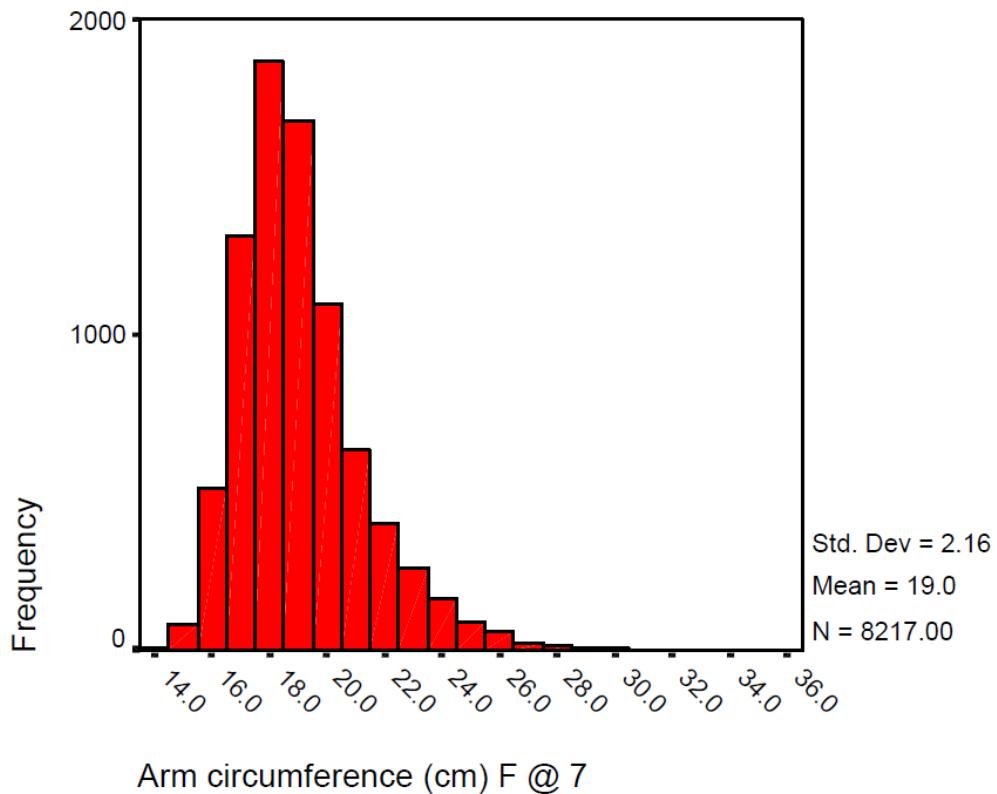


**F7MS015 Problems measuring Head circumference: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Done/no probs	8117	97.8	98.6	98.6
	3 would not keep still	8	.1	.1	98.7
	10 inaccurate-see comms	52	.6	.6	99.3
	12 not done/unable to do	2	.0	.0	99.3
	13 intricate hair	55	.7	.7	100.0
	Total	8234	99.2	100.0	
Missing	-9 Did not do measures	63	.8		
Total		8297	100.0		

**Arm Circumference**

The left arm was flexed to a right angle and the circumference was measured to the nearest mm, midway between the process of the acromion of the scapula and the olecranon process of the elbow, keeping the tape taut but not tight.

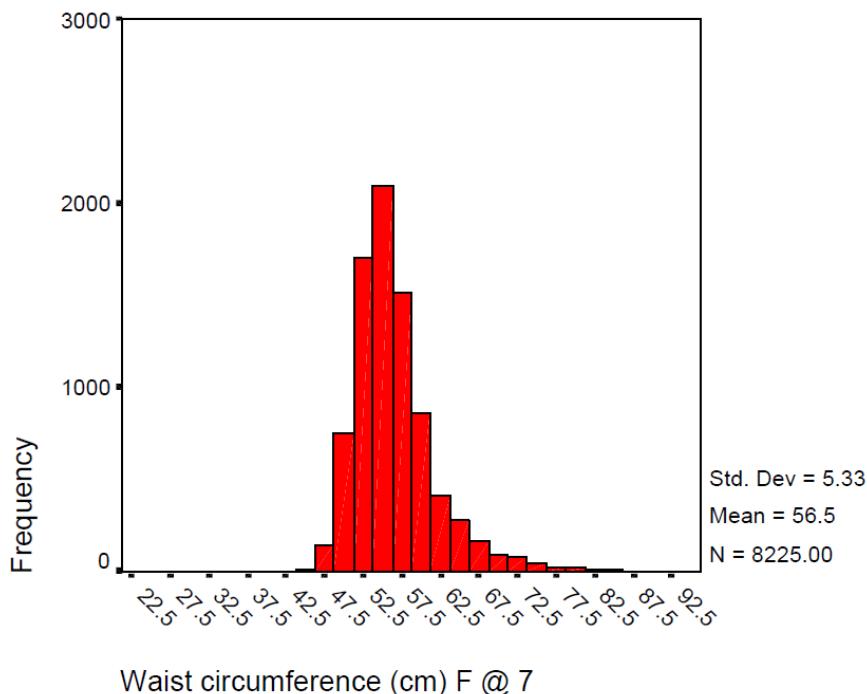
**F7MS016: Arm circumference (cm) F @ 7**

**F7MS017 Problems measuring Arm circumference: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Done/no probs	8129	98.0	98.7	98.7
	1 not done/uncoop	9	.1	.1	98.8
	2 not done/shy	1	.0	.0	98.8
	3 would not keep still	13	.2	.2	99.0
	4 partly clothed	10	.1	.1	99.1
	10 inaccurate-see comms	35	.4	.4	99.6
	12 not done/unable to do	7	.1	.1	99.6
	14 difficult feel bones	30	.4	.4	100.0
	Total	8234	99.2	100.0	
Missing	-9 Did not do measures	63	.8		
Total		8297	100.0		

**Waist Circumference**

Waist circumference was measured to the nearest mm at the minimum circumference of the abdomen between the iliac crests and the lowest ribs, the tape was kept perpendicular to the long axis of the body, touching the skin but not compressing the tissue.

**F7MS018: Waist circumference (cm) F @ 7**


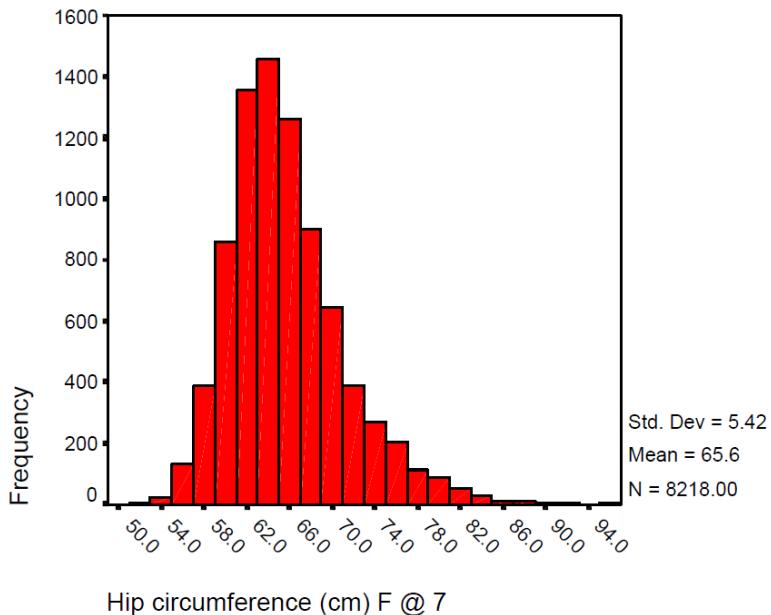
## F7MS019 Problems measuring Waist circumference: F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Done/no probs	7859	94.7	95.4	95.4
	1 not done/uncoop	5	.1	.1	95.5
	2 not done/shy	1	.0	.0	95.5
	3 would not keep still	50	.6	.6	96.1
	4 partly clothed	87	1.0	1.1	97.2
	5 wc held stomach in	79	1.0	1.0	98.1
	7 partly clothed(no shoes)	1	.0	.0	98.2
	10 inaccurate-see comms	71	.9	.9	99.0
	11 vest+pants	1	.0	.0	99.0
	12 not done/unable to do	3	.0	.0	99.1
	14 difficult feel bones	77	.9	.9	100.0
	Total	8234	99.2	100.0	
Missing	-9 Did not do measures	63	.8		
Total		8297	100.0		

**Hip Circumference**

Hip circumference was measured to the nearest mm at the point of maximum circumference around the child's hips/buttocks, again with the tape kept perpendicular to the long axis of the body segment. The measurement was done over the child's pants.

F7MS020: Hip circumference (cm) F @ 7



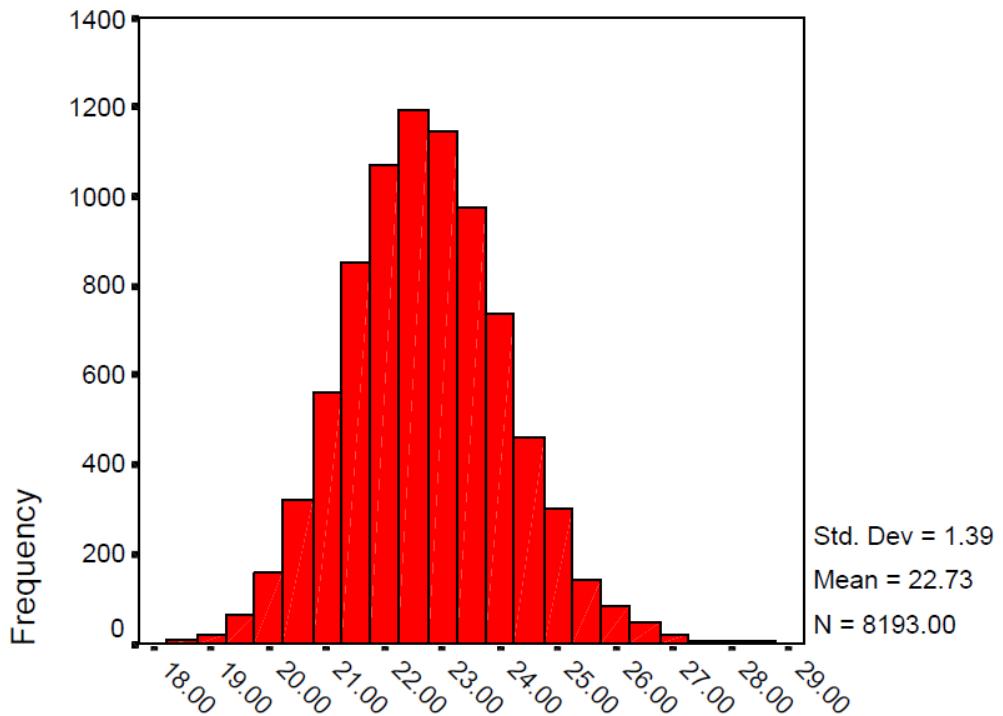
## F7MS021 Problems measuring Hip circumference: F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Done/no probs	7652	92.2	92.9	92.9
	1 not done/uncoop	6	.1	.1	93.0
	2 not done/shy	1	.0	.0	93.0
	3 would not keep still	19	.2	.2	93.2
	4 partly clothed	446	5.4	5.4	98.7
	5 wc held stomach in	1	.0	.0	98.7
	7 partly clothed(no shoes)	3	.0	.0	98.7
	10 inaccurate-see comms	50	.6	.6	99.3
	12 not done/unable to do	8	.1	.1	99.4
	14 difficult feel bones	48	.6	.6	100.0
	Total	8234	99.2	100.0	
Missing	-9 Did not do measures	63	.8		
Total		8297	100.0		

## Upper Arm Length

Upper arm length was measured using the Harpenden anthropometer and was recorded to the last complete mm. The child stood with their back to the measurer with arms relaxed. The fixed blade was placed on the latero-superior margin of the head of the radius and the moveable end was placed immediately inferior to the acromial angle.

## F7MS022: Upper arm length (cm) F @ 7



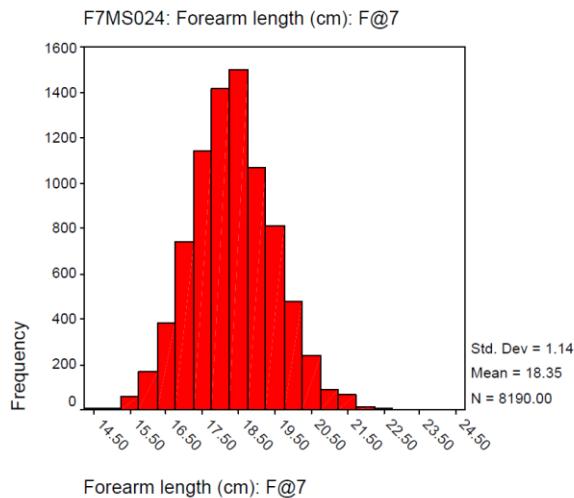
## Upper arm length (cm) F @ 7

## F7MS023 Problems measuring Upper arm : F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Done/no probs	8024	96.7	97.4	97.4
	1 not done/uncoop	16	.2	.2	97.6
	2 not done/shy	2	.0	.0	97.7
	3 would not keep still	11	.1	.1	97.8
	4 partly clothed	5	.1	.1	97.9
	10 inaccurate-see comms	64	.8	.8	98.6
	12 not done/unable to do	23	.3	.3	98.9
	14 difficult feel bones	88	1.1	1.1	100.0
	15 difficult balance/wobbly	1	.0	.0	100.0
	Total	8234	99.2	100.0	
Missing	-9 Did not do measures	63	.8		
Total		8297	100.0		

## Forearm Length

Forearm length was measured as above. The fixed blade of the anthropometer was applied to the distal end of the radius and the moveable end on the radius of the left arm.

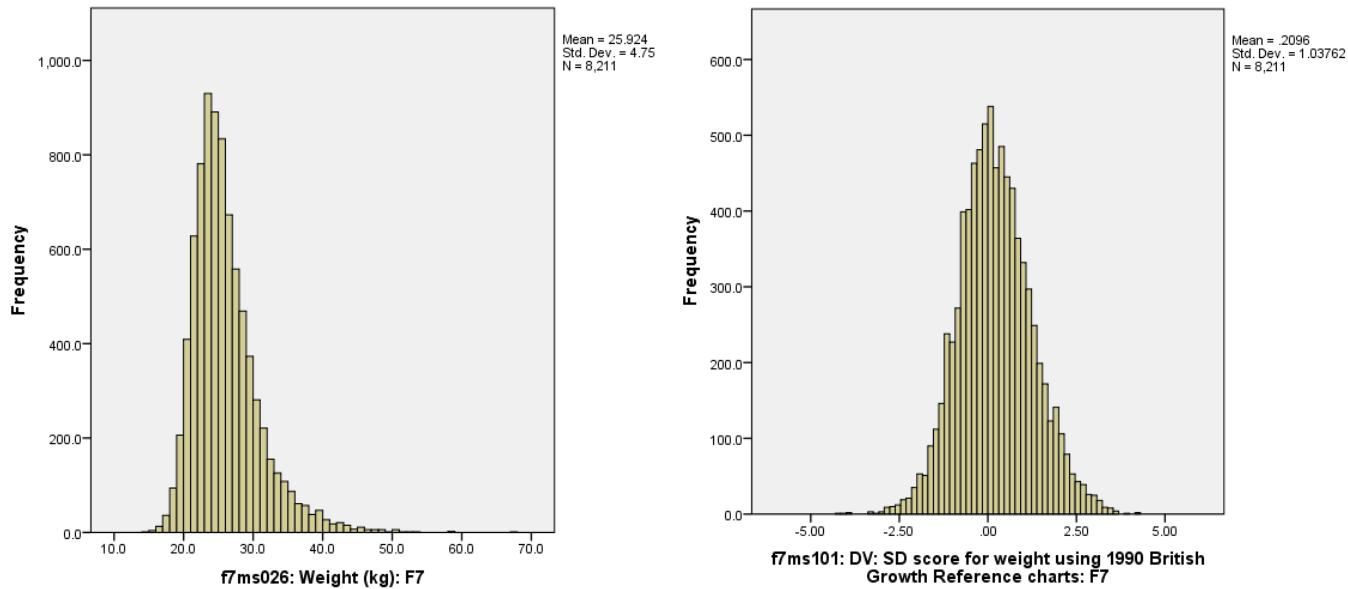


### F7MS025 Problems measuring Forearm : F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Done/no probs	8050	97.0	97.8	97.8
	1 not done/uncoop	15	.2	.2	97.9
	2 not done/shy	2	.0	.0	98.0
	3 would not keep still	10	.1	.1	98.1
	4 partly clothed	2	.0	.0	98.1
	10 inaccurate-see comms	61	.7	.7	98.9
	12 not done/unable to do	27	.3	.3	99.2
	14 difficult feel bones	67	.8	.8	100.0
	Total	8234	99.2	100.0	
Missing	-9 Did not do measures	63	.8		
Total		8297	100.0		

### 3.1.2 Weight and Bioelectrical Impedance

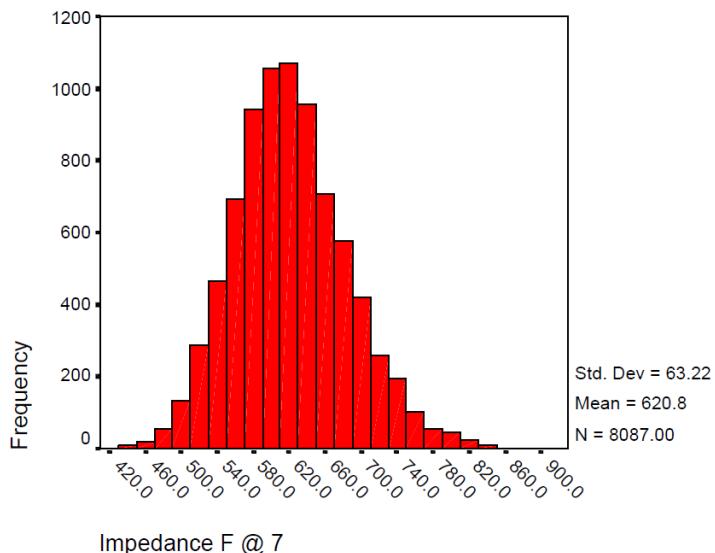
Both were measured using the Tanita Body Fat Analyser (Model TBF 305). The child was encouraged to pass urine (see F7MS029) and undress to their underclothes. 'Female Standard' was entered into the machine for all children and their height was entered to the nearest cm. The child stepped onto the measuring platform which had been wiped with disinfecting alcohol and positioned so that both feet were located in parallel with the toe and heel in contact with their respective electrodes. Measurement was completed when the weight and fat ratio readings were fixed and the buzzer beeped. Weight was measured to the nearest 50g.



## F7MS027 Problems measuring Weight : F7

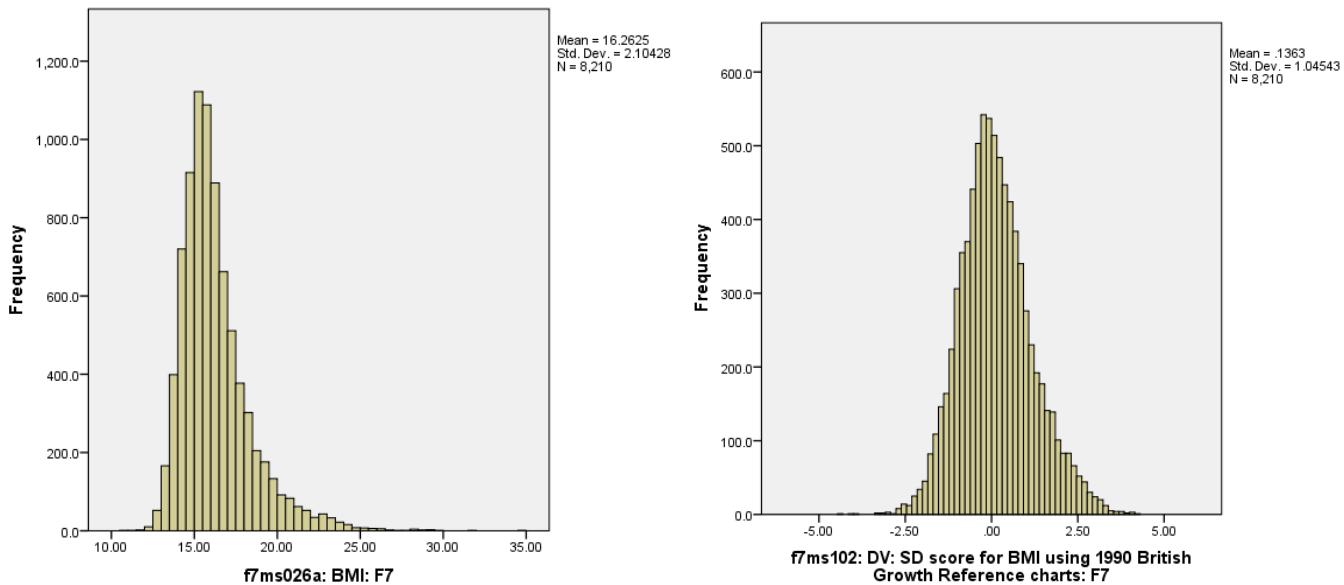
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Done/no probs	6892	83.1	83.7	83.7
	1 not done/uncoop	6	.1	.1	83.8
	2 not done/shy	1	.0	.0	83.8
	3 would not keep still	2	.0	.0	83.8
	4 partly clothed	12	.1	.1	84.0
	6 fully clothed(no shoes)	114	1.4	1.4	85.3
	7 partly clothed(no shoes)	424	5.1	5.1	90.5
	8 fully clothed(shoes)	3	.0	.0	90.5
	10 inaccurate-see comms	47	.6	.6	91.1
	11 vest+pants	722	8.7	8.8	99.9
	12 not done/unable to do	9	.1	.1	100.0
	15 difficult balance/wobbly	2	.0	.0	100.0
	Total	8234	99.2	100.0	
Missing	-9 Did not do measures	63	.8		
Total		8297	100.0		

## F7MS028: Impedance F @ 7



## Body Mass Index

BMI (Kg/m<sup>2</sup>) was calculated as  $F7MS026 / (F7MS010/100)^2$ .



### 3.1.3 Bodystat

As well as the Tanita Bodyfat Analyser a further method was used to measure a child's bioelectrical impedance. The Bodystat 1500 Body Composition Unit was also used. This unit was calibrated weekly to enable the operator to independently verify that the unit remained in calibration at all times.

Ideally the child had not drunk or eaten anything for two hours prior to this measurement and had recently emptied his/her bladder.

The child was asked to lie down on their back and the time this happened was recorded. It was ensured that no parts of the body were touching each other. A set of self-adhesive disposable electrodes were placed on specific parts of the body: Two on the right hand (one behind the knuckle of the middle finger and one next to the ulna head on the wrist) and two on the right foot (Behind the second toe next to the big toe and on the ankle at the level of and between the medial and lateral malleoli). Leads with crocodile clips were attached to the electrodes (red lead from finger to toe and black lead from wrist to ankle). The Bodystat 1500 Unit was switched on and the measurer recorded what the child had to eat and drink that day and what time these had been consumed (together with the volume of drinks consumed). The measurer had to key the following information into the machine: gender, age, height (cm), weight (kg) and activity level of the child. Ensuring that the child had been in the supine position for at least 5 minutes and that the unit had been switched on for at least 1 minute the recording was made.

**F7BS001 Child started Bodystat: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	8045	97.0	97.0	97.0
	2 No	252	3.0	3.0	100.0
	Total	8297	100.0	100.0	

**F7BS001A Reason Child did not do Bodystat session**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 No staff	6	.1	.1	.1
	2 Ch left early	12	.1	.1	.2
	3 Ch arrived late	2	.0	.0	.2
	5 Ch did session	8046	97.0	99.8	100.0
	Total	8066	97.2	100.0	
Missing	-1 Missing	231	2.8		
	Total	8297	100.0		

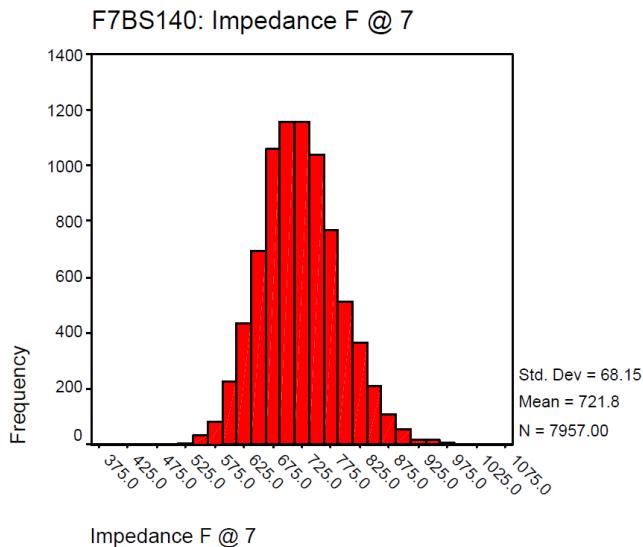
Bodystat session tester:

**F7BS004 Bodystat tester: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1248	15.0	15.5	15.5
	2	828	10.0	10.3	25.8
	3	1407	17.0	17.5	43.3
	4	2461	29.7	30.6	73.9
	5	785	9.5	9.8	83.6
	6	71	.9	.9	84.5
	7	462	5.6	5.7	90.3
	8	784	9.4	9.7	100.0
	Total	8046	97.0	100.0	
Missing	-9 Did not do bodystat	251	3.0		
	Total	8297	100.0		

**F7BS002a and F7BS002b: Time that child lay down: F7 – not summarised**

**F7BS141a and F7BS141b: Time that recording was made: F7 – not summarised**



The measurer recorded whether the child remained still for the measurement (F7BS142), problems taking the measure (F7BS145) and finally any other comments relevant to the session were made (F7BS131).

The consumption of various foods and drinks in the two hours previous to the session were recorded, together with times (and volumes for drinks). The variable names are shown below (data not shown).

### What did you have to eat for breakfast/lunch today (depending on am or pm visit)?

Child eaten:	Yes/No	Time
Cereal	F7BS011	F7BS012
Porridge	F7BS013	F7BS014
Toast	F7BS015	F7BS016
Cooked breakfast	F7BS017	F7BS018
Sandwiches	F7BS019	F7BS020
Crisps/nuts	F7BS021	F7BS022
Chocolate/sweets	F7BS023	F7BS024
Cake	F7BS025	F7BS026
Cereal bar/biscuits	F7BS027	F7BS028
Yoghurt/mousse	F7BS029	F7BS030
Fruit	F7BS031	F7BS032
Custard	F7BS033	F7BS034
Other pudding	F7BS035	F7BS036
Meat+veg	F7BS037	F7BS038
Vegetarian hot meal	F7BS039	F7BS040
Salad	F7BS041	F7BS042
Chips+burger etc.	F7BS043	F7BS044
Sausage roll/pork pie etc	F7BS045	F7BS046
Chips only	F7BS047	F7BS048

**What did you have to drink at breakfast/lunch today (depending on am or pm visit)?**

Child drunk	Yes/No	Time	Volume
Tea/coffee	F7BS100	F7BS01	F7BS102
Pure fruit juice	F7BS103	F7BS04	F7BS105
Milk	F7BS106	F7BS07	F7BS108
Fizzy drink	F7BS109	F7BS10	F7BS111
Water	F7BS112	F7BS13	F7BS114
Milkshake/hot chocolate	F7BS115	F7BS16	F7BS117
Soup	F7BS118	F7BS19	F7BS119

### 3.1.4 Scoliosis

As part of the measurements session, a scoliometer (Orthopaedic Systems Inc, Haywood, California) was used to measure the axial trunk inclination (ATI) in a forward bending position. The child was asked to bend forward slowly with their arms straight and palms together until the trunk was horizontal. If a rotational deformity was noted at any level, the scoliometer was placed gently across the spine at different positions, perpendicular to the long axis, until the maximum ATI was read and recorded (Murrell, 1993).

**F7MS030 Scoliometer measure: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1527	18.4	19.0	19.0
	1	2689	32.4	33.4	52.3
	2	2451	29.5	30.4	82.8
	3	1029	12.4	12.8	95.5
	4	250	3.0	3.1	98.6
	5	82	1.0	1.0	99.7
	6	11	.1	.1	99.8
	7	9	.1	.1	99.9
	8	3	.0	.0	99.9
	9	2	.0	.0	100.0
	10	3	.0	.0	100.0
Missing	Total	8056	97.1	100.0	
	-9 Did not do measures	63	.8		
	-1 missing	178	2.1		
	Total	241	2.9		
Total		8297	100.0		

If any child was found to have an ATI  $\geq 7^\circ$  the parent was given a letter to pass to their GP which recommended surveillance (F7MS032).

### 3.1.4 Flexural Dermatitis

Flexural dermatitis is poorly demarcated erythema with surface changes which can be fine scaling, vesicles, oozing, crusting or lichenification. It was measured according to the ISAAC protocol (Strachan & Williams, 1995) as part of the measurements session.

Observers noted the presence of any flexural dermatitis > 1 cm in diameter in *any* of the following areas: around the eyes, the sides or front of the neck, in front of the elbows, behind the knees or in front of the ankles. The anthropometry team were trained to carry out these observations by Professor Hywell Williams, University of Nottingham.

Area	Variable label	Yes (%)	No (%)
Any	F7MS033	647 (7.9%)	7549 (92.1%)
Eyes	F7MS035	75 (0.9%)	8121 (99.1%)
Neck	F7MS036	85 (1.0%)	8111 (99.0%)
Elbows	F7MS037	517 (6.3%)	7679 (93.7%)
Knees	F7MS038	350 (4.3%)	7846 (95.7%)
Ankles	F7MS039	88 (1.1%)	8108 (98.9%)

The measurer made any relevant comments which may have affected the accuracy of the measurements. These are recorded in variables F7MS045 and F7MS046.

### 3.2. Skin prick testing

**F7AL001 Child entered Allergy session: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7680	92.6	92.6	92.6
	2 No	617	7.4	7.4	100.0
	Total	8297	100.0	100.0	

**F7AL001A Reason Child did not do Allergy session**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 No staff	314	3.8	3.9	3.9
	2 Ch left early	12	.1	.1	4.1
	3 Ch arrived late	2	.0	.0	4.1
	5 Ch did session	7680	92.6	95.9	100.0
	Total	8008	96.5	100.0	
Missing	-1 Missing	289	3.5		
	Total	8297	100.0		

**F7AL002a and F7AL002b: Allergy session start time: F7 – not summarised**

Prior to the Focus @ 7 visit, parents were informed that an allergy testing procedure would be performed. They were sent a series of questions designed to identify high risk cases and to record the use of antihistamines.

If a child was identified as being high risk (e.g. they had previously experienced anaphylactic shock) they were invited to attend the clinic only on a day when a doctor was present. If on the day, the child was considered to be high risk but had not been previously identified as such and there was not a doctor available they were invited to return at a later date when a doctor was on the premises. (In the event n=61 returned on such an occasion-see F7AL020 below).

**F7AL010 Parental consent: allergy: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7400	96.4	96.4	96.4
	2 No	57	.7	.7	97.2
	3 child refused all	217	2.8	2.8	100.0
	Total	7674	99.9	100.0	
Missing	-1 missing	6	.1		
	Total	7680	100.0		

**F7AL011 Child is high risk: allergy: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 yes	228	3.0	3.0	3.0
	2 no	7395	96.3	97.0	100.0
	Total	7623	99.3	100.0	
Missing	-1 missing	57	.7		
	Total	7680	100.0		

F7AL015 to F7AL019 (See Table 3.2.1 below) are variables representing the information the testers recorded about the child's previous/current allergies which have made them high risk subjects.

**Table 3.2.1: Number of children reported as having previous allergic reactions**

Code	Reacted to:	Number
1	Penicilliin	41
2	Peanut	56
3	Fish	7
4	Fruit/veg	8
5	Other nuts	48
6	Horse	8
7	Egg	23
8	Cat	27
9	Dog	10
10	Bee/wasp sting	12
11	Latex	1
12	Medicines/vaccinations	9
13	Rabbit/guinea pig	8
14	Hayfever/grasses	30
15	Housedust mite	13
16	Milk/Dairy products	19
17	Soya	1
18	Food colourings/additives	6
19	Wheat	1
20	Other foods	15
21	Other (not listed above)	13
22	Unknown cause	27

Often the child had to come back on another occasion to complete their skin prick testing including needing a doctor present.

**F7AL005 Child returned for second visit to complete allergy: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	199	2.4	2.4	2.4
	2 No	8098	97.6	97.6	100.0
	Total	8297	100.0	100.0	

**F7AL020 Child had to come back for 2nd visit when DR was present: allergy F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	61	.7	.8	.8
	2 No	7619	91.8	99.2	100.0
	Total	7680	92.6	100.0	
Missing	-9 Did not do allergy	617	7.4		
	Total	8297	100.0		

If the child regularly took antihistamines (but was not at high risk) parents were asked to stop these drugs for 48 hours prior to the visit. The tester recorded any antihistamine use (F7AL030), how many days prior to the visit they were taken (F7AL031) and the time antihistamines were taken (FKAL032a/b). The type of antihistamines and any other medication the child was currently on was recorded (F7AL035).

All allergy staff were doctors or nurses who were specifically trained in allergy testing, the use of IM adrenaline and paediatric resuscitation. IM adrenaline was always available on site.

**F7AL004 Allergy tester F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2501	30.1	32.6	32.6
	2	687	8.3	8.9	41.5
	3	201	2.4	2.6	44.1
	4	793	9.6	10.3	54.5
	5	315	3.8	4.1	58.6
	6	106	1.3	1.4	59.9
	7	169	2.0	2.2	62.1
	8	412	5.0	5.4	67.5
	9	184	2.2	2.4	69.9
	10	405	4.9	5.3	75.2
	11	1906	23.0	24.8	100.0
	Total	7679	92.6	100.0	
Missing	-9 Did not do allergy	617	7.4		
	-1 Missing	1	.0		
	Total	618	7.4		
Total		8297	100.0		

At the beginning of the session, the tester carefully explained to the child what they were going to do and obtained parental consent for the allergy testing. They then proceeded to ask some questions about any medicines the child had taken in the previous 48 hours. Any antihistamines and cough medicines used were recorded, together with when they were taken.

Each child was tested with a positive and negative control and a core set of six allergens. They were also tested with one of three other sets of up to eight allergens.

**F7AL050 What set of allergens were tested: allergy: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Core and set A	2555	33.3	33.3	33.3
	2 Core and set B	2515	32.7	32.7	66.0
	3 Core and set C	2447	31.9	31.9	97.9
	4 core only	163	2.1	2.1	100.0
	Total	7680	100.0	100.0	

The allergens in each group were as follows:

<b>Core Set</b> Positive control (histamine) Negative control (saline) Cat Mixed grasses Peanut Egg white House dust mite (DP) Mixed nuts	<b>Set A</b> Dog Horse Mouse Rabbit Guinea pig Hamster Soya
<b>Set B</b> Fish Sesame Cashew Almond Walnut Hazelnut Brazil Pecan	<b>Set C</b> Mixed tree pollens House dust mite (DF) Alternaria * Cladosporium * Aspergillus * Mixed cockroach Latex Milk

\* Moulds

The set of allergens that a child received was rotated on a weekly basis.

The testers wrote a set of numbers on each of the child's forearms (core set on one arm, other set on the other arm), which related to each allergen. Drops of each control and allergen were placed next to their relevant number, each more than 1cm apart and none above a visible vein or eczema. A small prick was made to the skin beneath each drop using a separate sterile lancet for each. The allergens were then left for five minutes, after which time each was wiped off with a separate tissue. Meanwhile, the parent was taken through the dietary diaries that they had brought with them to check for errors etc (See Section 3.8) and the child was encouraged to participate in this to distract them from scratching their arms.

After ten minutes each skin prick site was checked and measured. Any weals and flares were marked with a pen at the maximum diameter, these were then measured and recorded. If the weal was irregular (had pseudopods) this was also recorded.

Parents and children were told if they had reacted to any of the allergens. In addition, they were given printed information explaining that a reaction did not necessarily mean that an allergy was present and that if there was no physical reaction to exposure then no action need be taken.

For the purposes of this file, a child was deemed to react to an allergen if the weal and/or flare was  $\geq 2\text{mm}$ . The tables overleaf show, firstly, the variable labels for the data collected on each allergen (weal and flare size, presence of pseudopod and reasons as to why a particular allergen was not tested) and secondly, how many children reacted to each allergen using the definition above.

**Table 3.2.2 Data collected on each allergen**

Allergen	Weal size	Flare size	Pseudopods	Reason why not tested
<b>Core Set</b>				
Positive	F7AL110	F7AL111	F7AL112	F7AL113
Negative	F7AL120	F7AL121	F7AL122	F7AL123
Mixed Grass	F7AL130	F7AL131	F7AL132	F7AL133
DP	F7AL140	F7AL141	F7AL142	F7AL143
Cat	F7AL150	F7AL151	F7AL152	F7AL153
Egg white	F7AL160	F7AL161	F7AL162	F7AL163
Peanut	F7AL170	F7AL171	F7AL172	F7AL173
Mixed nuts	F7AL180	F7AL181	F7AL182	F7AL183
<b>Set A</b>				
Dog	F7AL190	F7AL191	F7AL192	F7AL193
Horse	F7AL200	F7AL201	F7AL202	F7AL203
Mouse	F7AL210	F7AL211	F7AL212	F7AL213
Rabbit	F7AL220	F7AL221	F7AL222	F7AL223
Guinea pig	F7AL230	F7AL231	F7AL232	F7AL233
Hamster	F7AL240	F7AL241	F7AL242	F7AL243
Soya	F7AL250	F7AL251	F7AL252	F7AL253
<b>Set B</b>				
Fish	F7AL270	F7AL271	F7AL272	F7AL273
Sesame	F7AL280	F7AL281	F7AL282	F7AL283
Cashew	F7AL290	F7AL291	F7AL292	F7AL293
Almond	F7AL300	F7AL301	F7AL302	F7AL303
Walnut	F7AL310	F7AL311	F7AL312	F7AL313
Hazelnut	F7AL320	F7AL321	F7AL322	F7AL323
Brazil	F7AL330	F7AL331	F7AL332	F7AL333
Pecan	F7AL340	F7AL341	F7AL342	F7AL343
<b>Set C</b>				
Mixed tree pollen	F7AL350	F7AL351	F7AL352	F7AL353
DF	F7AL360	F7AL361	F7AL362	F7AL363
Alternaria	F7AL370	F7AL371	F7AL372	F7AL373
Cladosporium	F7AL380	F7AL381	F7AL382	F7AL383
Aspergillus	F7AL390	F7AL391	F7AL392	F7AL393
Mixed cockroach	F7AL400	F7AL401	F7AL402	F7AL403
Latex	F7AL410	F7AL411	F7AL412	F7AL413
Milk	F7AL420	F7AL421	F7AL422	F7AL423

**Table 3.2.1: Number of children showing a reaction to each allergen (defined as weal  $\geq 2\text{mm}$ )**

Allergen	Variable label	Yes (%)	No (%)
<b>Core Set</b>			
Positive	F7AL115	7108 (98.0%)	148 (2.0%)
Negative	F7AL125	16 (0.2%)	7151 (99.8%)
Mixed Grass	F7AL135	872 (12.2%)	6273 (87.8%)
DP	F7AL145	911 (12.7%)	6252 (87.3%)
Cat	F7AL155	482 (6.8%)	6626 (93.2%)
Egg white	F7AL165	40 (0.7%)	5668 (99.3%)
Peanut	F7AL175	155 (2.3%)	6590 (97.7%)
Mixed nuts	F7AL185	112 (1.7%)	6410 (98.3%)
<b>Set A</b>			
Dog	F7AL195	114 (4.6%)	2342 (95.4%)
Horse	F7AL205	49 (2.0%)	2403 (98.0%)
Mouse	F7AL215	11 (0.5%)	2308 (99.5%)
Rabbit	F7AL225	44 (1.9%)	2300 (98.1%)
Guinea pig	F7AL235	19 (0.8%)	2320 (99.2%)
Hamster	F7AL245	5 (0.2%)	2333 (99.8%)
Soya	F7AL255	7 (0.5%)	1319 (99.5%)
<b>Set B</b>			
Fish	F7AL275	5 (0.2%)	2304 (99.8%)
Sesame	F7AL285	7 (0.3%)	2241 (99.7%)
Cashew	F7AL295	12 (0.5%)	2229 (99.5%)
Almond	F7AL305	22 (1.0%)	2103 (99.0%)
Walnut	F7AL315	24 (1.1%)	2217 (98.9%)
Hazelnut	F7AL325	6 (0.3%)	2315 (99.7%)
Brazil	F7AL335	16 (0.7%)	2197 (99.3%)
Pecan	F7AL345	10 (0.4%)	2218 (99.6%)
<b>Set C</b>			
Mixed tree pollen	F7AL355	35 (1.5%)	2259 (98.5%)
DF	F7AL365	172 (7.5%)	2115 (92.5%)
Alternaria	F7AL375	18 (0.8%)	2261 (99.2%)
Cladosporium	F7AL385	23 (1.0%)	2255 (99.0%)
Aspergillus	F7AL395	11 (0.5%)	2165 (99.5%)
Mixed cockroach	F7AL405	7 (0.5%)	2168 (99.7%)
Latex	F7AL415	9 (0.4%)	2057 (99.6%)
Milk	F7AL425	12 (0.5%)	2217 (99.5%)

The testers recorded various comments regarding the session. If appropriate they have been incorporated into preceding variables, the remainder have been coded and are labeled as follows:

F7AL501: Allergens left on for five minutes  
F7AL502: How long allergens left on (mins)  
F7AL505: Allergens wiped off immediately  
F7AL510: Child had eczema  
F7AL511: Child had asthma  
F7AL512: Arm(s) in plaster  
F7AL513: Allergens recently tested elsewhere  
F7AL600: Problems with child

It is recommended that researchers using this data exclude cases who did not react to the positive allergen and those who did react to the negative allergen.

### 3.3 Hearing

**F7HS001 Child entered Hearing session: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7873	94.9	94.9	94.9
	2 No	424	5.1	5.1	100.0
	Total	8297	100.0	100.0	

**F7HS001A Reason Child did not do Hearing session**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 No staff	235	2.8	2.9	2.9
	2 Ch left early	12	.1	.1	3.0
	5 Ch did session	7873	94.9	97.0	100.0
	Total	8120	97.9	100.0	
Missing	-1 Missing	177	2.1		
	Total	8297	100.0		

**F7HS002a and F7HS002b: Hearing session start time: F7 – not summarised**

All hearing tests were carried out by audiologists and staff specially trained in audiology and tympanometry and performed in a 'sound proof' room or a room with minimal external noise (not exceeding 35 dB (A)).

**F7HS004 Hearing tester F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	741	8.9	9.4	9.4
	2	396	4.8	5.0	14.4
	3	293	3.5	3.7	18.2
	4	567	6.8	7.2	25.4
	5	644	7.8	8.2	33.5
	6	75	.9	1.0	34.5
	7	864	10.4	11.0	45.5
	8	2393	28.8	30.4	75.9
	9	41	.5	.5	76.4
	10	1859	22.4	23.6	100.0
	Total	7873	94.9	100.0	
Missing	-9 Did not do hearing	424	5.1		
	Total	8297	100.0		

All background noise was monitored using a sound level meter and testing was stopped if the noise level exceeded 35 dBA.

At the start of the session, parents were informed that they would not be told any details of the test results. But they would be informed if their child's hearing was satisfactory or whether a referral was recommended.

### 3.3.1 Audiometry

Audiometry was performed as per British Society of Audiologists (BSA) standards – thresholds were taken as 2/3 presentations on the ascending scales. Both air- and bone-conduction were performed using either a GSI 61 clinical audiometer or a Kamplex AD12 audiometer.

**F7HS009 Audiometry done: hearing F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 yes	7780	93.8	98.8	98.8
	2 no	92	1.1	1.2	100.0
	Total	7872	94.9	100.0	
Missing	-9 Did not do hearing	425	5.1		
Total		8297	100.0		

### 3.3.1.1 Air conduction

Priority was given to the higher frequencies and to obtain as much bilateral information as possible. As such the test was performed in the following order:

1. Right ear – 1 kHz and 4 kHz
2. Left ear – 1 kHz and 4 kHz
3. Right ear – 8 kHz and 2 kHz
4. Left ear – 8 kHz and 2 kHz
5. Right ear – 500 Hz
5. Left ear – 500 Hz

Finally, 1 kHz was repeated on the right ear to check reliability

If the GSI 61 audiometer was available 16kHz was also performed (starting with the right ear).

The data (not shown) on the release files are as follows

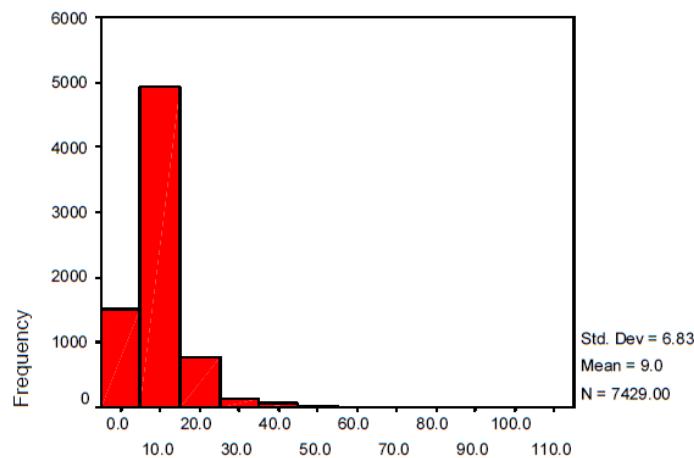
F7HS010: Air cond hearing threshold level (dBHL) R ear 500 Hz: hearing: F7  
 F7HS011: Air cond hearing threshold level (dBHL) R ear 1 kHz: hearing: F7  
 F7HS012: Air cond hearing threshold level (dBHL) R ear 2 kHz: hearing: F7  
 F7HS013: Air cond hearing threshold level (dBHL) R ear 4 kHz: hearing: F7  
 F7HS014: Air cond hearing threshold level (dBHL) R ear 8 kHz: hearing: F7  
 F7HS015: Air cond hearing threshold level (dBHL) R ear 16 kHz: hearing: F7  
 F7HS016: Air cond hearing threshold level (dBHL) R ear repeat 1 kHz: hearing: F7  
 F7HS020: Air cond hearing threshold level (dBHL) L ear 500 Hz: hearing: F7  
 F7HS021: Air cond hearing threshold level (dBHL) L ear 1 kHz: hearing: F7  
 F7HS022: Air cond hearing threshold level (dBHL) L ear 2 kHz: hearing: F7  
 F7HS023: Air cond hearing threshold level (dBHL) L ear 4 kHz: hearing: F7  
 F7HS024: Air cond hearing threshold level (dBHL) L ear 8 kHz: hearing: F7  
 F7HS025: Air cond hearing threshold level (dBHL) L ear 16 kHz: hearing: F7

From the above data, variables were derived to indicate the average threshold across different frequencies in each ear.

R ear:  $F7HS017=(F7HS010 + F7HS011 + F7HS012 + F7HS013) / 4$   
 $F7HS018=(F7HS011 + F7HS012 + F7HS013) / 3$

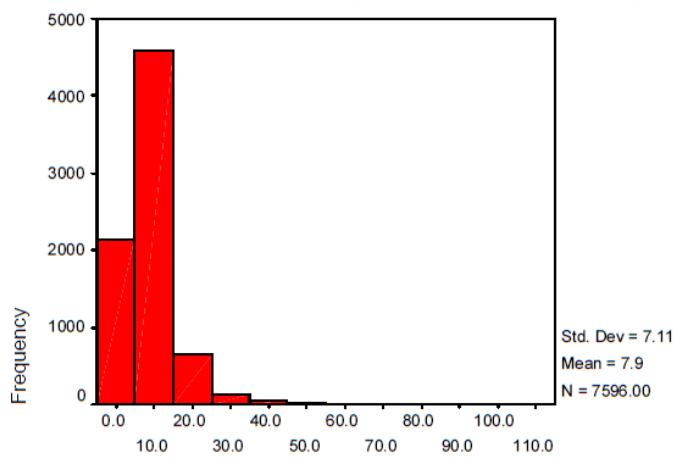
L ear:  $F7HS027=(F7HS020 + F7HS021 + F7HS022 + F7HS023) / 4$   
 $F7HS028=(F7HS021 + F7HS022 + F7HS023) / 4$

F7HS017: Air conduction Right average 0.5, 1, 2, 4 kHz: hearing F @ 7



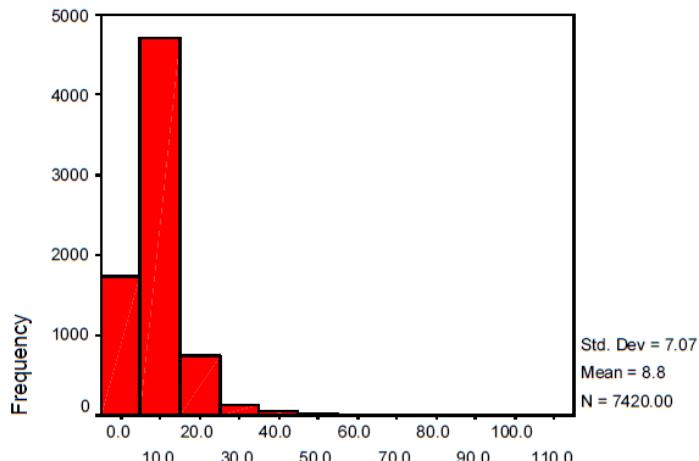
Air conduction Right average 0.5, 1, 2, 4 kHz: hearing F @ 7

F7HS018: Air conduction Right average 1, 2, 4 kHz: hearing F @ 7

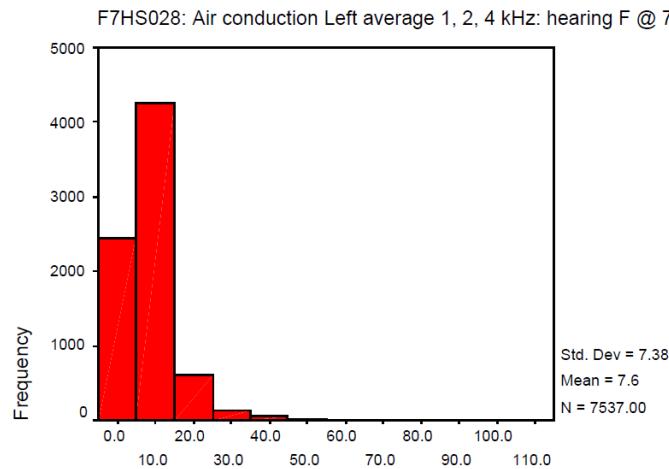


Air conduction Right average 1, 2, 4 kHz: hearing F @ 7

F7HS027: Air conduction Left average 0.5, 1, 2, 4 kHz: hearing F @ 7



Air conduction Left average 0.5, 1, 2, 4 kHz: hearing F @ 7



Air conduction Left average 1, 2, 4 kHz: hearing F @ 7

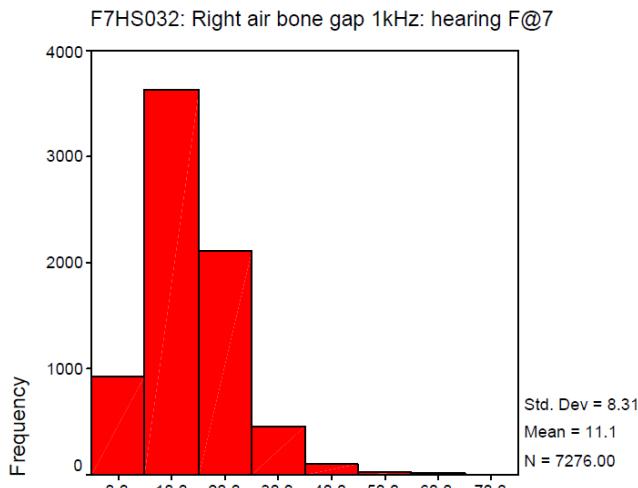
### 3.3.1.2 Bone conduction

The bone conductor was placed on the mastoid of the right ear if both ears were the same. If different, it was placed on the better ear. Bone conduction was tested at 4 kHz for all children and 1 kHz was tested if circumstances permitted.

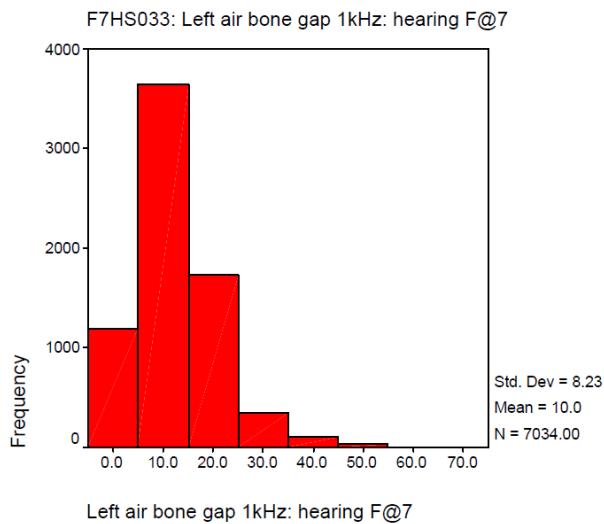
F7HS030: Bone conduction hearing threshold level (dBHL) 4 kHz: hearing F7

F7HS031: Bone conduction hearing threshold level (dBHL) 1 kHz: hearing F7

Two variables were created indicating the air bone gap for each ear, these were calculated as the hearing threshold at 1kHz minus the bone conduction threshold at 1kHz for each ear.



Right air bone gap 1kHz: hearing F@7



Further variables were created denoting hearing impairment (f7HS035), sensorineural hearing loss (f7HS036) and high frequency hearing loss (f7HS037).

F7HS035 was derived using the following information:

Bilateral normal hearing	Bilateral average AC thresholds 1, 2 and 4 kHz, better than or equal to 20 dB HL
Bilateral hearing impairment	Bilateral average AC thresholds 1, 2 and 4 kHz, between 21 – 40 dB HL inclusive
Left unilateral hearing impairment	Left ear average AC thresholds 1, 2 and 4 kHz between 21 – 40 dB HL inclusive; right ear normal (as for code 1)
Right unilateral hearing impairment	Right ear average AC thresholds 1, 2 and 4 kHz between 21 – 40 dB HL inclusive; left ear normal (as for code 1)

**F7HS035 Hearing Impairment: hearing F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Bilateral normal hearing	6857	82.6	91.9	91.9
	2 Bilateral Hearing Impairment	179	2.2	2.4	94.3
	3 Left unilateral hearing Impairment	218	2.6	2.9	97.2
	4 Right unilateral hearing Impairment	208	2.5	2.8	100.0
	Total	7462	89.9	100.0	
Missing	-9 Did not do hearing	424	5.1		
	-3 Audiometry not done	92	1.1		
	-1 Missing	319	3.8		
	Total	835	10.1		
	Total	8297	100.0		

F7HS036 was derived using the following information:

Bilateral normal hearing	Bilateral average AC thresholds 1, 2 and 4 kHz, less than or equal to 20 dB
Right mild unilateral sensorineural hearing impairment	Right ear average AC thresholds 1, 2 and 4 kHz between 21 – 40 dB HL (inclusive); left ear normal Type A tympanogram in the right ear
Left mild unilateral hearing impairment	Left ear average AC thresholds 1, 2 and 4 kHz between 21 – 40 dB HL (inclusive); right ear normal Type A tympanogram in the left ear
Mild bilateral sensorineural hearing loss	Average AC thresholds 1, 2 and 4 kHz between 21 – 40 dB HL (inclusive) in both ears Type A tympanogram in both ears If data available, air bone gap at 1 kHz in the better of the two ears less than or equal to 10 dB
Moderate bilateral sensorineural hearing loss	Average AC thresholds 1, 2 and 4 kHz greater than or equal to 41 dB HL in both ears Type A tympanogram in both ears If data available, air bone gap at 1 kHz in the better of the two ears less than or equal to 10 dB
Right moderate unilateral sensorineural hearing loss	Right ear average AC thresholds 1, 2 and 4 kHz greater than or equal to 41 dB HL; left ear normal Type A tympanogram in the right ear
Left moderate unilateral sensorineural hearing loss	Left ear average AC thresholds 1, 2 and 4 kHz greater than or equal to 41 dB HL; right ear normal Type A tympanogram in the left ear
Left ear mild, right ear moderate sensorineural hearing loss	Left ear average AC thresholds 1, 2 and 4 kHz between 21 – 40 dB HL inclusive; Right ear average AC thresholds greater than or equal to 41 dB HL Type A tympanogram in both ears If data available, air bone gap at 1 kHz in the left ear less than or equal to 10 dB
Right ear mild, left ear moderate sensorineural hearing loss	Right ear average AC thresholds 1, 2 and 4 kHz between 21 – 40 dB HL inclusive; Left ear average AC thresholds greater than or equal to 41 dB HL Type A tympanogram in both ears If data available, air bone gap at 1 kHz in the right ear less than or equal to 10 dB

**F7HS036 Sensorineural hearing loss: hearing F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Bilateral normal hearing	7138	86.0	97.8	97.8
	2 Right mild unilateral hearing impairment	45	.5	.6	98.4
	3 Left mild unilateral hearing impairment	54	.7	.7	99.2
	4 Mild bilateral hearing impairment	34	.4	.5	99.6
	5 Moderate bilateral hearing impairment	10	.1	.1	99.8
	6 Right moderate unilateral hearing impairment	4	.0	.1	99.8
	7 Left moderate unilateral hearing impairment	6	.1	.1	99.9
	8 Bilateral hearing impairment: L mild, R moderate	3	.0	.0	100.0
	9 Bilateral hearing impairment: R mild, L moderate	3	.0	.0	100.0
	Total	7297	87.9	100.0	
Missing	-9 Did not do hearing	424	5.1		
	-3 Audio/tymp not done	129	1.6		
	-1 Missing	447	5.4		
	Total	1000	12.1		
Total		8297	100.0		

F7HS037 was derived using the following information:

Right unilateral high frequency hearing loss	Right ear air conduction thresholds at 2 kHz 20 dB or less, thresholds at 4 and 8 kHz 25 dB HL or greater; Left ear air conduction thresholds at 4 and 8 kHz 20 dB or less
Left unilateral high frequency hearing loss	Left ear air conduction thresholds at 2 kHz 20 dB or less, thresholds at 4 and 8 kHz 25 dB HL or greater; Right ear air conduction thresholds at 4 and 8 kHz 20 dB or less
Bilateral high frequency hearing loss	Right ear air conduction thresholds at 2 kHz 20 dB or less, thresholds at 4 and 8 kHz 25 dB HL or greater AND Left ear air conduction thresholds at 2 kHz 20 dB or less, thresholds at 4 and 8 kHz 25 dB HL or greater

**F7HS037 High frequency hearing loss: hearing F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 No high freq hearing loss	7545	90.9	98.3	98.3
	2 R unilateral high freq hearing loss	46	.6	.6	98.9
	3 L unilateral high freq hearing loss	58	.7	.8	99.7
	4 Bilateral high freq hearing loss	25	.3	.3	100.0
	Total	7674	92.5	100.0	
Missing	-9 Did not do hearing	424	5.1		
	-3 Audiometry not done	92	1.1		
	-1 Missing	107	1.3		
Total		623	7.5		
Total		8297	100.0		

Testers made any appropriate comments about the session and the child (coded in variables F7HS041 and F7HS042). It is recommend that when analysing audiometry data the researcher excludes unreliable codes. They may also want to exclude data which was recorded in noisy conditions.

**F7HS041 Comment 1 made on audiology: hearing: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Poor test conditions throughout	298	3.8	21.7	21.7
	2 Poor test conditions S/T	121	1.5	8.8	30.5
	3 Child unreliable at testing	574	7.3	41.8	72.3
	4 Audiometry not available	78	1.0	5.7	77.9
	5 Child had a cold	45	.6	3.3	81.2
	6 Child had earache/other ear complaint	10	.1	.7	82.0
	7 Time problems	19	.2	1.4	83.3
	8 Other member of staff present	86	1.1	6.3	89.6
	9 Parents concerned about hearing	3	.0	.2	89.8
	10 Under review at ENT/audiologist	2	.0	.1	90.0
	11 Child sensitive to loud noise	5	.1	.4	90.3
	12 Tester repeatability checked	59	.7	4.3	94.6
	13 Child deaf/had hearing aids	8	.1	.6	95.2
	14 Session ended early-child	66	.8	4.8	100.0
Missing	Total	1374	17.5	100.0	
	-1 No comment made	6499	82.5		
Total		7873	100.0		

### 3.3.2 Tympanometry

All the children had a measure of their middle ear function to determine whether otitis media with effusion (OME, 'glue ear') was present. The right ear was tested first. The probe of a Kamplex AT2 tympanometer was placed at the entrance of the ear canal, this measured the eardrum (tympanic membrane) mobility and middle ear pressure. The graph produced by the tympanometer (tympanogram) was visible to the parent but no attempt at interpretation was made by the staff.

The tympanogram was categorized after the test into one of the following groups:

Type A: Normal graph (Middle ear pressure of +100 to -100 mm H<sub>2</sub>O).

Type C<sub>1</sub>: Middle ear pressure of -100 to -200 mm H<sub>2</sub>O (Indicates slight Eustachian tube dysfunction).

Type C<sub>2</sub>: Middle ear pressure of -200 to -300 mm H<sub>2</sub>O (Indicates Eustachian tube Dysfunction [NB: cannot tell whether ear is recovering from OME or whether fluid is starting to build up]).

Type B: Flat trace (Consistent with OME: No middle ear pressure recorded – Eardrum immobilized due to fluid in middle ear space).

Type P: Perforation in eardrum.

Type G: Grommets (tubes) present.

Type U: Unclassified (e.g. Presence of ear infection).

**F7HS051 Tympanometry done: hearing F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7828	94.3	99.4	99.4
	2 No	45	.5	.6	100.0
	Total	7873	94.9	100.0	
Missing	-9 Did not do hearing	424	5.1		
	Total	8297	100.0		

**F7HS060 Tympanometry result L ear: hearing F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Type A	6221	75.0	79.6	79.6
	2 Type C1	751	9.1	9.6	89.2
	3 Type C2	388	4.7	5.0	94.1
	4 Type B	351	4.2	4.5	98.6
	5 Grommet	63	.8	.8	99.4
	6 Perforation	14	.2	.2	99.6
	7 Ear infection	30	.4	.4	100.0
	Total	7818	94.2	100.0	
Missing	-9 Did not do hearing	424	5.1		
	-2 Tymp not done	45	.5		
	-1 missing	10	.1		
	Total	479	5.8		
Total		8297	100.0		

**F7HS061 Tympanometry result R ear: hearing F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Type A	6199	74.7	79.3	79.3
	2 Type C1	752	9.1	9.6	88.9
	3 Type C2	399	4.8	5.1	94.0
	4 Type B	385	4.6	4.9	98.9
	5 Grommet	54	.7	.7	99.6
	6 Perforation	11	.1	.1	99.7
	7 Ear infection	22	.3	.3	100.0
	Total	7822	94.3	100.0	
Missing	-9 Did not do hearing	424	5.1		
	-2 Tymp not done	45	.5		
	-1 missing	6	.1		
	Total	475	5.7		
Total		8297	100.0		

**F7HS062 Bilateral OME: hearing: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 AA	5698	72.4	72.9	72.9
	2 Minor (C1)	921	11.7	11.8	84.7
	3 Unilateral C2 or B	681	8.6	8.7	93.4
	4 Bilateral C2 or B	517	6.6	6.6	100.0
	Total	7817	99.3	100.0	
Missing	-2 Tymp not done	45	.6		
	-1 Missing	11	.1		
	Total	56	.7		
Total		7873	100.0		

F7HS063 combines the results of F7HS060 and F7HS061 to produce a bilateral tympanometry variable.

**F7HS063 Bilateral tympanometry L/R: hearing F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 A A	5698	68.7	72.9	72.9
	2 A B	86	1.0	1.1	74.0
	3 A C1	314	3.8	4.0	78.0
	4 A C2	93	1.1	1.2	79.2
	5 A Other	30	.4	.4	79.6
	6 B A	59	.7	.8	80.3
	7 B B	170	2.0	2.2	82.5
	8 B C1	53	.6	.7	83.2
	9 B C2	60	.7	.8	84.0
	10 B Other	8	.1	.1	84.1
	11 C1 A	323	3.9	4.1	88.2
	12 C1 B	42	.5	.5	88.7
	13 C1 C1	284	3.4	3.6	92.4
	14 C1 C2	97	1.2	1.2	93.6
	15 C1 Other	5	.1	.1	93.7
	16 C2 A	80	1.0	1.0	94.7
	17 C2 B	72	.9	.9	95.6
	18 C2 C1	88	1.1	1.1	96.7
	19 C2 C2	144	1.7	1.8	98.6
	20 C2 Other	4	.0	.1	98.6
	21 Other A	35	.4	.4	99.1
	22 Other B	15	.2	.2	99.3
	23 Other C1	13	.2	.2	99.4
	24 Other C2	4	.0	.1	99.5
	25 Other Other	40	.5	.5	100.0
	Total	7817	94.2	100.0	
Missing	-9 Did not do hearing	424	5.1		
	-2 Tymp not done	45	.5		
	-1 Missing	11	.1		
	Total	480	5.8		
Total		8297	100.0		

The tester recorded appropriate comments about the tympanometry testing (variable F7HS066, not summarised).

Letters of referral for further hearing test were issued to parents if the child had:

1. Audiogram was 30 dB or worse at any one frequency, excluding 500 Hz and 8 kHz, regardless of tympanogram.
2. Any unusually shaped audiogram.
3. Any child who caused great concern to the audiologist or was causing great concern to the parent.

**F7HS071 Hearing letter given: hearing F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 yes	393	4.7	5.1	5.1
	2 no	7355	88.6	94.9	100.0
	Total	7748	93.4	100.0	
Missing	-9 Did not do hearing	424	5.1		
	-1 missing	125	1.5		
	Total	549	6.6		
Total		8297	100.0		

Testers recorded any comments that may have affected the child's general hearing relevant to this session, this information is coded in variables F7HS074 to F7HS076.

### 3.3.3 Previous referrals

A history was obtained about previous visits to an audiologist or ENT service, asking whether the child had ever been referred, if so, at what age (F7HS080/1) and their current status (were seen once only and discharged, kept under review and later discharged or still under review-F7HS082). It was also recorded whether the child had any ENT surgery (grommets, tonsils, adenoids, other) and the age this had occurred.

**F7HS079 Previously referred for hearing assessment/ENT: hearing F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 yes	2073	25.0	26.4	26.4
	2 no	5794	69.8	73.6	100.0
	Total	7867	94.8	100.0	
Missing	-9 Did not do hearing	424	5.1		
	-1 missing	6	.1		
	Total	430	5.2		
Total		8297	100.0		

**Table 3.3.3: Child had any ENT surgery**

Type of surgery	Variable label: Y/N	Freq Y	Variable label: Age of most recent
Any	F7HS083	183 (2.3%)	-
Grommets	F7HS084	147 (1.9%)	F7HS085/6
Tonsils out	F7HS087	38 (0.5%)	F7HS088
Adenoids out	F7HS089	87 (1.1%)	F7HS090
Other	F7HS091	17 (0.2%)	F7HS092

Finally, the tester recorded any adverse behaviour of the child during the session (variables F7HS930)

### 3.4 Reading, Spelling and Phoneme Deletion

#### F7WS001 Child entered Word session: F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	8164	98.4	98.4	98.4
	2 No	133	1.6	1.6	100.0
	Total	8297	100.0	100.0	

#### F7WS001A Reason Child did not do Word session

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 No staff	41	.5	.5	.5
	2 Ch left early	12	.1	.1	.6
	3 Ch arrived late	3	.0	.0	.7
	5 Ch did session	8164	98.4	99.3	100.0
	Total	8220	99.1	100.0	
Missing	-1 Missing	77	.9		
	Total	8297	100.0		

#### F7WS002a and F7WS002b: Word session start time: F7 – not summarised

This session (which was known as the WORD session) took approximately twenty minutes to perform and was carried out by trained psychologists and speech therapists.

It comprised of basic reading, a phoneme deletion task and spelling. A letter decision task was also given to children who had struggled with the basic reading task and had considerable difficulty with the spelling task or if they were unable to do either of these tasks at all.

## F7WS004 Word tester F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	998	12.0	12.2	12.2
	2.00	695	8.4	8.5	20.7
	3.00	1480	17.8	18.1	38.9
	4.00	208	2.5	2.5	41.4
	5.00	320	3.9	3.9	45.3
	6.00	277	3.3	3.4	48.7
	7.00	261	3.1	3.2	51.9
	8.00	518	6.2	6.3	58.3
	9.00	232	2.8	2.8	61.1
	10.00	216	2.6	2.6	63.8
	11.00	221	2.7	2.7	66.5
	12.00	157	1.9	1.9	68.4
	13.00	279	3.4	3.4	71.8
	14.00	192	2.3	2.4	74.2
	15.00	110	1.3	1.3	75.5
	16.00	330	4.0	4.0	79.5
	17.00	179	2.2	2.2	81.7
	18.00	251	3.0	3.1	84.8
	19.00	342	4.1	4.2	89.0
	20.00	508	6.1	6.2	95.2
	21.00	390	4.7	4.8	100.0
	Total	8164	98.4	100.0	
Missing	-9.00 Did not do word	133	1.6		
	Total	8297	100.0		

### 3.4.1 Basic Reading

This was assessed using the basic reading subtest of the word (Wechsler Objective Reading Dimensions-Rust *et al*, 1993). Pictures and words were used to assess decoding and word reading.

**F7WS020 Child started Reading session: Word F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	8152	98.3	99.9	99.9
	2 No	12	.1	.1	100.0
	Total	8164	98.4	100.0	
Missing	-9 Did not do word	133	1.6		
	Total	8297	100.0		

The child was shown a series of four pictures. Each picture had four short, simple words underneath it. The child was asked to point to the word which had the same beginning or ending sound as the picture.

This was then followed by a series of three pictures, each with four words beneath, each starting with the same letter as the picture. The child was asked to point to the word that correctly named the picture

Finally, the child was asked to read aloud a series of 48 unconnected words which increased in difficulty. If the child read the word incorrectly but pronounced it in a way that was phonetically plausible, this was also noted for each word.

The reading task was stopped after the child had made six consecutive errors. Occasionally, the task was stopped early if requested by the child or if the member of staff thought it was appropriate (variable F7WS084).

**F7WS084 Reading session stopped prematurely: Word F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes, by staff	37	.4	.5	.5
	2 Yes, by child	45	.5	.6	1.0
	3 No	8070	97.3	99.0	100.0
Missing	Total	8152	98.3	100.0	
	-9 Did not do word	133	1.6		
	-2 Did not start	12	.1		
	Total	145	1.7		
Total		8297	100.0		

Table 3.4.1 overleaf, indicates the results for each item on the word session.

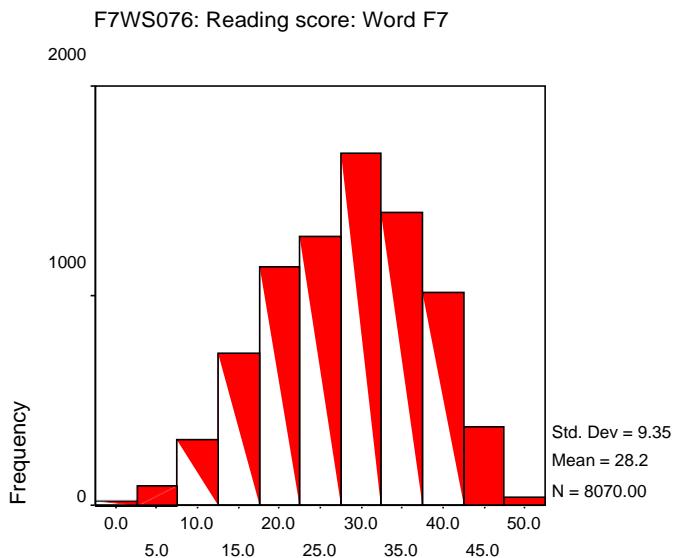
**Table 3.4.1 Frequency of responses to the Reading subtest of the WORD from the 8152 children who started the task**

Variable name	Word	Correct	Incorrect	Incorrect, but phonetic	Ch said DK	Child stopped prem.	Missing
F7WS02 1	Sit	5539 (65.8%)	2779 (34.1%)	-	9 (0.1%)	-	5
F7WS02 2	Card	7670 (94.2%)	398 (4.9%)	-	75 (0.9%)	2	7
F7WS02 3	Duck	7413 (91.0%)	691 (8.5%)	-	39 (0.5%)	2	7
F7WS02 4	Push	7847 (96.3%)	258 (3.2%)	-	38 (0.5%)	2	7
F7WS02 5	Cow	7946 (97.6%)	193 (2.3%)	-	3 (0.1%)	2	8
F7WS02 6	Hat	7653 (94.0%)	484 (5.9%)	-	3 (0.1%)	2	10
F7WS02 7	Sheep	7128 (87.7%)	995 (12.2%)	-	4 (0.1%)	3	22
F7WS02 8	The	8087 (99.6%)	15 (0.2%)	-	13 (0.2%)	12	25
F7WS02 9	Up	8071 (99.5%)	16 (0.2%)	1 (0.01%)	23 (0.3%)	14	27
F7WS03 0	Into	7943 (98.0%)	64 (0.8%)	29 (0.4%)	72 (0.9%)	15	29
F7WS03 1	So	7914 (97.7%)	128 (1.6%)	8 (0.1%)	54 (0.7%)	15	33
F7WS03 2	Said	7917 (97.7%)	120 (1.5%)	4 (0.05%)	62 (0.8%)	17	32
F7WS03 3	Then	7722 (95.3%)	305 (3.8%)	5 (0.1%)	67 (0.8%)	17	36
F7WS03 4	Animal	6925 (85.5%)	700 (8.6%)	21 (0.3%)	451 (5.6%)	17	38
F7WS03 5	Because	7561 (93.5%)	203 (2.5%)	9 (0.1%)	313 (3.9%)	19	47
F7WS03 6	Slow	7285 (90.5%)	494 (6.1%)	31 (0.4%)	238 (3.0%)	25	79
F7WS03 7	Again	7322 (91.1%)	279 (3.5%)	38 (0.5%)	394 (4.9%)	27	131
F7WS03 8	Any	6845 (85.5%)	617 (7.7%)	129 (1.6%)	419 (5.2%)	29	113
F7WS03 9	Fruit	6172 (77.7%)	1073 (13.5%)	105 (1.3%)	590 (7.4%)	31	181
F7WS04 0	Know	6385 (81.8%)	1020 (13.1%)	252 (3.2%)	144 (1.8%)	32	319
F7WS04 1	Shut	6833 (87.8%)	694 (8.9%)	43 (0.6%)	210 (2.7%)	32	340
F7WS04 2	Instead	5939 (77.1%)	1172 (15.2%)	70 (0.9%)	522 (6.8%)	33	416
F7WS04 3	Enough	5086 (66.5%)	1384 (18.1%)	56 (0.7%)	1118 (14.6%)	34	474
F7WS04 4	Sight	5507 (72.8%)	1387 (18.3%)	55 (0.7%)	615 (8.1%)	34	554
F7WS04 5	Photograph	5803 (77.2%)	794 (10.6%)	44 (0.6%)	879 (11.7%)	35	597
F7WS04 6	Completely	4288 (57.4%)	1984 (26.5%)	258 (3.5%)	943 (12.6%)	40	639
F7WS04 7	Courage	3631 (49.9%)	1353 (18.6%)	731 (10.0%)	1560 (21.4%)	49	828
F7WS04 8	Comforting	2893	1290	1935 (28.3%)	712 (10.4%)	51	1271

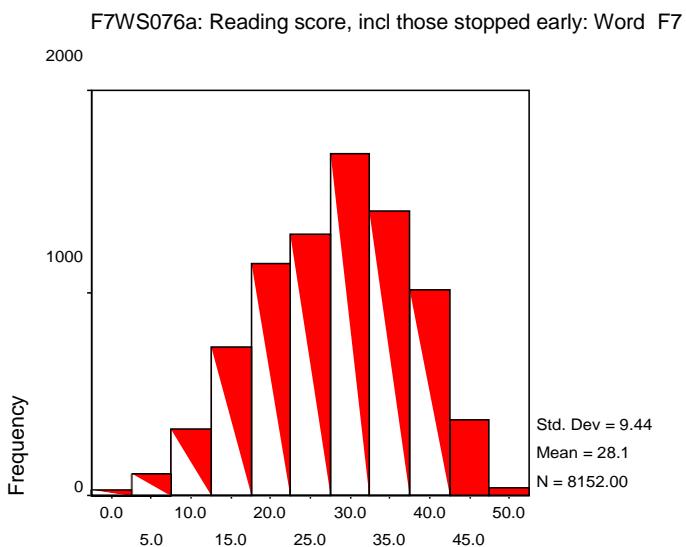
8		(42.4%)	(18.9%)				
F7WS04	Jealous	4340 (65.8%)	880 (13.3%)	548 (8.3%)	830 (12.6%)	52	1502
9							
F7WS05	Responsibilit	3799 (58.0%)	1285 (19.6%)	220 (3.4%)	1242 (19.0%)	52	1554
0	y						
F7WS05	Dozing	4077 (65.1%)	502 (8.0%)	1451 (23.2%)	233 (3.7%)	56	1833
1							
F7WS05	Ajar	3668 (62.7%)	691 (11.8%)	1023 (17.5%)	466 (8.0%)	58	2246
2							
F7WS05	Ruin	2430 (42.4%)	2169 (37.8%)	401 (7.0%)	731 (12.8%)	58	2363
3							
F7WS05	Useless	2873 (50.7%)	2025 (35.8%)	473 (8.4%)	292 (5.2%)	58	2431
4							
F7WS05	Pier	3225 (57.5%)	1369 (24.4%)	736 (13.1%)	276 (4.9%)	58	2488
5							
F7WS05	Ideally	2359 (43.2%)	1782 (32.6%)	696 (12.7%)	627 (11.5%)	63	2625
6							
F7WS05	Chord	1203 (22.3%)	397 (7.4%)	3538 (65.6%)	25.4 (4.7%)	65	2695
7							
F7WS05	Acquire	1698 (33.0%)	1780 (34.6%)	780 (15.2%)	888 (17.3%)	66	2940
8							
F7WS05	Government	2277 (46.9%)	1076 (22.2%)	709 (14.6%)	792 (16.3%)	68	3230
9	al						
F7WS06	Abrupt	1569 (32.9%)	1680 (35.2%)	884 (18.5%)	642 (13.4%)	69	3308
0							
F7WS06	Pathetic	1665 (37.2%)	1398 (31.2%)	899 (20.1%)	517 (11.5%)	70	3603
1							
F7WS06	Cleanse	429 (10.7%)	943 (23.6%)	2293 (57.4%)	328 (8.2%)	70	4089
2							
F7WS06	Unique	463 (12.8%)	1464 (40.4%)	1142 (31.5%)	552 (15.2%)	70	4461
3							
F7WS06	Sparse	1444 (43.1%)	948 (28.3%)	783 (23.4%)	176 (5.3%)	71	4730
4							
F7WS06	Accordion	1090 (34.3%)	1569 (49.4%)	236 (7.4%)	284 (8.9%)	72	4901
5							
F7WS06	Poise	1337 (48.4%)	977 (35.4%)	366 (13.2%)	83 (3.0%)	72	5317
6							
F7WS06	Ridicule	806 (31.2%)	848 (32.9%)	769 (29.8%)	157 (6.1%)	73	5499
7							
F7WS06	Indomitable	416 (17.9%)	666 (28.6%)	1052 (45.2%)	196 (8.4%)	73	5749
8							
F7WS06	Catastrophe	292 (12.9%)	764 (33.7%)	1000 (44.1%)	212 (9.3%)	73	5811
9							
F7WS07	Conscience	71 (3.2%)	646 (28.7%)	1424 (63.3%)	109 (4.8%)	74	5828
0							
F7WS07	Reminisce	106 (.4%)	1103 (55.8%)	504 (25.5%)	265 (13.4%)	74	6100
1							
F7WS07	Coerce	106 (6.1%)	1006 (57.5%)	392 (22.4%)	247 (14.1%)	74	6327
2							
F7WS07	Euphemism	63 (5.3%)	558 (47.4%)	190 (16.1%)	367 (31.2%)	75	6899
3							
F7WS07	Antithesis	131 (17.3%)	326 (43.0%)	191 (25.2%)	110 (14.5%)	75	7319
4							
F7WS07	Hierarchical	9 (1.7%)	208 (38.9%)	195 (36.4%)	123 (23.0%)	75	7542
5							

A small number of children stopped the reading task before they had made six consecutive errors (see F7WS078). This was usually because they were distressed or disruptive and this was usually related to not being able to answer the questions easily. Two final reading scores have been derived, computed as the sum of the number of items (f7ws021 to f7ws075) the child read/responded to correctly: the first score (F7WS076) excludes all children who stopped on the task prematurely. The second

score (F7WS076a) includes the scores of children who stopped prematurely and assumes that they would not have got any more points for the test (ie they would have refused to answer, replied *don't know*, or guessed the item incorrectly).



Reading score: Word F7



Reading score, incl those stopped early: Word F7

The testers recorded the apparent use of a strategy during the reading task (F7WS082); whether they used decoding skills (F7WS079), the child's persistence at decoding (F7WS080), and how readily the child gave up on a word that was not instantly readable (F7WS081) and the child's attempt at the task (F7WS077 / F7WS083).

### 3.4.1 Spelling

The child was given a series of 15 words to spell. THE words were CHOSEN specifically for this age group after piloting on several hundred children in Oxford and London (Peter Bryant and Terezinha Nunes, Personal Communication). The 15 spellings were of regular and irregular words of differing frequencies. They were put in order of increasing difficulty according to results from the pilot study conducted by the authors. For each word, the member of staff first read the word out alone to the child, then within a specific sentence incorporating the word, and finally alone again. The child was asked to write down the spelling, even if he or she thought they were just guessing at the spelling.

**F7WS100 Started Spelling session: Word F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	8031	96.8	98.4	98.4
	2 No	133	1.6	1.6	100.0
	Total	8164	98.4	100.0	
Missing	-9 Did not do word	133	1.6		
	Total	8297	100.0		

Table 3.4.2 overleaf indicates the frequency with which each spelling was correct/incorrect etc

**Table 3.4.2 Frequency of responses to the Spelling subtest of the WORD from the 8031 children who started the task**

Variable name	Word	Correct	Incorrect, but phonetic	One sound incorrect	Incorrect	Child stopped prem.	Missing
F7WS101	Chin	6438 (80.9%)	111 (1.4%)	225 (2.8%)	1185 (14.9%)	-	72
F7WS102	Fall	4948 (62.3%)	457 (5.8%)	354 (4.5%)	2188 (27.5%)	5	79
F7WS103	Pant	4223 (53.3%)	520 (6.6%)	466 (5.9%)	2718 (34.3%)	15	89
F7WS104	Church	3946 (50.7%)	307 (3.9%)	431 (5.5%)	3101 (39.8%)	38	208
F7WS105	When	6159 (77.5%)	376 (4.7%)	146 (1.8%)	1261 (15.9%)	50	39
F7WS106	Bird	5065 (64.5%)	200 (2.5%)	451 (5.7%)	2138 (27.2%)	60	117
F7WS107	Smoked	3748 (47.6%)	827 (10.5%)	207 (2.6%)	3089 (39.2%)	72	88
F7WS108	Called	5082 (64.8%)	378 (4.8%)	224 (2.9%)	2154 (27.5%)	77	116
F7WS109	Kissed	4296 (55.0%)	634 (8.1%)	294 (3.8%)	2588 (33.1%)	85	134
F7WS110	Telephone	1908 (25.0%)	771 (10.1%)	389 (5.1%)	4572 (59.8%)	88	303
F7WS111	Madness	2939 (38.0%)	617 (8.0%)	383 (4.9%)	3805 (49.1%)	96	191
F7WS112	Baseball	2722 (35.0%)	974 (12.5%)	205 (2.6%)	3882 (49.9%)	98	150
F7WS113	Brought	1911 (24.6%)	947 (12.2%)	387 (5.0%)	4513 (58.2%)	98	176
F7WS114	Fox	7481 (94.8%)	85 (1.1%)	52 (0.7%)	270 (3.4%)	98	276
F7WS115	Colour	1261 (16.4%)	891 (11.6%)	434 (5.6%)	5097 (66.3%)	99	249

The main spelling score, *No. Of words spelt correctly*, was calculated simply as the number of spellings the child spelt correctly (F7WS116). A further spelling score, *Spelling score with credit for spelling strategies* (F7WS117), was also created, which took into account spelling strategies used by the child for words spelt incorrectly. A score of 3 points was given to each correct spelling; two points for a spelling spelt incorrectly but phonetically; one point for a spelling which was spelt with one sound (eg, a vowel sound or a consonant) wrong, and no points for any other spelling, or if the word was not attempted.

A second set of scores were created (F7WS116a and F7WS117a) which included the scores of those children who stopped prematurely (see F7WS125) and assume that they would not have got any more points for the test (ie they would have refused to answer, replied *don't know*, or guessed the item incorrectly).

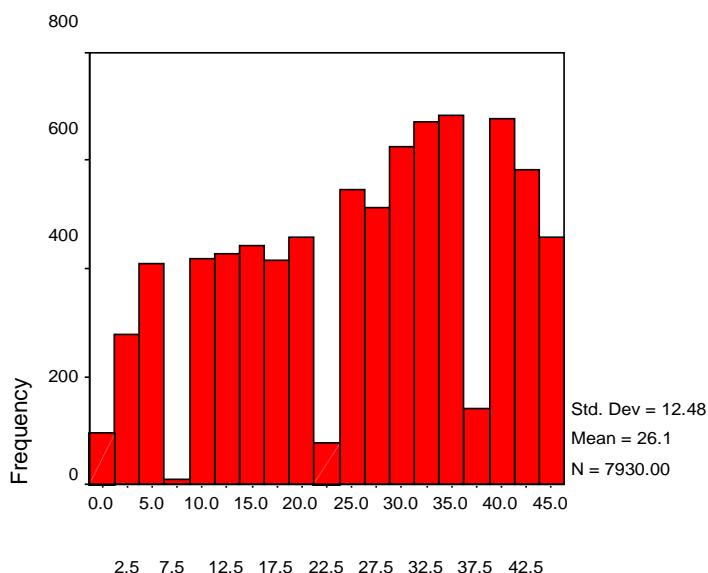
**F7WS116 Spelling score (no. correct): Word F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	137	1.7	1.7	1.7
	1.00	412	5.0	5.2	6.9
	2.00	605	7.3	7.6	14.6
	3.00	584	7.0	7.4	21.9
	4.00	550	6.6	6.9	28.9
	5.00	531	6.4	6.7	35.6
	6.00	507	6.1	6.4	42.0
	7.00	490	5.9	6.2	48.1
	8.00	492	5.9	6.2	54.4
	9.00	470	5.7	5.9	60.3
	10.00	504	6.1	6.4	66.6
	11.00	576	6.9	7.3	73.9
	12.00	515	6.2	6.5	80.4
	13.00	558	6.7	7.0	87.4
	14.00	550	6.6	6.9	94.4
	15.00	445	5.4	5.6	100.0
Missing	Total	7926	95.5	100.0	
	-9.00 Did not do word	133	1.6		
	-3.00 Stopped prem	105	1.3		
	-2.00 Did not start	133	1.6		
Total	Total	371	4.5		
		8297	100.0		

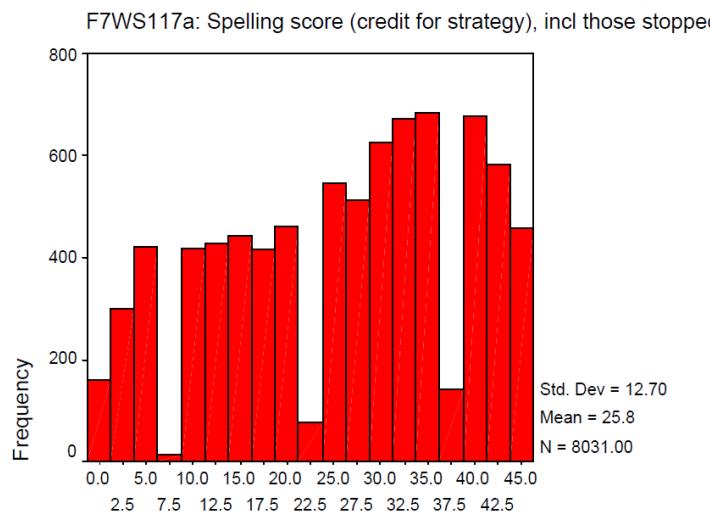
**F7WS116A Spelling score (no. correct), incl those stopped early: Word F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	217	2.6	2.7	2.7
	1.00	429	5.2	5.3	8.0
	2.00	609	7.3	7.6	15.6
	3.00	585	7.1	7.3	22.9
	4.00	550	6.6	6.8	29.8
	5.00	532	6.4	6.6	36.4
	6.00	507	6.1	6.3	42.7
	7.00	491	5.9	6.1	48.8
	8.00	492	5.9	6.1	54.9
	9.00	470	5.7	5.9	60.8
	10.00	504	6.1	6.3	67.1
	11.00	576	6.9	7.2	74.2
	12.00	515	6.2	6.4	80.6
	13.00	558	6.7	6.9	87.6
	14.00	550	6.6	6.8	94.4
	15.00	446	5.4	5.6	100.0
	Total	8031	96.8	100.0	
Missing	-9.00 Did not do word	133	1.6		
	-2.00 Did not start	133	1.6		
	Total	266	3.2		
	Total	8297	100.0		

## F7WS117: Spelling score (credit for strategy): Word F7



## Spelling score (credit for strategy): Word F7



Spelling score (credit for strategy), incl those stopped early: Word

Occasionally, a child decided or requested to stop the spelling test, or the member of staff did if the child seemed upset with the task (F7WS125). This was usually because the child found the task very difficult. The scores have been derived both with and without the scores of these children who stopped the task prematurely. If the scores which exclude children who did not complete the task are used, it is important to note that the missing children are a very biased sample of children.

**F7WS125 Spelling session stopped prematurely: Word F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes, by staff	68	.8	.8	.8
	2 Yes, by child	37	.4	.5	1.3
	3 No	7926	95.5	98.7	100.0
	Total	8031	96.8	100.0	
Missing	-9 Did not do word	133	1.6		
	-2 Did not start	133	1.6		
	Total	266	3.2		
Total		8297	100.0		

The testers opinion of the child's attempt at the spelling task was recorded (F7WS122).

**F7WS122 Attempt at Spelling: Word F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Good	7813	94.2	97.8	97.8
	2 Medium	113	1.4	1.4	99.2
	3 Poor	62	.7	.8	100.0
	Total	7988	96.3	100.0	
Missing	-9 Did not do word	133	1.6		
	-2 Did not start	133	1.6		
	-1 Missing	43	.5		
	Total	309	3.7		
Total		8297	100.0		

### 3.4.3 Phoneme Deletion Task

The phoneme deletion task, known as the word game in the session, was the Auditory Analysis Test by Rosner and Simon (1971). The task comprised 2 practise and 40 test items of increasing difficulty.

F7WS140 Started Phoneme task: Word F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	8132	98.0	99.6	99.6
	2 No	32	.4	.4	100.0
	Total	8164	98.4	100.0	
Missing	-9 Did not do word	133	1.6		
Total		8297	100.0		

The task involved asking the child to repeat a word and then to say it again but with part of the word (a phoneme or number of phonemes) removed. For example, the child was asked to say 'sour' and then say it again without the /s/ to which the child should respond 'our'. There were seven categories of omission: omission of a first, a medial or a final syllable; omission of the initial, of the final consonant of a one syllable word and omission of the first consonant or consonant blend of a medial consonant. Words from the different categories were mixed together but were placed in order of increasing difficulty.

Table 3.4.3 overleaf indicates the frequencies with which the children responded to each item. The words used are shown in the second column, that part of the word in italics is the part the child was asked to omit.

**Table 3.4.3 Frequency of responses to the Phoneme Deletion task of the WORD from the 8132 children who started the task**

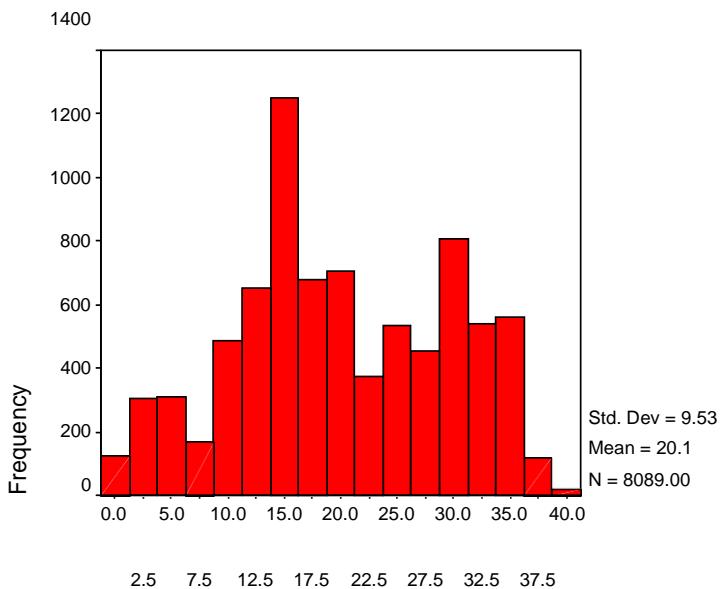
Variable name	Word	Correct	Incorrect	Ch said DK	Child stopped prem.	Missing
<i>Practise items</i>						
F7WS145	Cowboy	7490 (92.2%)	634 (7.8%)	1 (0.01%)	-	7
F7WS146	Toothbrush	8029 (98.8%)	96 (1.2%)	1 (0.01%)	-	6
<i>Test items</i>						
F7WS151	Birthday	7997 (98.4%)	123 (1.5%)	6 (0.1%)	-	6
F7WS152	Carpet	7088 (87.3%)	982 (12.1%)	52 (0.6%)	3	7
F7WS153	Belt	7257 (89.4%)	736 (9.1%)	123 (1.5%)	5	11
F7WS154	Man	6859 (84.6%)	1175 (14.5%)	78 (1.0%)	5	15
F7WS155	Block	4212 (51.9%)	3720 (45.9%)	141 (1.7%)	6	53
F7WS156	Tone	5952 (74.3%)	1777 (22.2%)	278 (3.5%)	8	117
F7WS157	Sour	6707 (84.5%)	1088 (13.7%)	141 (1.8%)	8	188
F7WS158	Pray	4131 (52.8%)	3571 (45.7%)	115 (1.5%)	10	305
F7WS159	Steak	5802 (75.6%)	1654 (21.6%)	216 (2.8%)	13	447
F7WS160	Lend	7068 (92.6%)	489 (6.4%)	74 (1.0%)	14	487
F7WS161	Smile	4540 (60.2%)	2936 (38.9%)	66 (0.9%)	15	575
F7WS162	Please	5869 (78.4%)	1304 (17.4%)	315 (4.2%)	16	628
F7WS163	Gate	6928 (92.7%)	501 (6.7%)	47 (0.6%)	16	640
F7WS164	Clip	4339 (58.3%)	3024 (40.7%)	75 (1.0%)	16	678
F7WS165	Time	5784 (78.4%)	1452 (19.7%)	138 (1.9%)	16	742
F7WS166	Scold	6018 (81.8%)	1204 (16.4%)	132 (1.8%)	18	760
F7WS167	Break	3501 (47.8%)	3772 (51.6%)	44 (0.6%)	18	797
F7WS168	Rode	6425 (89.4%)	695 (9.7%)	64 (0.9%)	18	930
F7WS169	Will	6715 (94.0%)	386 (5.4%)	45 (0.6%)	19	967
F7WS170	Trail	3417 (47.9%)	3613 (50.7%)	97 (1.4%)	19	986
F7WS171	Shrug	3394 (48.0%)	3574 (50.5%)	110 (1.6%)	20	1034
F7WS172	Glow	4171 (59.0%)	2585 (36.6%)	312 (4.4%)	20	1044
F7WS173	Create	2132 (30.7%)	3658 (52.7%)	1152 (16.6%)	23	1167
F7WS174	Strain	2350 (40.8%)	3307 (57.4%)	109 (1.9%)	24	2342
F7WS175	Smell	3522 (63.2%)	1865 (33.5%)	185 (3.3%)	26	2534
F7WS176	Eskimo	1644 (31.2%)	2843 (53.9%)	784 (14.9%)	26	2835
F7WS177	Desk	2604 (55.6%)	1930 (41.2%)	152 (3.2%)	27	3419
F7WS178	Germany	1478 (32.9%)	2630 (58.6%)	381 (8.5%)	30	3613
F7WS179	Stream	2651 (65.2%)	1296 (31.9%)	118 (2.9%)	30	4037
F7WS180	Automobile	1972 (52.9%)	1385 (37.2%)	370 (9.9%)	31	4374
F7WS181	Reproduce	2379 (66.2%)	977 (27.2%)	237 (6.6%)	32	4507
F7WS182	Smack	3042 (89.2%)	352 (10.3%)	16 (0.5%)	32	4690
F7WS183	Philosophy	292 (8.6%)	2609 (77.1%)	484 (14.3%)	32	4715
F7WS184	Skin	2961 (89.8%)	286 (8.7%)	49 (1.5%)	32	4804
F7WS185	Reaction	1861 (56.7%)	1148 (35.0%)	271 (8.3%)	33	4819
F7WS186	Continent	788 (24.4%)	1931 (59.8%)	512 (15.8%)	33	4868
F7WS187	Swing	2983 (95.6%)	129 (4.1%)	8 (0.3%)	34	4978
F7WS188	Carpenter	1536 (49.2%)	1412 (45.3%)	171 (5.5%)	34	4979
F7WS189	Clutter	2774 (89.9%)	245 (7.9%)	65 (2.1%)	34	5014
F7WS190	Offering	1503 (49.0%)	1395 (45.5%)	168 (5.5%)	34	5032

Occasionally, the task was stopped by the member of staff (F7WS214) if he or she felt that it would not be appropriate to continue, usually because of child distress due to difficulty with the task. Sometimes a child also refused to continue with the task.

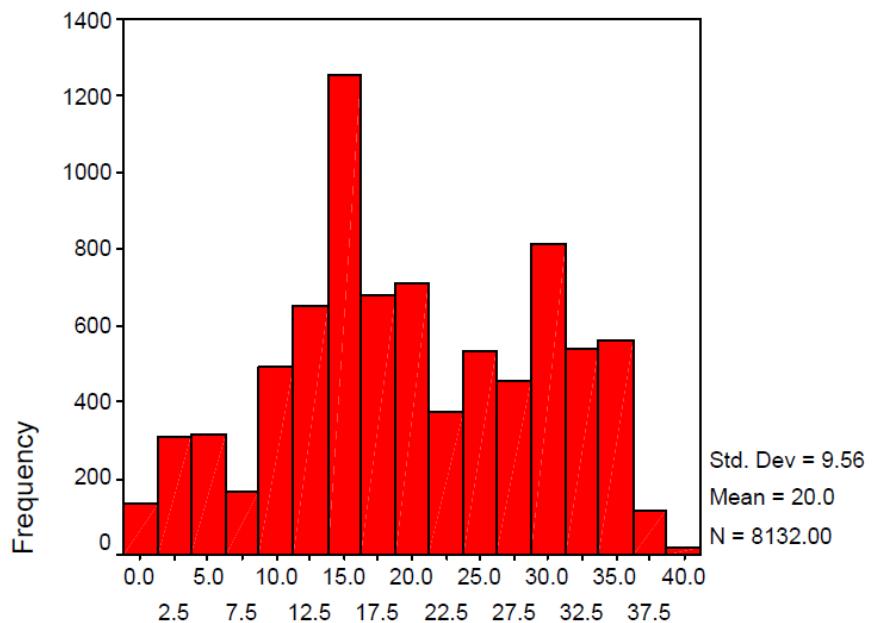
**F7WS214 Phoneme test stopped prematurely: Word F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes, by staff	18	.2	.2	.2
	2 Yes, by child	25	.3	.3	.5
	3 No	8088	97.5	99.5	100.0
	Total	8131	98.0	100.0	
Missing	-9 Did not do word	133	1.6		
	-2 Did not start	32	.4		
	-1 Missing	1	.0		
	Total	166	2.0		
Total		8297	100.0		

As with the other measures, there are two final scores that can be used: the first (F7WS191), excluding the scores of those children who stopped prematurely, and the other, including these children's scores (F7WS191a) and assuming that they would not have scored any points on any further items. Since these children are a very biased sample of the children tested it is important to note that if you use the former score (without the scores of these children) a very biased sample of children have been removed.

**F7WS191: Phoneme task score: Word F7****Phoneme task score: Word F7**

F7WS191a: Phoneme task score, incl those stopped early: Word



Phoneme task score, incl those stopped early: Word F@7

### 3.4.4 Letter Decision Task

The letter decision task (known in the session as the shapes game) (Gathercole & Baddeley, 1997, personal communication) comprised four practise shapes and 40 test items. This task was only given to children who had struggled with previous tasks in the session. Some children who struggled were not able to do this task because of time constraints. The task was partly administered as it was something that most children who were doing poorly in the rest of the session could do and enjoy and given that only a very biased sample of children were given this task, that the scores are not used unless you are familiar with this task and have good reason to use it on this sample.

Half the shapes were real letters and half were non-letters (including reversed letters). The child was instructed to go through the shapes, placing a tick next to the genuine letters and a cross next to a shape if he or she believed it was not a real letter. The tester noted the speed at which this task was completed.

**F7WS300 Shapes game attempted: Word F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	587	7.1	7.2	7.2
	2 No	7577	91.3	92.8	100.0
	Total	8164	98.4	100.0	
Missing	-9 Did not do word	133	1.6		
Total		8297	100.0		

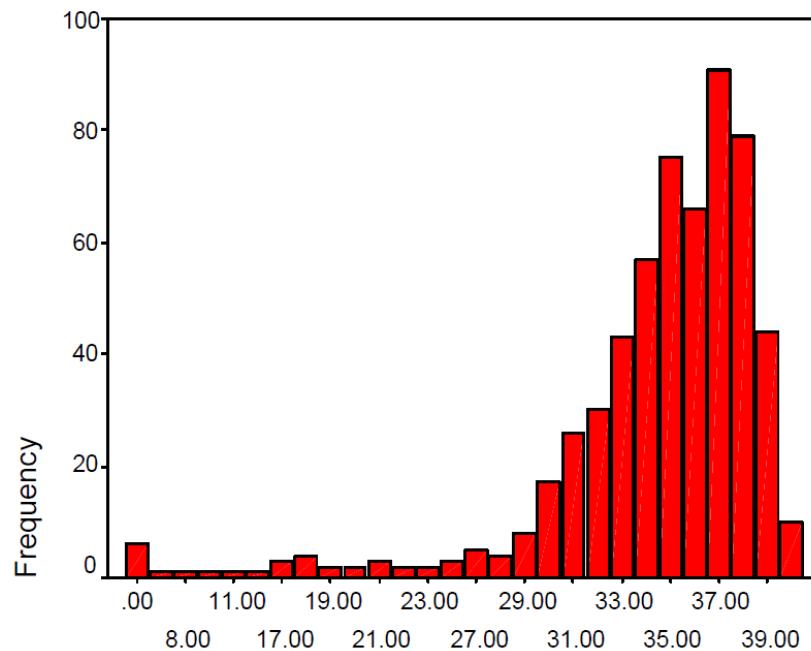
Table 3.4.4 overleaf, shows the frequencies for the test items.

**Table 3.4.4 Frequency of responses to the Letter Decision task of the WORD from the 587 children who started the task started the task**

Variable name	Shape number	Correct	Incorrect	Child stopped prem.	Missing
F7WS301	1	568 (98.3%)	10 (1.7%)	-	8
F7WS302	2	567 (97.9%)	12 (2.1%)	1	7
F7WS303	3	549 (94.8%)	30 (5.2%)	1	7
F7WS304	4	563 (97.1%)	17 (2.9%)	1	6
F7WS305	5	563 (97.4%)	15 (2.6%)	1	8
F7WS306	6	543 (93.8%)	36 (6.2%)	2	6
F7WS307	7	374 (64.7%)	204 (35.3%)	2	7
F7WS308	8	554 (95.8%)	24 (4.2%)	2	7
F7WS309	9	563 (97.2%)	16 (2.8%)	2	6
F7WS310	10	415 (71.7%)	164 (28.3%)	2	6
F7WS311	11	548 (94.8%)	30 (5.2%)	2	7
F7WS312	12	564 (97.4%)	15 (2.6%)	2	6
F7WS313	13	523 (90.3%)	56 (9.7%)	2	6
F7WS314	14	555 (96.0%)	23 (4.0%)	2	7
F7WS315	15	527 (91.2%)	51 (8.8%)	2	7
F7WS316	16	416 (72.0%)	162 (28.0%)	2	7
F7WS317	17	89 (15.4%)	490 (84.6%)	2	6
F7WS318	18	516 (89.3%)	62 (10.7%)	2	7
F7WS319	19	493 (85.1%)	86 (14.9%)	2	6
F7WS320	20	565 (97.6%)	14 (2.4%)	2	6
F7WS321	21	519 (90.1%)	57 (9.9%)	2	9
F7WS322	22	543 (94.1%)	34 (5.9%)	5	5
F7WS323	23	447 (77.5%)	130 (22.5%)	5	5
F7WS324	24	432 (74.9%)	145 (25.1%)	5	5
F7WS325	25	553 (95.8%)	24 (4.2%)	5	5
F7WS326	26	514 (89.1%)	63 (10.9%)	5	5
F7WS327	27	368 (63.8%)	209 (36.2%)	5	5
F7WS328	28	562 (97.4%)	15 (2.6%)	5	5
F7WS329	29	563 (97.6%)	14 (2.4%)	5	5
F7WS330	30	562 (97.4%)	15 (2.6%)	5	5
F7WS331	31	352 (61.0%)	225 (39.0%)	5	5
F7WS332	32	544 (94.3%)	33 (5.7%)	5	5
F7WS333	33	557 (96.5%)	20 (3.5%)	5	5
F7WS334	34	473 (82.1%)	103 (17.9%)	5	6
F7WS335	35	517 (%89.6)	60 (10.4%)	5	5
F7WS336	36	554 (96.0%)	23 (4.0%)	5	5
F7WS337	37	560 (97.1%)	17 (2.9%)	5	5
F7WS338	38	359 (62.2%)	218 (37.8%)	5	5
F7WS339	39	542 (93.9%)	35 (6.1%)	5	5
F7WS340	40	500 (86.7%)	77 (13.3%)	5	5

A score was created for the shapes game, derived as the sum of the number of correct responses.

F7WS341: Shapes game score: Word F @ 7



Shapes game score: Word F @ 7

A number of other factors were recorded during the WORD session: Whether the child was accompanied by a parent (and whether this was at the request of the parent, the child, both or the member of staff; a child was only accompanied at the request of the family or member of staff) (F7WS010); Whether the child wore glasses (F7WS012); which hand he or she used to write with (F7WS013) and whether he or she had an immature pencil grip (F7WS014).

**F7WS010 Adult accompanied child into session: Word F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Child request	146	1.8	1.8	1.8
	2 Parent request	11	.1	.1	1.9
	3 Both request	13	.2	.2	2.1
	4 All agree	17	.2	.2	2.3
	5 Query request	73	.9	.9	3.2
	6 Y, whose request NK	6	.1	.1	3.3
	7 Not accompanied	7890	95.1	96.7	100.0
	Total	8156	98.3	100.0	
Missing	-9 Did not do word	133	1.6		
	-1 Missing	8	.1		
	Total	141	1.7		
Total		8297	100.0		

**F7WS012 Child wore glasses: Word F @7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	433	5.2	5.3	5.3
	2 No	7725	93.1	94.7	100.0
	Total	8158	98.3	100.0	
Missing	-9 Did not do word	133	1.6		
	-1 Missing	6	.1		
	Total	139	1.7		
Total		8297	100.0		

**F7WS013 Handedness: Word F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Right	7111	85.7	87.8	87.8
	2 Left	980	11.8	12.1	99.9
	8 Dont know	6	.1	.1	100.0
	Total	8097	97.6	100.0	
Missing	-9 Did not do word	133	1.6		
	-2 Did not hold pencil	36	.4		
	-1 Missing	31	.4		
	Total	200	2.4		
Total		8297	100.0		

**F7WS014 Immature pencil grip: Word F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	1425	17.2	18.0	18.0
	2 No	5674	68.4	71.8	89.8
	3 Hand covered	594	7.2	7.5	97.4
	8 Borderline	209	2.5	2.6	100.0
	Total	7902	95.2	100.0	
Missing	-9 Did not do word	133	1.6		
	-2 Did not hold pencil	36	.4		
	-1 Missing	226	2.7		
Total		395	4.8		
Total		8297	100.0		

### 3.5 Motor Ability

The Movement Assessment Battery for Children (Movement ABC, Henderson & Sugden, 1992) was used to test the children's motor ability. It comprises three sections, assessing static and dynamic balance, manual dexterity and ball skills. Because of time constraints, it was not possible to conduct the whole assessment, so specific subtests from each of the three sections (described in more detail below) were carried out:

Manual dexterity: Placing Pegs and Threading lace

Ball skills: Bean bags

Balance: Heel to toe walking

**F7CR001 Child entered Coordination session: F7**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Yes	7406	89.3	89.3	89.3
2 No	891	10.7	10.7	100.0
Total	8297	100.0	100.0	

**F7CR001A Reason Child did not do Coordination session**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 No staff	213	2.6	2.7	2.7
2 Ch left early	7	.1	.1	2.8
3 Ch arrived late	4	.0	.1	2.8
4 Session not started	330	4.0	4.1	7.0
5 Ch did session	7406	89.3	93.0	100.0
Total	7960	95.9	100.0	
Missing -1 Missing	337	4.1		
Total	8297	100.0		

**F7CR002a and F7CR002b: Coordination session start time: F7 – not summarised**

Detailed description of the main variables for each subtest are presented in the next sections (and it is important that all researchers *read the documentation* carefully prior to using *any* Movement ABC variables). However, in summary, we would recommend the following summary variables be used for the Movement ABC outcomes:

Heel-to-toe F7CR015 –no. of correct steps out of 15 (summary variable)  
 F7CR016 -no. of correct steps before an error was made (summary variable)

Placing pegs F7CR105 -time taken for preferred hand (summary variable)  
 F7CR115 -time taken for non-preferred hand (summary variable)

String game F7CR211 -time taken for threading lace (summary variable)

Bean bag F7CR331 -no. of correct throws in the box (out of 10)

Tester effects (F7CR004) must be checked for in all analyses. The examiner's rating of the child's *Attempt at task* (good, medium, poor) -F7CR082, F7CR170, F7CR274 and F7CR375 for heel-to-toe, placing pegs, threading lace and bean bag game, respectively- should also be considered alongside these variables. The vast majority of children are rated with a good attempt at each task. Those whose attempt is described as poor may have scores which are not a good reflection of their motor ability. Given the fact that the complete Movement ABC assessment could not be completed it has not been possible to adhere strictly to the protocol for calculating official Movement ABC scores, however, close equivalents have been calculated and are clearly described in the following sections. It should be noted that on this basis children younger than 7 years or older than 8 years have been excluded from these overall scores.

**F7CR004 Coordination tester: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	280	3.4	3.8	3.8
	2	263	3.2	3.6	7.3
	3	254	3.1	3.4	10.8
	4	458	5.5	6.2	16.9
	5	1211	14.6	16.4	33.3
	6	529	6.4	7.1	40.4
	7	241	2.9	3.3	43.7
	8	240	2.9	3.2	46.9
	9	86	1.0	1.2	48.1
	10	236	2.8	3.2	51.3
	11	220	2.7	3.0	54.3
	12	1072	12.9	14.5	68.7
	13	91	1.1	1.2	70.0
	14	626	7.5	8.5	78.4
	15	323	3.9	4.4	82.8
	16	264	3.2	3.6	86.3
	17	280	3.4	3.8	90.1
	18	226	2.7	3.1	93.2
	19	506	6.1	6.8	100.0
	Total	7406	89.3	100.0	
Missing	-9 Did not do coord	891	10.7		
	Total	8297	100.0		

### 3.5.1 Balance

From the static and dynamic balance subsection of the Movement ABC, heel-to-toe walking was examined. The child was asked to walk along a straight line (a line taped to the floor) without leaving any gaps of any size between the heel and toe and without

stepping off the line. The tester demonstrated the task first and emphasized these points. The child then had a practice of five steps. If the child made any procedural errors during the practice, the tester interrupted and reminded him or her of what to do. The child then began the main trial consisting of 15 steps along the line. If on this trial (labeled A in the data) the child appeared not to be following instructions (e.g. ran rather than walked or was not stepping heel to toe) then, after completion of this trial he or she was asked to walk along the line again (labeled B in the data).

**F7CR010 Heel to Toe, Started: coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7385	89.0	99.7	99.7
	2 No, child's request	17	.2	.2	99.9
	3 No, staff decision	4	.0	.1	100.0
	Total	7406	89.3	100.0	
Missing	-9 Did not do coord	891	10.7		
Total		8297	100.0		

**F7CR011 Heel to Toe, Second trial done: coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 Yes	121	1.5	1.6	1.6
	2.00 No	7264	87.5	98.4	100.0
	Total	7385	89.0	100.0	
Missing	-9.00 Did not do coord	891	10.7		
	-2.00 Heel to toe not done	21	.3		
	Total	912	11.0		
Total		8297	100.0		

The child was scored on a) the total number of "successful" steps taken and b) the number of steps taken *before* a procedural error was made (leaving a gap or stepping off). It is recommended for research purposes (unless the researcher is familiar with the Movement ABC) that the former measure be used, although the latter can be used in conjunction with it.

When the child ran along the line, it was not possible to determine which kind of error had been made for each step (small or large gap, or stepped off line) or how many steps had been taken (it took fewer than 15 steps to run along the line). However, each step the child ran was necessarily an error of some sort. This was coded for by putting an r for every step (up to 15) once the child had started running and was treated as an error for the calculation of all summary variables.

A variable has been created which summarises the child's score for the heel to toe session. F7CR015 gives the number of correct steps from the first trial (F7CR015a not

shown) but substitutes the number of correct steps from the second trial (F7CR015b not shown) if this trial was performed and resulted in an improved score.

All researchers unfamiliar with the Movement ABC should use this variable. Similarly, F7CR016 summarises the number of steps taken before a procedural error was made (from F7CR016a and F7CR016b not shown), substituting the number of correct steps from the second trial if it was carried out and resulted in a better overall score for the child

**F7CR015 Heel to Toe, Summary No. of correct steps: coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	49	.6	.7	.7
	1	8	.1	.1	.8
	2	8	.1	.1	.9
	3	8	.1	.1	1.0
	4	8	.1	.1	1.1
	5	19	.2	.3	1.4
	6	21	.3	.3	1.7
	7	26	.3	.4	2.0
	8	42	.5	.6	2.6
	9	82	1.0	1.1	3.7
	10	131	1.6	1.8	5.5
	11	247	3.0	3.4	8.9
	12	424	5.1	5.8	14.7
	13	852	10.3	11.6	26.3
	14	1682	20.3	23.0	49.3
	15	3714	44.8	50.7	100.0
Total		7321	88.2	100.0	
Missing	-9 Did not do coord	891	10.7		
	-4 Experimenter Error	54	.7		
	-2 Heel to toe not done	21	.3		
	-1 Missing	10	.1		
	Total	976	11.8		
Total		8297	100.0		

**F7CR015A Heel to Toe, A No. of correct steps: coordination F @ 7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	72	.9	1.0	1.0
	1	9	.1	.1	1.1
	2	9	.1	.1	1.2
	3	8	.1	.1	1.3
	4	7	.1	.1	1.4
	5	19	.2	.3	1.7
	6	28	.3	.4	2.1
	7	26	.3	.4	2.4
	8	43	.5	.6	3.0
	9	82	1.0	1.1	4.1
	10	127	1.5	1.7	5.9
	11	241	2.9	3.3	9.2
	12	425	5.1	5.8	15.0
	13	843	10.2	11.5	26.5
Missing	14	1669	20.1	22.8	49.3
	15	3708	44.7	50.7	100.0
	Total	7316	88.2	100.0	
	-9 Did not do coord	891	10.7		
	-4 Experimenter Error	54	.7		
Total	-2 Heel to toe not done	21	.3		
	-1 Missing	15	.2		
	Total	981	11.8		
Total		8297	100.0		

Movement ABC scores were calculated as per manual instructions. Variables F7CR018 and F7CR019 are the closest equivalents to the official Movement ABC scores,

**F7CR018 Heel to Toe, Movement ABC score (correct steps): coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	6014	72.5	83.7	83.7
	1	949	11.4	13.2	96.9
	2	53	.6	.7	97.6
	3	75	.9	1.0	98.7
	4	21	.3	.3	99.0
	5	73	.9	1.0	100.0
	Total	7185	86.6	100.0	
Missing	-9 Did not do coord	891	10.7		
	-4 Experimenter Error	54	.7		
	-3 Out of age range	142	1.7		
	-2 Heel to toe not done	21	.3		
	-1 Missing	4	.0		
	Total	1112	13.4		
Total		8297	100.0		

**F7CR019 Heel to Toe, Movement ABC score (steps < SG, LG or SO): coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	3865	46.6	53.8	53.8
	1	928	11.2	12.9	66.7
	2	232	2.8	3.2	69.9
	3	474	5.7	6.6	76.5
	4	572	6.9	8.0	84.5
	5	1114	13.4	15.5	100.0
	Total	7185	86.6	100.0	
Missing	-9 Did not do coord	891	10.7		
	-4 Experimenter Error	54	.7		
	-3 Out of age range	142	1.7		
	-2 Heel to toe not done	21	.3		
	-1 Missing	4	.0		
	Total	1112	13.4		
Total		8297	100.0		

**F7CR082 Heel to Toe, Attempt at task: coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Good	6883	92.9	94.5	94.5
	2 Medium	349	4.7	4.8	99.3
	3 Poor	52	.7	.7	100.0
	Total	7284	98.3	100.0	
Missing	-2 Heel to toe not done	21	.3		
	-1 Missing	102	1.4		
	Total	123	1.7		
Total		7407	100.0		

The tester recorded for each step whether the child left a small (SG) or large gap (LG), stepped off the line (SO), ran rather than walked or made an error which was self-corrected (CE), see variables F7CR020 to F7CR034 for trial 1 and F7CR040 to F7CR054 for trial 2 if done.

Further information was also collected detailing the total number of such procedural errors made on each trial (data not shown: variables F7CR060 to F7CR064b). The tester also recorded aspects relating to the child, such as posture.

Variables (frequencies) not included in this documentation for the heel to toe session are listed below.

- F7CR060 Heel to Toe, Summary No. of small gaps: coordination: F7
- F7CR060a Heel to Toe, A No. of small gaps: coordination: F7
- F7CR060b Heel to Toe, B No. of small gaps: coordination: F7
- F7CR061 Heel to Toe, Summary No. of large gaps: coordination: F7
- F7CR061a Heel to Toe, A No. of large gaps: coordination: F7
- F7CR061b Heel to Toe, B No. of large gaps: coordination: F7
- F7CR062 Heel to Toe, Summary No. times stepped off: coordination: F7
- F7CR062a Heel to Toe, A No. times stepped off: coordination: F7
- F7CR062b Heel to Toe, B No. times stepped off: coordination: F7
- F7CR063 Heel to Toe, Summary No. of corrected errors: coordination: F7
- F7CR063a Heel to Toe, A No. of corrected errors: coordination: F7
- F7CR063b Heel to Toe, B No. of corrected errors: coordination: F7
- F7CR064 Heel to Toe, Summary No. of steps < SG, LG, SO or CE: coordination: F7
- F7CR064a Heel to Toe, A No. of steps < SG, LG, SO or CE: coordination: F7
- F7CR064b Heel to Toe, B No. of steps < SG, LG, SO or CE: coordination: F7
- F7CR080 Heel to Toe, Errors in practise: coordination: F7
- F7CR081 Heel to Toe, Wore glasses: coordination: F7
- F7CR082 Heel to Toe, Attempt at task: coordination: F7
- F7CR083 Heel to Toe, Wobbly during task: coordination: F7
- F7CR084 Heel to Toe, Fluency of task: coordination: F7
- F7CR085 Heel to Toe, Arms not used for balance: coordination: F7
- F7CR086 Heel to Toe, Exag arm movements: coordination: F7
- F7CR087 Heel to Toe, Body seemed rigid: coordination: F7
- F7CR088 Heel to Toe, Body seemed limp: coordination: F7
- F7CR089 Heel to Toe, Feet came off line: coordination: F7
- F7CR090 Heel to Toe, Head not steady: coordination: F7
- F7CR091 Heel to Toe, One eye closed: coordination: F7

### **3.5.2 Manual dexterity**

Placing pegs and threading lace were the two subtasks selected from the manual dexterity section of the Movement ABC.

#### **3.5.2.1 Placing Pegs**

In the placing pegs task (known in the clinic as the peg game), the child had to insert twelve pegs, one at a time, into a peg board, holding the board with one hand and inserting the pegs with the other, as quickly as possible. The task was carried out with the preferred and the non-preferred hand, after it had been described and demonstrated by the tester, and after a practice attempt with each hand. Time taken to complete the task was recorded for each hand. If the child failed to carry out the instructions, for example, picked up more than one peg at a time, or used both hands to place the pegs, he or she failed that trial and a second trial with the same hand was given.

Variables have been created which summarise the child's performance over the different trials (F7CR103 and F7CR113 for the preferred and non-preferred hand, respectively). The original non-summarised data collected have also been retained for those researchers who are experienced with the Movement ABC test and who have reason to use them. These summary variables have been used to determine which trial times should be used.

**F7CR103 Peg game, Pref hand, Summary Pass/Fail: coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 1, Pass; 2, Not done	6721	90.7	91.4	91.4
	2 1, Query; 2, Pass	197	2.7	2.7	94.0
	3 1, Query; 2, Query	21	.3	.3	94.3
	4 1, Query; 2, Fail	19	.3	.3	94.6
	5 1, Fail; 2, Pass	333	4.5	4.5	99.1
	6 1, Fail; 2, Query	12	.2	.2	99.3
	7 1, Fail; 2, Fail	54	.7	.7	100.0
	Total	7357	99.3	100.0	
Missing	-2 Peg game not done	8	.1		
	-1 Missing	42	.6		
	Total	50	.7		
Total		7407	100.0		

**F7CR113 Peg game, Non-Pref hand, Summary Pass/Fail: coordination: F7**

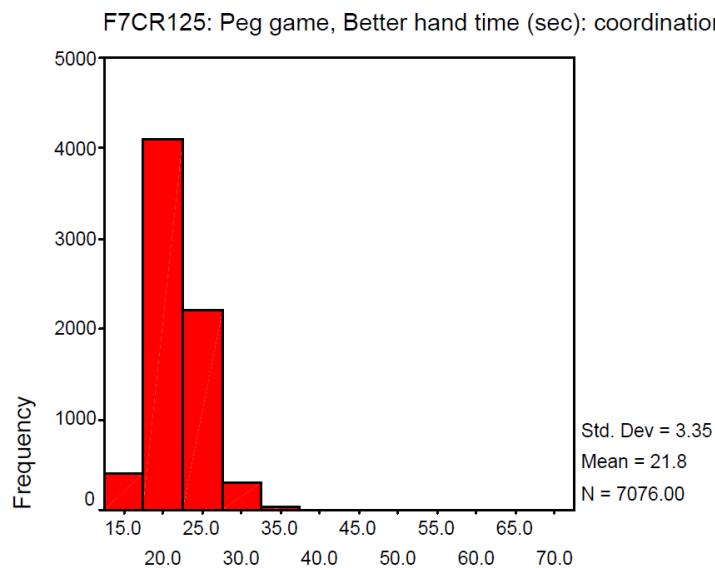
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 1, Pass; 2, Not done	6407	86.5	88.2	88.2
	2 1, Query; 2, Pass	235	3.2	3.2	91.4
	3 1, Query; 2, Query	24	.3	.3	91.8
	4 1, Query; 2, Fail	24	.3	.3	92.1
	5 1, Fail; 2, Pass	453	6.1	6.2	98.3
	6 1, Fail; 2, Query	17	.2	.2	98.6
	7 1, Fail; 2, Fail	105	1.4	1.4	100.0
	Total	7265	98.1	100.0	
Missing	-2 Peg game not done	8	.1		
	-1 Missing	134	1.8		
	Total	142	1.9		
Total		7407	100.0		

The majority of children passed trial 1 (>90% using their preferred hand and >85% using their non-preferred hand; see above). For these cases, a second trial was not carried out and the data for trial 1 are to be used. Approximately 4-6% of children failed trial 1 but went on to pass trial 2. For these children the times for trial 2 are to be used, in line with Movement ABC specifications. Approximately 1% of children failed trials 1 and 2. Their data should not be used (they may have used short cuts and have an artificially quick time, or have misunderstood instructions and have an artificially inflated time) but it is important to note that these children are a very biased sample of children and may well have poorer coordination and/or understanding of the instructions than many of the study children.

Some children received a *query* for a trial. These children did not *fail* the trial according to Movement ABC specifications but had done something that might have resulted in an unrealistically slow time. (For example, they may have knocked a peg to the floor which rolled away from the table and was not easy to pick up immediately, adding more time to the trial than for some other children who knocked a peg to the floor that was easier to pick up.) If trial 1 was queried, the child was given the benefit of the doubt and a second trial was administered. The trial time summary variable for each hand that is recommended for all researchers (unless they are familiar with the Movement ABC and have specific reason to use different variables), uses the time from trial 1 if the child passes this trial, or if he or she has a query

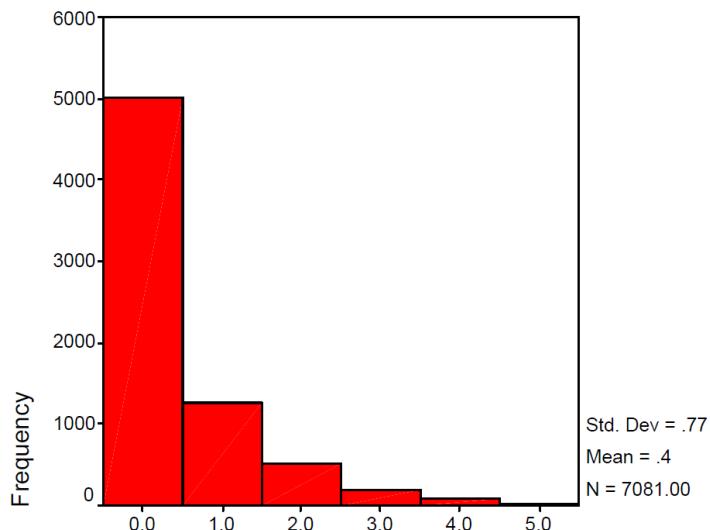
for both trials; the time from the faster trial if the child has a query for trial 1 and a pass for trial 2; and the time from the queried trial if the child has a query for one trial and a fail for the other. It is worth bearing in mind that children with queried trials might have more motor difficulties than children without queried or failed trials.

F7CR105 and F7CR115 are the trial time summary variables for the preferred and non- preferred hands, respectively. For researchers who know the Movement ABC and have reason to look at individual trial time data, times from each individual trial have been retained regardless of whether the child passed, was queried or failed the trial. F7CR106b, F7CR107b, F7CR116b and F7CR117b show the trial times for preferred hand trials 1 and 2, and non-preferred hands trials 1 and 2, respectively (data not shown).



Peg game, Better hand time (sec): coordination F @ 7

## F7CR126: Peg game, Movement ABC score, Better hand:



## Peg game, Movement ABC score, Better hand: Coordination: F7

Movement ABC scores were calculated as per manual instructions.

**F7CR127 Peg game, Movement ABC score, Better hand: Coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	5743	77.5	81.1	81.1
	1	918	12.4	13.0	94.1
	2	196	2.6	2.8	96.8
	3	162	2.2	2.3	99.1
	4	43	.6	.6	99.7
	5	19	.3	.3	100.0
	Total	7081	95.6	100.0	
Missing	-2 Peg game not done	8	.1		
	-1 Missing	318	4.3		
	Total	326	4.4		
Total		7407	100.0		

**F7CR128 Peg game, Movement ABC score, Worst hand: Coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	5593	75.5	79.0	79.0
	1	605	8.2	8.5	87.5
	2	355	4.8	5.0	92.5
	3	298	4.0	4.2	96.8
	4	185	2.5	2.6	99.4
	5	45	.6	.6	100.0
	Total	7081	95.6	100.0	
Missing	-2 Peg game not done	8	.1		
	-1 Missing	318	4.3		
	Total	326	4.4		
Total		7407	100.0		

**F7CR129 Peg game, Movement ABC mean score: Coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	5014	67.7	70.8	70.8
	.50	884	11.9	12.5	83.3
	1.00	382	5.2	5.4	88.7
	1.50	290	3.9	4.1	92.8
	2.00	219	3.0	3.1	95.9
	2.50	111	1.5	1.6	97.4
	3.00	72	1.0	1.0	98.5
	3.50	55	.7	.8	99.2
	4.00	28	.4	.4	99.6
	4.50	13	.2	.2	99.8
	5.00	13	.2	.2	100.0
	Total	7081	95.6	100.0	
Missing	-2.00 Peg game not done	8	.1		
	-1.00 Missing	318	4.3		
	Total	326	4.4		
Total		7407	100.0		

**F7CR170 Peg game, Attempt: coordination F @ 7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Good	7003	94.5	98.4	98.4
	2 Medium	100	1.4	1.4	99.8
	3 Poor	13	.2	.2	100.0
	Total	7116	96.1	100.0	
Missing	-2 Peg game not done	8	.1		
	-1 Missing	283	3.8		
	Total	291	3.9		
Total		7407	100.0		

For each trial the tester recorded various aspects of the child's performance, including such things as whether the child used his or her other hand to support the board, use of pincer grip, whether any pegs were dropped and if the child used excessive force in placing the pegs. The variables (not shown here) are detailed as follows:

Trial 1, preferred hand: F7CR130 – F7CR136

Trial 1, non-preferred hand: F7CR140 – F7CR146

Trial 2, preferred hand: F7CR150 – F7CR156

Trial 2, non-preferred hand: F7CR160 – F7CR166

Other aspects of performance were also recorded (data not shown, variables F7CR170 – F7CR183).

Variables not included in this documentation for the peg game session are listed below.

F7CR106a Peg game, Pref hand, Trial 1, time (sec) excl failed trials: coordination: F7

F7CR106b Peg game, Pref hand, Trial 2, time (sec) excl failed trials: coordination: F7

F7CR107a Peg game, Pref hand, Trial 1, time (sec): coordination: F7

F7CR107b Peg game, Pref hand, Trial 1, time (sec): coordination: F7

F7CR116a Peg game, Non-Pref hand, Trial 1, time (sec) excl failed trials: coordination: F7

F7CR116b Peg game, Non-Pref hand, Trial 2, time (sec) excl failed trials: coordination: F7

F7CR117a Peg game, Non-Pref hand, Trial 1, time (sec): coordination: F7

F7CR117b Peg game, Non-Pref hand, Trial 1, time (sec): coordination: F7

F7CR130 Peg game, Pref hand, Trial 1, Pegs in order: coordination: F7

F7CR131 Peg game, Pref hand, Trial 1, No. Pegs not in easily: coordination: F7

F7CR132 Peg game, Pref hand, Trial 1, No. Pegs dropped: coordination: F7

F7CR133 Peg game, Pref hand, Trial 1, Did not use supporting hand: coordination: F7

F7CR134 Peg game, Pref hand, Trial 1, Did not use pincer grip: coordination: F7

F7CR135 Peg game, Pref hand, Trial 1, Exag finger mment releasing peg: coordination: F7

F7CR136 Peg game, Pref hand, Trial 1, Excess force: coordination: F7

F7CR140 Peg game, Non-Pref hand, Trial 1, Pegs in order: coordination: F7

F7CR141 Peg game, Non-Pref hand, Trial 1, No. Pegs not in easily: coordination: F7

F7CR142 Peg game, Non-Pref hand, Trial 1, No. Pegs dropped: coordination: F7

F7CR143 Peg game, Non-Pref hand, Trial 1, Did not use supporting hand: coordination: F7

F7CR144 Peg game, Non-Pref hand, Trial 1, Did not use pincer grip: coordination: F7

F7CR145 Peg game, Non-Pref hand, Trial 1, Exag finger mment releasing peg: coordination: F7

F7CR146 Peg game, Non-Pref hand, Trial 1, Excess force: coordination: F7

F7CR150 Peg game, Pref hand, Trial 2, Pegs in order: coordination: F7

F7CR151 Peg game, Pref hand, Trial 2, No. Pegs not in easily: coordination: F7

F7CR152 Peg game, Pref hand, Trial 2, No. Pegs dropped: coordination: F7

F7CR153 Peg game, Pref hand, Trial 2, Did not use supporting hand: coordination: F7

F7CR154 Peg game, Pref hand, Trial 2, Did not use pincer grip: coordination: F7

F7CR155	Peg game, Pref hand, Trial 2, Exag finger mment releasing peg: coordination: F7
F7CR156	Peg game, Pref hand, Trial 2, Excess force: coordination: F7
F7CR160	Peg game, Non-Pref hand, Trial 2, Pegs in order: coordination: F7
F7CR161	Peg game, Non-Pref hand, Trial 2, No. Pegs not in easily: coordination: F7
F7CR162	Peg game, Non-Pref hand, Trial 2, No. Pegs dropped: coordination: F7
F7CR163	Peg game, Non-Pref hand, Trial 2, Did not use supporting hand: coordination: F7
F7CR164	Peg game, Non-Pref hand, Trial 2, Did not use pincer grip: coordination: F7
F7CR165	Peg game, Non-Pref hand, Trial 2, Exag finger mment releasing peg: coordination: F7
F7CR166	Peg game, Non-Pref hand, Trial 2, Excess force: coordination: F7
F7CR170	Peg game, Pref hand, Practise: coordination: F7
F7CR171	Peg game, Pref hand, Main: coordination: F7
F7CR172	Peg game, Pref hand, Child unsure about handedness: coordination: F7
F7CR173	Peg game, Pref hand, Practise, correct 1st time: coordination: F7
F7CR174	Peg game, Pref hand, Practise, ustood eventually: coordination: F7
F7CR175	Peg game, Pref hand, Practise, wore glasses: coordination: F7
F7CR176	Peg game, Face too close: coordination: F7
F7CR177	Peg game, Head odd angle: coordination: F7
F7CR178	Peg game, One eye shut: coordination: F7
F7CR179	Peg game, Didn't look at board: coordination: F7
F7CR180	Peg game, Attempt: coordination: F7
F7CR181	Peg game, One hand much worse: coordination: F7
F7CR182	Peg game, Too fast for accuracy: coordination: F7
F7CR183	Peg game, Fluency: coordination: F7

### 3.5.2.2 Threading Lace

The second task from the manual dexterity sub-section of the Movement ABC was threading lace (known in the clinic as the string game), which involved the child threading a lace through holes in a wooden board. The child was asked to thread the lace in and out of the holes (rather than going around the edge of the board), using each hole and ensuring that the lace was pulled through each hole so that sufficient lace was left to complete the threading. The task was demonstrated by the tester and the child was given a practice attempt of completing two holes on the board, where any procedural errors were corrected immediately by the tester. The child was expected to use only one hand for using the lace, with the other hand holding the board.

The time taken to complete this task was recorded. If the child failed to carry out the instructions or made procedural errors, for example, missed a hole in the board or threaded around the edges of the board, a second trial (with the same hand) was administered.

A variable has been created which summarises the child's performance over trials 1 and 2 (F7CR202). This has been used to determine which trial time should be used. (The original non-summarised data collected have also been retained for those researchers who are experienced with the Movement ABC test and who have reason to use them).

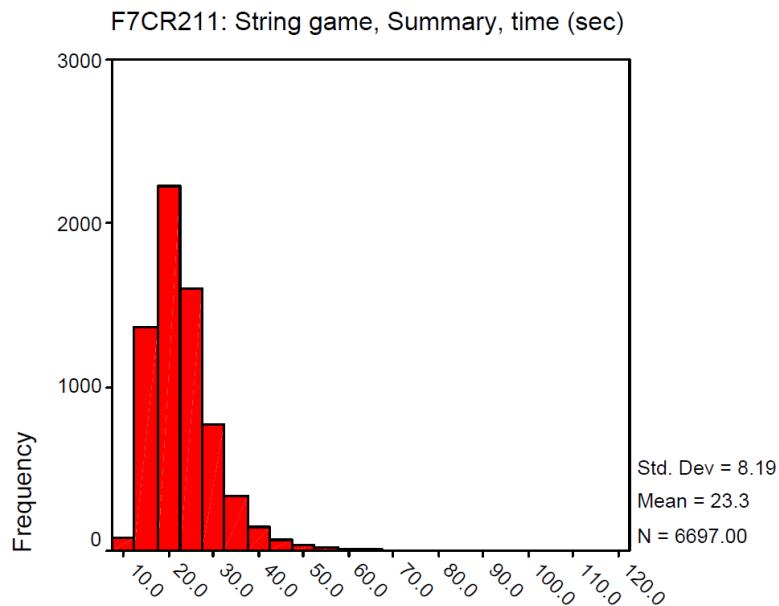
**F7CR202 String game, Summary Pass/Fail: coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 1, Pass; 2, Not done	5096	68.8	70.3	70.3
	2 1, Query; 2, Pass	529	7.1	7.3	77.6
	3 1,Query; 2, Query	77	1.0	1.1	78.7
	4 1, Query; 2, Fail	90	1.2	1.2	79.9
	5 1, Fail; 2, Pass	859	11.6	11.9	91.8
	6 1, Fail; 2, Query	51	.7	.7	92.5
	7 1, Fail; 2, Fail	545	7.4	7.5	100.0
	Total	7247	97.8	100.0	
Missing	-2 String game not done	29	.4		
	-1 Missing	131	1.8		
	Total	160	2.2		
Total		7407	100.0		

As with placing pegs, the majority of children passed trial 1 (approximately 70%). For these children, a second trial was not carried out and the data for trial 1 are to be used. Approximately 12% of children failed trial 1 but went on to pass trial 2. For these children the times for trial 2 are to be used. Approximately 8% of children failed trials 1 and 2. Their data should not be used (they may have used short-cuts and have an artificially quick time, or have misunderstood instructions and have an artificially inflated time) but it is important to note that these children are a very biased sample of children and may well have poorer coordination and/or understanding of the instructions than many of the study children. Again, as with Placing Pegs, children could receive a *query* for a trial, which [again] meant that they had not *failed* the trial according to MovABC specifications, but that they had done something which may have resulted in them having a unrealistically slow time (for example, the string could easily get caught up around the board).

If trial 1 was queried, the child was given the benefit of the doubt and a second trial was administered. The overall trial time summary variable (F7CR211) that is recommended for all researchers (unless they are familiar with the Movement ABC and have specific reason to use different variables), uses the time from trial 1 if the child passes this trial, or if he or she has a query for both trials; the time from the faster trial if the child has a query for trial 1 and a pass for trial 2; and the time from the queried trial if the child has a query for one trial and a fail for the other. It is worth bearing in mind that children with queried trials might have more motor difficulties than children without queried or failed trials.

For researchers who know the Movement ABC and have reason to look at individual trial time data, times from each individual trial have been retained regardless of whether the child passed, was queried or failed the trial. F7CR211b and F7CR212b show the trial times for trials 1 and 2, respectively (data not shown).



String game, Summary, time (sec): coordination F @ 7

Movement ABC scores were calculated as per manual instructions.

**F7CR210 String game, Movement ABC score: Coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2697	35.3	37.8	37.8
	1	857	11.2	12.0	49.9
	2	706	9.3	9.9	59.8
	3	1097	14.4	15.4	75.2
	4	1038	13.6	14.6	89.7
	5	731	9.6	10.3	100.0
	Total	7126	93.4	100.0	
Missing	-2 String game not done	30	.4		
	-1 Missing	474	6.2		
	Total	504	6.6		
Total		7630	100.0		

**F7CR274 String game, Attempt: coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Good	6939	93.7	97.7	97.7
	2 Medium	153	2.1	2.2	99.8
	3 Poor	12	.2	.2	100.0
	Total	7104	95.9	100.0	
Missing	-2 String game not done	29	.4		
	-1 Missing	274	3.7		
	Total	303	4.1		
Total		7407	100.0		

For each trial the tester recorded various aspects of the child's performance, such as difficulty with the sequence, or how the child held the string. These variables (not shown here) are detailed as follows:

Trial 1, preferred hand: F7CR230 – F7CR239

Trial 2, preferred hand: F7CR240 – F7CR249

Other aspects of performance were also recorded (data not shown, variables F7CR260 – F7CR278).

Variables not included in this documentation for the string game are listed below.

- F7CR211a String game, Trial 1, time (sec) excl failed trials: coordination: F7
- F7CR211b String game, Trial 1, time (sec): coordination: F7
- F7CR212 String game, Trial 1, pass: coordination: F7
- F7CR213 String game, Trial 1, reason not pass: coordination: F7
- F7CR221a String game, Trial 2, time (sec) excl failed trials: coordination: F7
- F7CR221b String game, Trial 2, time (sec): coordination: F7
- F7CR222 String game, Trial 2, pass: coordination: F7
- F7CR223 String game, Trial 2, reason not pass: coordination: F7
- F7CR230 String game, Trial 1, Changes hands: coordination: F7
- F7CR231 String game, Trial 1, Drops string: coordination: F7
- F7CR232 String game, Trial 1, S/T misses hole: coordination: F7
- F7CR233 String game, Trial 1, Threads over top: coordination: F7
- F7CR234 String game, Trial 1, Muddled sequence: coordination: F7
- F7CR235 String game, Trial 1, Problem threading: coordination: F7
- F7CR236 String game, Trial 1, No pincer grip: coordination: F7
- F7CR237 String game, Trial 1, String too far from tip: coordination: F7
- F7CR238 String game, Trial 1, String too near tip: coordination F @
- F7CR239 String game, Trial 1, Other hand pull through: coordination: F7
- F7CR240 String game, Trial 2, Changes hands: coordination: F7
- F7CR241 String game, Trial 2, Drops string: coordination: F7
- F7CR242 String game, Trial 2, S/T misses hole: coordination: F7
- F7CR243 String game, Trial 2, Threads over top: coordination: F7
- F7CR244 String game, Trial 2, Muddled sequence: coordination: F7
- F7CR245 String game, Trial 2, Problem threading: coordination: F7
- F7CR246 String game, Trial 2, No pincer grip: coordination: F7
- F7CR247 String game, Trial 2, String too far from tip: coordination: F7
- F7CR248 String game, Trial 2, String too near tip: coordination: F7

- F7CR249 String game, Trial 2, Other hand pull through: coordination: F7  
F7CR260 String game, Pref hand, Practise: coordination: F7  
F7CR261 String game, Pref hand, Main: coordination: F7  
F7CR262 String game, Child unsure about handedness: coordination: F7  
F7CR263 String game, Practise, correct 1st time: coordination: F7  
F7CR264 String game, Practise, ustood eventually: coordination: F7  
F7CR265 String game, Wore glasses: coordination: F7  
F7CR270 String game, Face too close: coordination: F7  
F7CR271 String game, Head odd angle: coordination: F7  
F7CR272 String game, One eye shut: coordination: F7  
F7CR273 String game, Didn't look at board: coordination: F7  
F7CR275 String game, Exceptionally slow: coordination: F7  
F7CR276 String game, Too fast for accuracy: coordination: F7  
F7CR277 String game, Fluency: coordination: F7

### 3.5.3 Ball skills

From the ball skills section of the Movement ABC, the bean bag subtest was conducted. This involved the child attempting to throw a bean bag (underarm) into a box, whilst standing behind a line at a distance of six feet from the box. During the demonstration and explanation, the tester emphasised to the child that he or she should use only one-handed, underarm throws and remain behind the line for each throw, standing in a good position for throwing. The children were given five practice throws where they were able to change hands but were encouraged to choose their preferred hand for the main trial. Any procedural errors made during the practice were corrected and the children were reminded of or re-demonstrated the correct procedure. The number of successful throws (where the bean bag landed in the box, either wholly or partly) out of ten was scored. It was also noted where non-successful throws landed in respect to the position of the box.

F7CR331 Bean bag game, No. throws in: coordination: F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	36	.5	.5	.5
	1	124	1.7	1.7	2.2
	2	295	4.0	4.0	6.2
	3	608	8.2	8.3	14.4
	4	882	11.9	12.0	26.4
	5	1177	15.9	16.0	42.4
	6	1353	18.3	18.4	60.8
	7	1250	16.9	17.0	77.8
	8	904	12.2	12.3	90.1
	9	548	7.4	7.4	97.5
	10	182	2.5	2.5	100.0
Total		7359	99.4	100.0	
Missing	-2 Bean bag game not done	12	.2		
	-1 Missing	36	.5		
	Total	48	.6		
Total		7407	100.0		

Movement ABC scores were calculated as per manual instructions.

**F7CR332 Bean bag game, Movement ABC Score: coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4103	53.8	56.9	56.9
	1	1171	15.3	16.2	73.1
	2	877	11.5	12.2	85.3
	3	607	8.0	8.4	93.7
	4	294	3.9	4.1	97.8
	5	158	2.1	2.2	100.0
	Total	7210	94.5	100.0	
Missing	-2 Bean bag game not done	12	.2		
	-1 Missing	408	5.3		
	Total	420	5.5		
Total		7630	100.0		

**F7CR375 Bean bag game, Attempt: coordination: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Good	6723	90.8	94.4	94.4
	2 Medium	360	4.9	5.1	99.5
	3 Poor	37	.5	.5	100.0
	Total	7120	96.1	100.0	
Missing	-2 Bean bag game not done	12	.2		
	-1 Missing	275	3.7		
	Total	287	3.9		
Total		7407	100.0		

Further information was recorded regarding the child's throwing technique and posture during the bean bag task (F7CR362 – F7CR374).

Variables not included in this documentation for the bean bag session are listed below.

- F7CR335 Bean bag game, Pref hand, Practise: coordination: F7
- F7CR336 Bean bag game, Pref hand unsure, Practise: coordination: F7
- F7CR337 Bean bag game, Pref hand, Main: coordination: F7
- F7CR338 Bean bag game, Pref hand unsure, Main: coordination: F7
- F7CR340 Bean bag game, Practise, instr followed: coordination: F7
- F7CR341 Bean bag game, Practise, No. throws in: coordination: F7
- F7CR342 Bean bag game, Practise, No. proc faults: coordination: F7
- F7CR350 Bean bag game, No. proc faults: coordination: F7
- F7CR351 Bean bag game, No. in front of box: coordination: F7
- F7CR352 Bean bag game, No. beyond box: coordination: F7
- F7CR353 Bean bag game, No. left of box: coordination: F7
- F7CR354 Bean bag game, No. right of box: coordination: F7
- F7CR355 Bean bag game, No. not close to box: coordination: F7
- F7CR360 Bean bag game, Wore glasses: coordination: F7
- F7CR361 Bean bag game, Main performance: coordination: F7

F7CR362	Bean bag game, Inappr grip: coordination: F7
F7CR363	Bean bag game, Used two hands: coordination: F7
F7CR364	Bean bag game, Used overarm: coordination: F7
F7CR365	Bean bag game, No pendulum swing: coordination: F7
F7CR366	Bean bag game, Very stiff arm: coordination: F7
F7CR367	Bean bag game, Head odd angle: coordination: F7
F7CR368	Bean bag game, One eye shut: coordination: F7
F7CR369	Bean bag game, Eyes not on target: coordination: F7
F7CR370	Bean bag game, Control of force variable: coordination: F7
F7CR371	Bean bag game, Force not altered after error: coordination: F7
F7CR372	Bean bag game, Feet together: coordination: F7
F7CR373	Bean bag game, Lost balance: coordination: F7
F7CR374	Bean bag game, Fluency: coordination: F7
F7CR380	Bean bag game, Comments made: coordination: F7

The tester recorded information on the child's behaviour during the session as a whole (data not shown: variables F7CR901 – F7CR920). These are listed below.

F7CR400	Child overestimated ability: coordination: F7
F7CR401	Child underestimated ability: coordination: F7
F7CR402	Child upset by failure: coordination: F7
F7CR403	Child no pleasure from success: coordination: F7
F7CR404	Child lacked persistence: coordination: F7
F7CR405	Child impulsive: coordination: F7
F7CR901	Staff rating: cooperative, coordination: F7
F7CR902	Staff rating: shy, coordination: F7
F7CR903	Staff rating: fidget, coordination: F7
F7CR904	Staff rating: active, coordination: F7
F7CR905	Staff rating: attention, coordination: F7
F7CR906	Staff rating: rapport, coordination: F7
F7CR907	Staff rating: comments, coordination: F7
F7CR908	Unusual child behaviour, coordination: F7
F7CR909	Avoidance of eye contact, coordination: F7
F7CR910	Tics, coordination: F7
F7CR911	Rocking, coordination: F7
F7CR912	Odd questions, coordination: F7
F7CR913	Personal comments, coordination: F7
F7CR914	Making faces, coordination: F7
F7CR915	Odd noises, coordination: F7
F7CR916	Talking to self, coordination: F7
F7CR917	Swearing, coordination: F7
F7CR918	Other unusual behaviour, coordination: F7
F7CR919	Unusual emotional reaction, coordination: F7
F7CR920	Unusual behavior comments, coordination: F7

### 3.5.3.1 Development Coordination Disorder

F7cr500, f7cr501 and f7cr502 are variables derived by Lingam *et. al.* (2010) which define development coordination disorder (DCD).

The 5<sup>th</sup> percentile of the MABC, (section 3.5) is used to define severe motor impairment and children between the 5th and 15th percentile are considered at risk of impairment.

These derivations also use data from the Wechsler Objective Language Dimensions (WOLD; collected at the Focus @ 8 clinic), the Wechsler Intelligence Scale for Children III (WISC, collected at the Focus @ 8 clinic), the Social and Communication Disorders Checklist (SCDC) and the Development and Well-being Assessment (DAWBA). The latter

two, SCDC and DAWBA, are from the parental questionnaires when the child was between 7 and 9 years old.

The derivations include a nominal variable which captures those in the 5<sup>th</sup> percentile, another nominal variable capturing those in the 15<sup>th</sup> percentile and a categorical variable, which captures those in the 5<sup>th</sup>, those in the 5-15<sup>th</sup> and those who are not. See Lingam *et. al.* (2010, doi:10.1542/peds.2009-2789) for further information.

No DCD data was derived for those children who were enrolled into ALSPAC as part of the phase II enrolment programme. Identification of these cases in this data is done using the variable [f7010]. There is more information in section 2.4 of this document.

Lingam, R., Golding, J., Jongmans, M. J., Hunt, L. P., Ellis, M. and Edmond, A. (2010). 'The Association Between Developmental Coordination Disorder and Other Developmental Traits'. *Pediatrics*. 126 (5): 2009-2789.

**f7cr500 DV: 5th percentile of developmental coordination disorder measure: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-0.00 not attended sessions or IQ<=70	6538	78.8	98.3	98.3
	1.00 5th percentile	112	1.4	1.7	100.0
	Total	6650	80.2	100.0	
Missing	-1.00 Missing	1643	19.8		
	Total	8293	100.0		

**f7cr501 DV: 15th percentile of developmental coordination disorder measure: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-0.00 not attended sessions or IQ<=70	6321	76.2	95.1	95.1
	1.00 15th percentile	329	4.0	4.9	100.0
	Total	6650	80.2	100.0	
Missing	-1.00 Missing	1643	19.8		
	Total	8293	100.0		

**f7cr502 DV: Categorical developmental coordination disorder measure: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 5th percentile	112	1.4	1.7	1.7
	2.00 5-15th percentile	217	2.6	3.3	4.9
	3.00 not attended sessions or IQ<=70	6321	76.2	95.1	100.0
	Total	6650	80.2	100.0	
Missing	-1.00 Missing	1643	19.8		
Total		8293	100.0		

### 3.6 Blood pressure, pulse and biological samples

#### F7SA001 Child entered Samples session: F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	8235	99.3	99.3	99.3
	2 No	62	.7	.7	100.0
	Total	8297	100.0	100.0	

#### F7SA001A Reason Child did not do Samples session

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 No staff	12	.1	.1	.1
	2 Ch left early	5	.1	.1	.2
	3 Ch arrived late	1	.0	.0	.2
	5 Ch did session	8235	99.3	99.8	100.0
	Total	8253	99.5	100.0	
Missing	-1 Missing	44	.5		
	Total	8297	100.0		

#### F7SA002a and F7SA002b: Samples session start time: F7 – not summarised

#### F7SA004 Samples tester F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1016	12.2	12.4	12.4
	2	817	9.8	10.0	22.4
	3	552	6.7	6.7	29.1
	4	625	7.5	7.6	36.8
	5	623	7.5	7.6	44.4
	6	843	10.2	10.3	54.7
	7	364	4.4	4.4	59.1
	8	1605	19.3	19.6	78.7
	9	796	9.6	9.7	88.5
	10	343	4.1	4.2	92.7
	11	456	5.5	5.6	98.2
	12	20	.2	.2	98.5
	13	125	1.5	1.5	100.0
	Total	8185	98.7	100.0	
Missing	-9 Did not do samples	62	.7		
	-2 Misrecorded	35	.4		
	-1 Missing	15	.2		
	Total	112	1.3		
	Total	8297	100.0		

At the start of this session the tester determined whether the child had recently or currently had an infection and if so, how long ago (F7SA011), details were recorded (coded as F7SA013). Also whether they were currently on any medication, details of these were also recorded (F7SA016).

**F7SA010 Infection present:samples F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	630	7.6	7.7	7.7
	2 No	7592	91.5	92.3	100.0
	Total	8222	99.1	100.0	
Missing	-9 Did not do samples	62	.7		
	-1 Missing	13	.2		
	Total	75	.9		
Total		8297	100.0		

**F7SA015 Currently taking medication: samples F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	398	4.8	4.9	4.9
	2 No	7801	94.0	95.1	100.0
	Total	8199	98.8	100.0	
Missing	-9 Did not do samples	62	.7		
	-1 missing	36	.4		
	Total	98	1.2		
Total		8297	100.0		

### 3.6.1. Blood pressure

Both blood pressure and pulse rates were measured using a Dinamap 9301 Vital Signs Monitor. The child was first given a simple explanation of what would happen in the session using the analogy of an inflating balloon to explain the action of the cuff. Two cuffs were used depending on the size of the child's upper arm circumference (ideally the right arm was used). If  $< 18\text{cm}$  a child size cuff (green in colour) was used and if  $\geq 18\text{cm}$  a small adult cuff (blue in colour) was used. A piece of cotton tubing was slid onto the child's arm to cushion it before the cuff was attached. The initial inflation was set to 130 mmHg. The child was asked to press 'start' on the machine. While it took the measurements, the tester asked the parent whether the child had recently or presently had an infection. If so, details were taken. The parents were also asked about any medications the child was currently on and when they had last been taken. Two readings of systolic and diastolic blood pressure and pulse rates were recorded. Also noted were the child's demeanour during the session, the time of the reading and the room temperature (data not shown for the two latter).

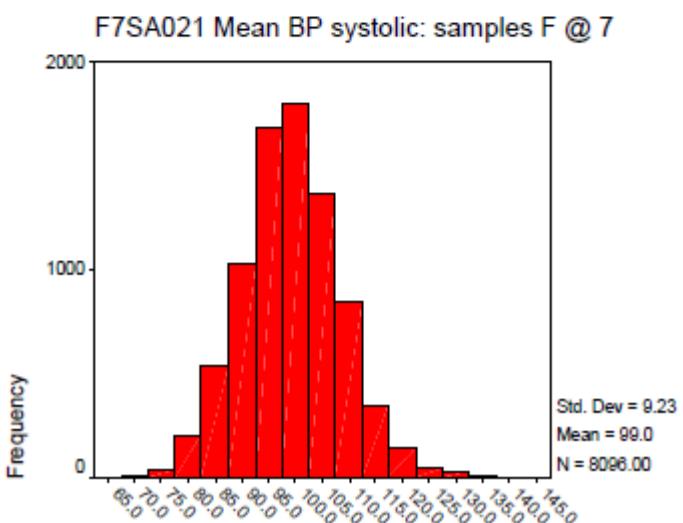
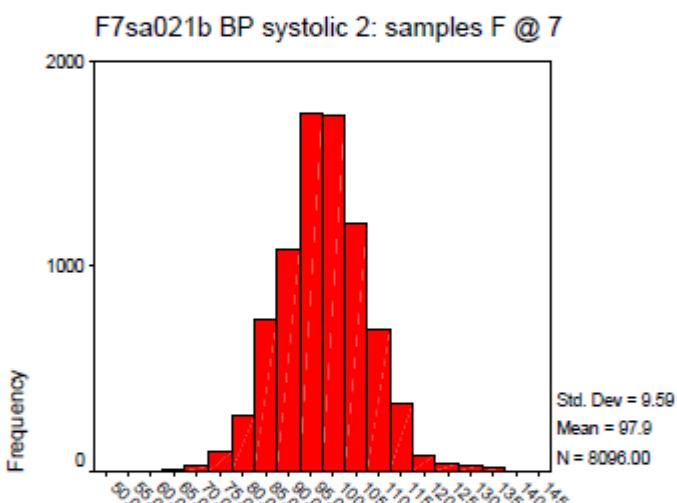
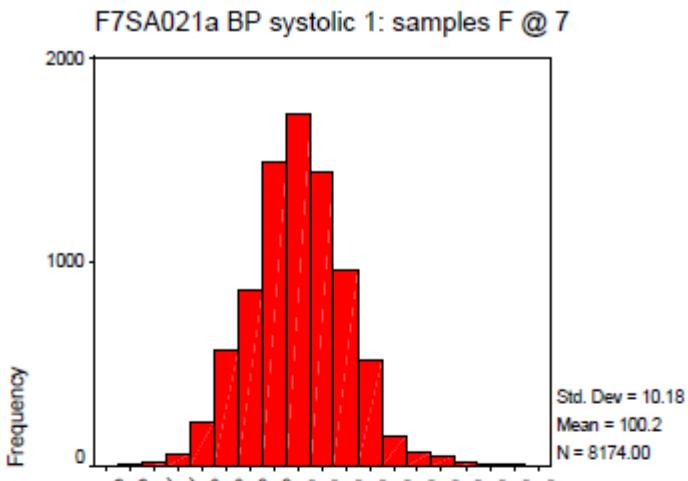
If the child's blood pressure was 140/90 or more the parents were given a letter to take to their GP.

**F7SA020 BP/pulse result obtained: samples F7**

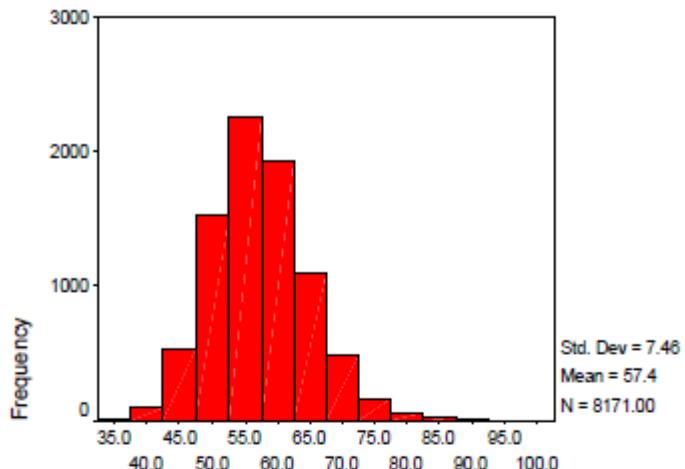
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	8176	98.5	99.3	99.3
	2 No	59	.7	.7	100.0
	Total	8235	99.3	100.0	
Missing	-9 Did not do samples	62	.7		
	Total	8297	100.0		

**F7SA020A Reason for BP/pulse not done: samples F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Child refused	32	.4	56.1	56.1
	2 Machine not working	25	.3	43.9	100.0
	Total	57	.7	100.0	
Missing	-9 Did not do samples	62	.7		
	-2 Not collected	8176	98.5		
	-1 Missing	2	.0		
	Total	8240	99.3		
	Total	8297	100.0		

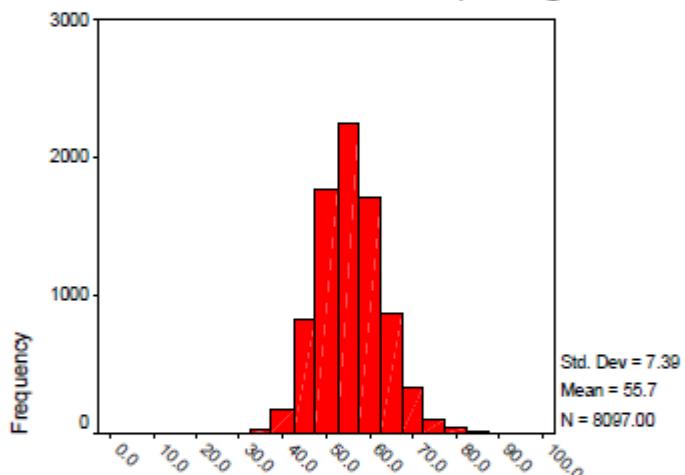


F7SA022a BP diastolic 1: samples F @ 7



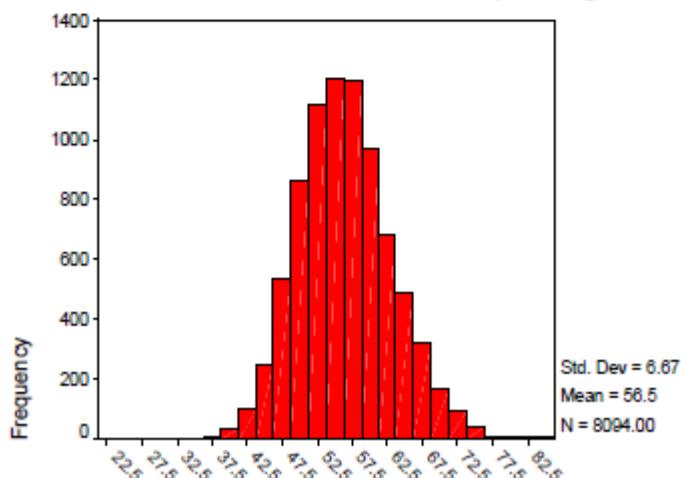
BP diastolic 1: samples F @ 7

F7SA022b BP diastolic 2: samples F @ 7



BP diastolic 2: samples F @ 7

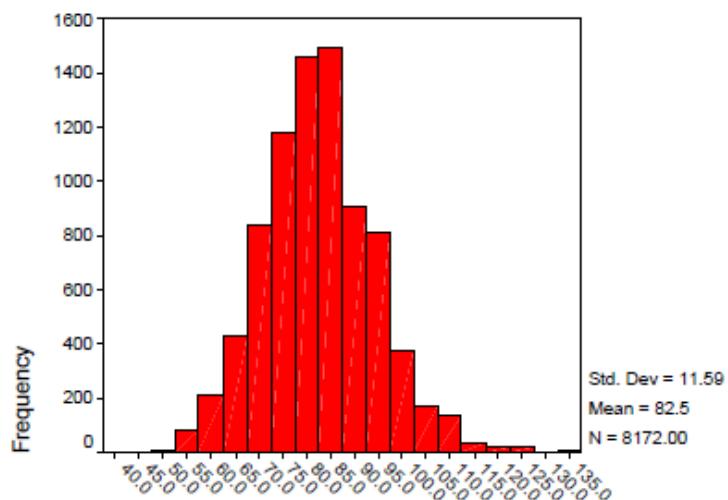
F7SA022 Mean BP diastolic: samples F @ 7



Mean BP diastolic: samples F @ 7

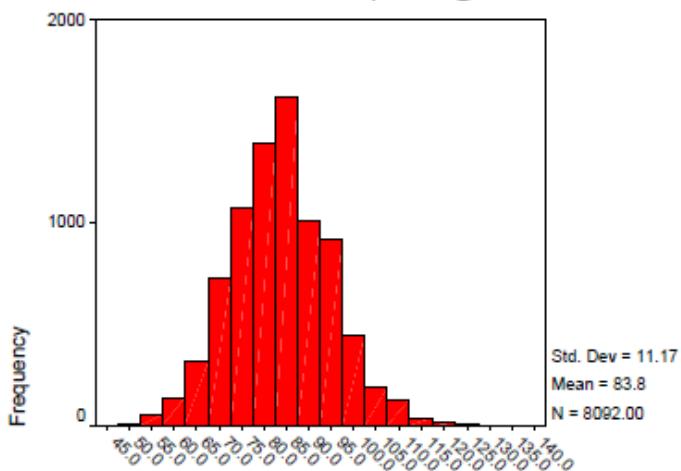
### 3.6.2. Pulse rate

F7SA023a Pulse 1: samples F @ 7



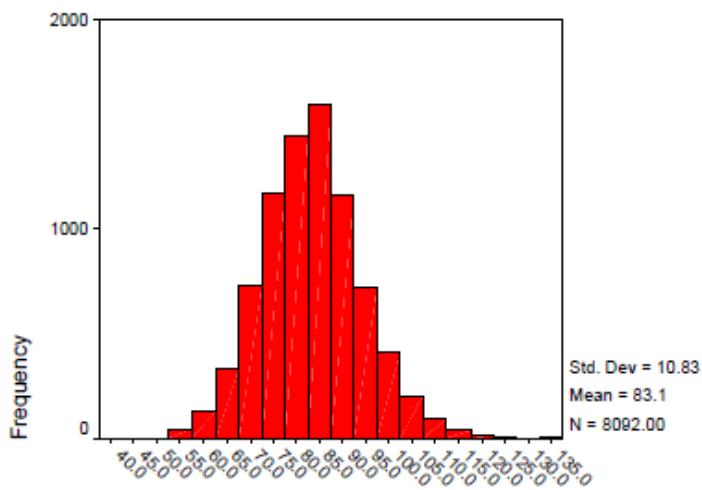
Pulse 1: samples F @ 7

F7sa023b Pulse 2: samples F @ 7



Pulse 2: samples F @ 7

F7SA023 Mean Pulse: samples F @ 7



Mean Pulse: samples F @ 7

The tester recorded the following information :

F7SA027: Child's demeanour during BP/pulse

F7SA028: Room temp

F7SA029: Which arm used BP/pulse

F7SA030: Which cuff used BP/pulse

### 3.6.3. Biological samples

Note was made of any infections or treatments current in the child (acute infection is known to affect ferritin levels), and of medications being used to treat them.

It is recognised that taking blood from children for research purposes is very different from taking it from sick children where the sample is essential to their care. For this study it was mandatory to:

- < Obtain the mother's or father's informed consent in writing before the sample was taken
- < Have the child's willingness to undergo the procedure
- < Ask the parent(s) to say if they wanted the blood-taker to stop taking the blood at any time (this removed some of the anxiety from both parents and staff)
- < Stop if the child asks the blood-taker to do so, or if the child became distressed

Staff were trained by the existing team of highly experienced blood-takers before working under their supervision. Permission was obtained from the parent for venepuncture while the child's blood pressure was being taken. After blood pressure had been recorded and providing consent was obtained, the tester gently explained the procedure and the use of EMLA (local anaesthetic) cream to the child. If any child (or parent) refused or objected at any stage, no further attempt was made to obtain a sample.

**F7SA050 Parents gave consent for blood taking: samples F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7236	87.2	88.2	88.2
	2 No	966	11.6	11.8	100.0
	Total	8202	98.9	100.0	
Missing	-9 Did not do samples	62	.7		
	-1 missing	33	.4		
	Total	95	1.1		
Total		8297	100.0		

Parents were asked several questions to determine whether it was appropriate to take blood, if the parent answered yes to any of the following questions blood was not taken:

1. Is your child allergic to local anaesthetic?
2. Has your child recently used or been given a local anaesthetic or related medicines?
3. Is your child taking any medication containing sulphonamides?
4. Is your child anaemic?
5. Does your child suffer from any clotting or bleeding disorders?
6. Does your child suffer from epilepsy?

The taking of blood was performed in two ten minute slots. In the first slot a vein was located using a tourniquet and 2.5g of EMLA was applied by the blood-taker at least 60 minutes before the blood was taken. The time of application was recorded. The child also selected a video to watch in the second session. Watching the video distracted the child as the sample was taken.

**F7SA051 EMLA cream applied: samples F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7059	85.1	86.2	86.2
	2 No	1129	13.6	13.8	100.0
	Total	8188	98.7	100.0	
Missing	-9 Did not do samples	62	.7		
	-1 missing	47	.6		
	Total	109	1.3		
Total		8297	100.0		

If EMLA cream was not applied, the tester recorded why (F7SA052). The time the EMLA cream was applied is recorded in F7SA053a/b.

In the second samples slot, if the child was happy to continue and 60 minutes had elapsed since the EMLA cream was applied, the cream was removed and the area was tested to reassure the child that their skin was numb. A tourniquet was applied and vein located. A butterfly needle was inserted once the child was settled watching their chose video. Three vacutainers of blood were taken: 7.5ml of clotted whole blood (white tube), 7.5ml in EDTA (large red tube) and 4.9ml EDTA (small red tube); a minimum of 2mls of blood was required for DNA extraction. Each tube had a bar-coded label to be stuck on. The red tubes were placed into a polybag and refrigerated while the white tube was place in a poly bag and kept at room temperature.

Blood Attempted	Variable label	Yes	No
Small red tube	F7SA060	5880 (71.4%)	2355 (28.6%)
Large red tube	F7SA061	5666 (68.8%)	2569 (31.2%)
White tube	F7SA062	5522 (67.1%)	2713 (32.9%)

A variable has been included from the biological samples team to denote whether any blood was obtained from the job (this was not recorded by the testers): F7SA055.

**F7SA055 Any blood sample obtained: samples F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	5871	70.8	71.3	71.3
	2 No	2364	28.5	28.7	100.0
	Total	8235	99.3	100.0	
Missing	-9 Did not do samples	62	.7		
	Total	8297	100.0		

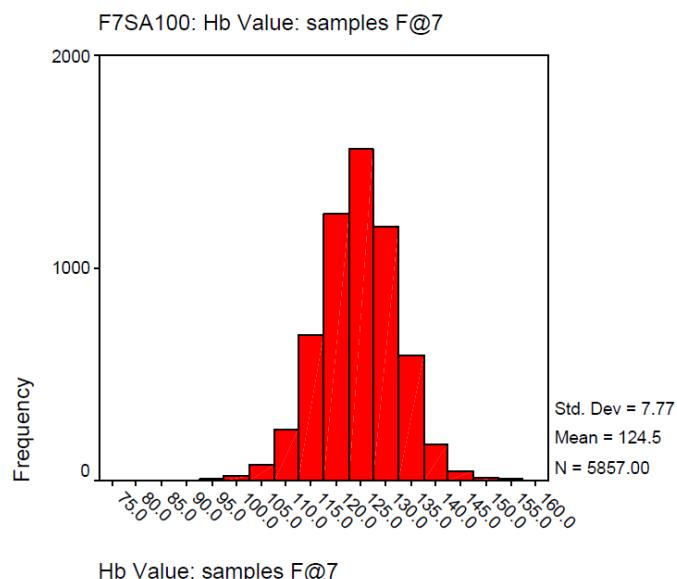
The tester recorded any reasons why blood was not taken or difficulties in obtaining blood (F7SA064). The time the blood samples was taken is recorded in F7SA065a/b.

Technicians from the laboratory nearby, in the Institute of Child Health visited the clinics twice daily to collect the blood samples. The small red EDTA tube was set aside for DNA extraction at Southmead Hospital. Each remaining blood sample was spun down and the red cells, buffy coat and plasma (or serum) aliquoted into a variety of different sized aliquots.

### Haemoglobin levels

At the Institute laboratory haemoglobin levels were measured using the Haemocue system from the large red EDTA tube (if this was not available then blood from the small red EDTA tube was used).

5889 had blood available for assay from one of the red EDTA tubes. Of these haemoglobin levels were obtained for 5857 (99.5%). For those who did not, the majority had an insufficient sample obtained, for reasons indicated in F7SA064.



If Haemoglobin was found to be below 9g/dl, a letter was sent to the parent explaining that their child appeared to be anaemic and that a check with their GP would be advised. A letter was enclosed for the parent to give to their GP explaining the situation.

### Saliva

For any child that did not wish to have blood taken, but for whom parental permission was obtained, mouth wash samples were collected for DNA analysis.

**F7SA070 Parents consent for saliva: samples F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	656	7.9	94.5	94.5
	2 No	16	.2	2.3	96.8
	3 child refused	22	.3	3.2	100.0
	Total	694	8.4	100.0	
Missing	-9 Did not do samples	62	.7		
	-1 missing	7541	90.9		
	Total	7603	91.6		
Total		8297	100.0		

**F7SA071 Saliva sample obtained: samples F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	614	7.4	93.2	93.2
	2 No	45	.5	6.8	100.0
	Total	659	7.9	100.0	
Missing	-9 Did not do samples	62	.7		
	-1 missing	7576	91.3		
	Total	7638	92.1		
Total		8297	100.0		

Any comments recorded in the session regarding the child's behaviour or any other relevant aspects of the session are coded in variable f7sa920.

### 3.7 Vision

(Please note: technical terms are explained in the glossary in section 3.7.13).

Visual tests were undertaken by trained orthoptists overseen by an ophthalmologist. A variety of procedures were undertaken to assess: visual acuity, ocular alignment, binocularly, contrast sensitivity, refractive error and accommodative facility. Part of the 'Please Bring' questionnaire was also dedicated to obtaining a family history of eye problems and previous contact with eye specialists (see Appendix 3)

The examinations were conducted in a room with a blackout blind or blacked out window. The tests were carried out under artificial light except for Worth's four-lights test and autorefraction for which the light was switched off. The room consisted of a desk and chair for the examiner with chairs for the child and carer placed next to it. When the first part of the assessment was finished the child would move to a swivel chair, so placed, so that it could be turned to face different tests without the child having to move again. There were also two extra chairs in the room for other accompanying adults or siblings.

At the beginning of each day the instruments were laid out and the Cannon Autorefractor was switched on allowing it time to fully 'warm up'. The ETDRS light screen was turned on but with the charts in the back compartment, as it would be left at the end of each examination to prevent the next child from seeing the chart at close range as they entered the room.

To decide which eye was tested first on the visual acuity test a list of random numbers was consulted. At the beginning of each day one six digit number was crossed off for each child expected and the datasheet marked accordingly: if the last digit of the random number was even or 0 then the right eye was tested first and the left eye if the last digit was odd.

When the child was collected from reception and being taken to the examination room, they were asked whether they wore glasses. The possible answers were yes, no or no longer. If yes, it was recorded whether the child had the glasses with them or not.

If the child was currently wearing glasses it was noted how many months it was since the last glasses check and also how much they were worn. The possible answers to this being constantly, at school, occasional or rarely. Constantly was defined as being >8 hours daily, at school 4-8 hours, occasional 2-4 hours and rarely 0-2 hours. It was also recorded if drops had been used when the child was refracted.

**F7VS001 Child entered Vision session: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	8042	96.9	96.9	96.9
	2 No	255	3.1	3.1	100.0
	Total	8297	100.0	100.0	

**F7VS001A Reason Child did not do Vision session**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 No staff	137	1.7	1.7	1.7
	2 Ch left early	13	.2	.2	1.8
	5 Ch did session	8042	96.9	98.2	100.0
	Total	8192	98.7	100.0	
Missing	-1 Missing	105	1.3		
Total		8297	100.0		

**F7VS002a and F7VS002b: Vision session start time: F7 – not summarised****F7VS004 Vision tester F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1114	13.4	13.9	13.9
	2	190	2.3	2.4	16.2
	3	102	1.2	1.3	17.5
	4	1121	13.5	13.9	31.4
	5	1972	23.8	24.5	55.9
	6	1534	18.5	19.1	75.0
	7	1107	13.3	13.8	88.8
	8	899	10.8	11.2	100.0
	9	3	.0	.0	100.0
	Total	8042	96.9	100.0	
Missing	-9 Did not do vision	255	3.1		
Total		8297	100.0		

**F7VS010 Child wears glasses: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 no glasses	7138	86.0	89.0	89.0
	2 yes in clinic	685	8.3	8.5	97.6
	3 yes not here	100	1.2	1.2	98.8
	4 no longer	95	1.1	1.2	100.0
	Total	8018	96.6	100.0	
Missing	-9 Did not do vision	255	3.1		
	-1 Missing	24	.3		
	Total	279	3.4		
Total		8297	100.0		

**F7VS011 If glasses, months since last check: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	8	.1	1.1	1.1
	1	146	1.8	20.5	21.7
	2	98	1.2	13.8	35.4
	3	95	1.1	13.4	48.8
	4	74	.9	10.4	59.2
	5	37	.4	5.2	64.4
	6	148	1.8	20.8	85.2
	7	16	.2	2.3	87.5
	8	11	.1	1.5	89.0
	9	12	.1	1.7	90.7
	10	10	.1	1.4	92.1
	11	9	.1	1.3	93.4
	12	36	.4	5.1	98.5
	13	1	.0	.1	98.6
	14	1	.0	.1	98.7
	16	1	.0	.1	98.9
	18	4	.0	.6	99.4
	19	1	.0	.1	99.6
	24	3	.0	.4	100.0
	Total	711	8.6	100.0	
Missing	-9 Did not do vision	255	3.1		
	-2 No glasses	7138	86.0		
	-1 missing	193	2.3		
	Total	7586	91.4		
	Total	8297	100.0		

**F7VS012 If glasses, how much worn: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 constant, >8hrs	281	3.4	40.3	40.3
	2 at school, 4-8hrs	246	3.0	35.3	75.6
	3 occasional, 2-4 hrs	86	1.0	12.3	87.9
	4 rarely, 0-2 hrs	84	1.0	12.1	100.0
	Total	697	8.4	100.0	
Missing	-9 Did not do vision	255	3.1		
	-2 No glasses	7138	86.0		
	-1 missing	207	2.5		
	Total	7600	91.6		
	Total	8297	100.0		

**F7VS013 If glasses, drops used for refraction: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 yes	360	4.3	53.8	53.8
	2 no	294	3.5	43.9	97.8
	3 dont know	15	.2	2.2	100.0
	Total	669	8.1	100.0	
Missing	-9 Did not do vision	255	3.1		
	-2 No glasses	7138	86.0		
	-1 missing	235	2.8		
	Total	7628	91.9		
Total		8297	100.0		

**3.7.1 Eye Laterality**

In each of the examination rooms three coloured boxes were standing on a table at the child's eye height. The tops of the boxes were made of a plastic material that allowed in light; otherwise they were constructed of wood. In the centre of the front panel was a keyhole, a different colour on each box, and on looking through the keyhole the child could see a room, different in each box.

When the child was first brought into the room they were asked to look into each of the three keyholes in turn and were asked a simple question about the contents of the box in order to maintain interest. The examiner noted which eye was used on each occasion, and recorded this by ticking the relevant box i.e. right, left, both or refused.

f7vs030: Red Box eye preference

f7vs031: Yellow Box eye preference

f7vs032: Green Box eye preference

**F7VS033 Summary of eye preference: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 R eye 3/3 times	4541	54.7	58.0	58.0
	2 R eye 2/3 times, L 1/3 times	127	1.5	1.6	59.7
	3 R eye 1/3 times, L 2/3 times	131	1.6	1.7	61.3
	4 L eye 3/3 times	2903	35.0	37.1	98.5
	5 Both eyes 3/3 times	18	.2	.2	98.7
	6 Both 1 or 2 times	97	1.2	1.2	99.9
	7 Refuse 3/3 times	6	.1	.1	100.0
	Total	7823	94.3	100.0	
Missing	-9 Did not do vision	255	3.1		
	-2 Not done	187	2.3		
	-1 Missing	32	.4		
	Total	474	5.7		
Total		8297	100.0		

The child and examiner then both sat down, with the examiner facing the child. The examiner noted whether there was any observable abnormality of the eyes or adnexae, and if so described it (this data is coded from text and available in variables F7VS240 to f7VS242).

**F7VS020 Observable abnormality: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 no	7795	93.9	97.5	97.5
	2 yes	198	2.4	2.5	100.0
	Total	7993	96.3	100.0	
Missing	-9 Did not do vision	255	3.1		
	-1 missing	49	.6		
	Total	304	3.7		
Total		8297	100.0		

The presence of an abnormal head posture was noted while the child fixed a near target, if yes, it was described (this data is coded from text and available in variables F7VS240 to f7VS242).

#### F7VS040 Abnormal head posture: vision F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 no	7933	95.6	99.6	99.6
	2 yes	35	.4	.4	100.0
	Total	7968	96.0	100.0	
Missing	-9 Did not do vision	255	3.1		
	-1 missing	74	.9		
	Total	329	4.0		
Total		8297	100.0		

#### 3.7.2 Cover/Uncover Test

Using a picture target, a cover/uncover test was carried out for near distance (33 cm) and far distance (6m) both with and without glasses, if worn. Each eye is covered up in turn, whilst the uncovered eye is observed. Any movement of the uncovered eye to take up fixation illustrates that it was misaligned prior to the cover being imposed. Due to the size of the room, the distance fixation target was viewed in a mirror. In each case, it was recorded whether there was no manifest deviation, an esotropia, an exotropia or a hypertropia. If a manifest deviation was present, it was noted whether it was right, left or alternating and whether it was constant or intermittent.

An alternate cover test was then carried out for near and far distance, again with and without glasses, if worn. In the same way the examiner recorded whether there was a latent deviation, an esophoria, an exophoria or a hyperphoria.

- f7vs042: CT (near, without): vision: F7
- f7vs043: CT (near, without) not NAD, SPCT in pd: vision: F7
- f7vs044: CT (near, without) not NAD, eye: vision: F7
- f7vs045: CT (near, without) not NAD, duration: vision: F7
- f7vs046: CT (near, without) not NAD, SPCT (with AHP): vision: F7
- f7vs047: CT (distance, without): vision: F7
- f7vs048: CT (distance, without) not NAD, SPCT in pd: vision: F7
- f7vs049: CT (distance, without) not NAD, eye: vision: F7
- f7vs050: CT (distance, without) not NAD, duration: vision: F7
- f7vs051: CT (distance, without) not NAD, SPCT (with AHP): vision: F7
- f7vs052: CT (near, with): vision: F7
- f7vs053: CT (near, with) not NAD, SPCT in pd: vision: F7
- f7vs054: CT (near, with) not NAD, eye: vision: F7
- f7vs055: CT (near, with) not NAD, duration: vision: F7
- f7vs056: CT (near, with) not NAD, SPCT (with AHP): vision: F7
- f7vs057: CT (distance, with): vision: F7
- f7vs058: CT (distance, with) not NAD, SPCT in pd: vision: F7
- f7vs059: CT (distance, with) not NAD, eye: vision: F7
- f7vs060: CT (distance, with) not NAD, duration: vision: F7
- f7vs061: CT (distance, with) not NAD, SPCT (with AHP): vision: F7
- f7vs062: Alternate CT (near, without): vision: F7
- f7vs063: Alternate CT (near, without) not NAD, PCT in pd: vision: F7

- f7vs064: Alternate CT (distance, without): vision: F7  
 f7vs065: Alternate CT (distance, without) not NAD, PCT in pd: vision: F7  
 f7vs066: Alternate CT (near, with): vision: F7  
 f7vs067: Alternate CT (near, with) not NAD, PCT in pd: vision: F7  
 f7vs068: Alternate CT (distance, with): vision: F7  
 f7vs069: Alternate CT (distance, with) not NAD, PCT in pd: vision: F7

**F7VS070 Manifest strabismus: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Esotropia	131	1.6	1.6	1.6
	2 Esotropia and hypertropia	13	.2	.2	1.8
	3 Exotropia	47	.6	.6	2.4
	5 Hypertropia, no horizontal element	5	.1	.1	2.4
	6 None	7834	94.4	97.6	100.0
	Total	8030	96.8	100.0	
Missing	-9 Did not do vision	255	3.1		
	-1 Missing	12	.1		
	Total	267	3.2		
Total		8297	100.0		

**F7VS071 Latent strabismus: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Esophoria	616	7.4	7.7	7.7
	3 Exophoria	1739	21.0	21.7	29.4
	4 Exophoria and hyperphoria	1	.0	.0	29.4
	5 Hyperphoria, no horizontal element	8	.1	.1	29.5
	6 None	5653	68.1	70.5	100.0
	Total	8017	96.6	100.0	
Missing	-9 Did not do vision	255	3.1		
	-1 Missing	25	.3		
	Total	280	3.4		
Total		8297	100.0		

Two variables have been derived (by Margaret Howard) representing binocular function (F7VS075) and the direction of deviation (F7VS076) as follows:

If all following variables = 1 then binocf =1 (Orthophoria)

- f7vs042  
 f7vs047  
 f7vs052  
 f7vs057  
 f7vs062

f7vs064  
f7vs066  
f7vs068

If f7vs042, f7vs047, f7vs052 and f7vs057 all = 1  
but one or more of f7vs062, f7vs064, f7vs066 or f7vs068 = 2, 3 or 4  
then binocf = 2 (latent strabismus)

If f7vs052 = 1 and f7vs057 = 2,3 or 4  
or  
if f7vs052 and f7vs057 = -3 (ie child not wearing glasses)  
and f7vs042 = 1 and f7vs047 = 2,3 or 4  
then binocf = 3 (BSV near/manifest distance)

If f7vs052 = 2,3 or 4 and f7vs057 = 1  
or  
if f7vs052 and f7vs057 = -3 (ie child not wearing glasses)  
and f7vs042 = 2,3 or 4 and f7vs047 = 1  
then binocf = 4 (manifest near/BSV distance)

If f7vs052 =1 and f7vs057 = 1  
and either or both f7vs042 and f7vs047 = 2,3 or 4  
then binocf = 5 (fully accom)

If f7vs042 and f7vs047 both = 2,3 or 4  
and neither f7vs052 or f7vs057 =1  
then binocf = 6 (manifest at all distances)

#### **f7vs075 Binocular function group: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Orthophoria	5633	67.9	70.0	70.0
	2 Heterophoria	2192	26.4	27.3	97.3
	3 BSV near/Manifest distance	30	.4	.4	97.7
	4 Manifest near/BSV distance	13	.2	.2	97.8
	5 Fully accommodative	33	.4	.4	98.2
	6 Manifest at all distances	125	1.5	1.6	99.8
	7 Cannot categorise - relevant data missing	16	.2	.2	100.0
	Total	8042	96.9	100.0	
	-9 Did not do vision	255	3.1		
Missing	Total	8297	100.0		

**f7vs076 Direction of deviation: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	.0	.0	.0
	1 NAD	5632	67.9	70.2	70.2
	2 Eso	630	7.6	7.9	78.1
	3 Exo	1730	20.9	21.6	99.7
	4 Hyper	6	.1	.1	99.7
	5 Mixed	21	.3	.3	100.0
	Total	8020	96.7	100.0	
Missing	-9 Did not do vision	255	3.1		
	-1 Unknown	22	.3		
	Total	277	3.3		
Total		8297	100.0		

**f7vs076 Direction of deviation: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 NAD	5632	67.9	70.2	70.2
	2 Eso	630	7.6	7.9	78.1
	3 Exo	1730	20.9	21.6	99.7
	4 Hyper	6	.1	.1	99.7
	5 Mixed	21	.3	.3	100.0
	Total	8019	96.6	100.0	
Missing	-9 Did not do vision	255	3.1		
	-1 Unknown	23	.3		
	Total	278	3.4		
Total		8297	100.0		

**3.7.3 Ocular movements**

Using a light, pursuit eye movements were examined and ocular alignment in all positions of gaze noted. Saccadic eye movements (vertical and horizontal) were checked using a picture target and light. The commoner abnormalities, inferior oblique overaction and end-point nystagmus, were coded. Any other defect was recorded as text.

**F7VS081 Combined Pursuit eye movements: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes (normal)	7416	89.4	92.4	92.4
	2 IO o/a	125	1.5	1.6	93.9
	3 End pt nystag	226	2.7	2.8	96.8
	4 Other	260	3.1	3.2	100.0
	Total	8027	96.7	100.0	
Missing	-9 Did not do vision	255	3.1		
	-1 Missing	15	.2		
	Total	270	3.3		
Total		8297	100.0		

\*IO o/a: Inferior oblique over-action    End pt nystag: Nystamus at extremes of gaze

**F7VS082A Saccadic eye movements normal (v.3): vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	6610	79.7	93.7	93.7
	2 IO o/a	74	.9	1.0	94.8
	3 end point nystag	149	1.8	2.1	96.9
	4 other	218	2.6	3.1	100.0
	Total	7051	85.0	100.0	
Missing	-9 Did not do vision	255	3.1		
	-2 not collected	969	11.7		
	-1 Missing	22	.3		
	Total	1246	15.0		
Total		8297	100.0		

\*IO o/a: Inferior oblique over-action    End pt nystag: Nystamus at extremes of gaze

**3.7.4 Prism Cover Tests**

These test the ability of the eye to fuse the images received from each eye. By placing a prism in front of one eye, the image perceived by that eye is displaced. If there is poor ability to fuse images, or if one eye does not see the target clearly, there may be abnormal or no compensatory eye movement.

**20 Dioptric Prism Test**

A base-out 20D prism was placed in front of the eye which displaces the image nasally. The examiner looked for an inward movement of the eye behind the prism. Most normally sighted children will make compensatory movements consisting of converging both eyes, the one behind the prism to the greater extent. A rapid recovery indicates good binocular function whereas a slow or delayed recovery suggests poor binocular function or perhaps an intermittent strabismus. This was carried out for near and

distance, with and without glasses and with abnormal head posture if present. A picture target was used and the measurement in prism dioptres was recorded on the data sheet.

**F7VS105 Combined 20D test R eye: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Normal	6718	81.0	83.6	83.6
	2 Overcome with diff	705	8.5	8.8	92.4
	3 Cant overcome	585	7.1	7.3	99.6
	4 Not done	29	.3	.4	100.0
	Total	8037	96.9	100.0	
Missing	-9 Did not do vision	255	3.1		
	-2 Not done	2	.0		
	-1 Missing	3	.0		
	Total	260	3.1		
Total		8297	100.0		

**F7VS106 Combined 20D test L eye: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Normal	6716	80.9	83.6	83.6
	2 Overcome with diff	705	8.5	8.8	92.3
	3 Cant overcome	587	7.1	7.3	99.6
	4 Not done	29	.3	.4	100.0
	Total	8037	96.9	100.0	
Missing	-9 Did not do vision	255	3.1		
	-2 Not done	2	.0		
	-1 Missing	3	.0		
	Total	260	3.1		
Total		8297	100.0		

#### F7VS107 Combined 20D test recovery: vision F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Both normal	7120	85.8	89.1	89.1
	2 R abnormal	131	1.6	1.6	90.7
	3 L abnormal	176	2.1	2.2	92.9
	4 Both abnormal	568	6.8	7.1	100.0
	Total	7995	96.4	100.0	
Missing	-9 Did not do vision	255	3.1		
	-2 Not done	15	.2		
	-1 Missing	32	.4		
	Total	302	3.6		
Total		8297	100.0		

### 3.7.5 Convergence

If the child wore glasses (see F7vs010), the test was carried out with the correction but not without. The child was shown the target with the line and central dot and asked to say "now" when the line "went double or jumped to one side". The examiner brought the target towards the child, noting to the nearest centimeter (rounding down, e.g. 7.5cm=7) at which point convergence failed, either because the child said "now" or because the examiner observed either eye deviating. This was repeated three times.

In each case, the near point of convergence in centimetres was recorded. The examiner also recorded whether, overall, convergence was maintained to that near point with ease or with effort and whether at the near point the child maintained the convergent position or whether the eyes deviated or the child appreciated diplopia or both.

- f7vs110 Convergence, converges to (cms), i: vision: F7
- f7vs111 Convergence, converges to (cms), ii: vision: F7
- f7vs112 Convergence, converges to (cms), iii: vision: F7
- f7vs113 Convergence, degree of control: vision: F7
- f7vs114: Loss of convergence: F7

Mean convergence (F7VS115) was calculated as the mean of F7VS110, F7VS111 and F7VS112.

Fatigue in convergence (F7VS116) was estimated as the difference between last and first measurements of the near points of convergence, i.e.  $F7VS116 = f7vs112 - f7vs110$ .

Maximum convergence (F7VS1175) was calculated as the maximum of F7VS110, F7VS111 and F7VS112.

### 3.7.6 Near Vision

This was carried out both with and without glasses, binocularly only. It would have been useful, especially in the case of amblyopes, to record the monocular near acuity but time constraints meant that this was not possible. The child was shown the near test types at 33 cm and asked to read the smallest type (N5), if this was not possible then the child was asked to try to read successive lines until the smallest type they could read was found. This result was recorded on the data sheet.

**F7VS120 Near vision (unaided): vision: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 N5	7857	97.7	98.8	98.8
	2 N8	63	.8	.8	99.6
	3 N10	9	.1	.1	99.7
	4 N12	10	.1	.1	99.8
	5 >N12	12	.1	.2	100.0
	Total	7951	98.9	100.0	
Missing	-2 not done	85	1.1		
	-1 missing	6	.1		
	Total	91	1.1		
Total		8042	100.0		

**F7VS126 Near vision (with glasses): vision: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 N5	614	7.6	7.6	7.6
	2 N8	11	.1	.1	7.8
	3 N10	1	.0	.0	7.8
	4 N12	1	.0	.0	7.8
	5 >N12	1	.0	.0	7.8
	6 not done	7413	92.2	92.2	100.0
Missing	Total	8041	100.0	100.0	
	-1 missing	1	.0		
Total		8042	100.0		

### 3.7.7 Accommodation

Accommodation is the ability of the lens of the eye to increase its focusing power and therefore enables a person to see very close objects clearly.

The test was carried out binocularly, both with and without glasses, and in each case was repeated three times. The near test type was brought up to 6 cm and the child was asked whether the line he could read at 33 cm was now blurred. If not the accommodation was recorded as 6 cm. If it was blurred then the test type was slowly

moved away and the child was asked to say "now" when the relevant line of print became clear enough to read. The near point of accommodation was noted to the nearest centimetre (rounding down, e.g. 7.5 cm = 7 cm

f7vs121: Point of accom (unaided) cm, i: vision: F7  
 f7vs122: Point of accom (unaided) cm, ii: vision: F7  
 f7vs123: Point of accom (unaided) cm, iii: vision: F7  
 f7vs124: Mean accom (unaided): vision: F7  
 f7vs125: Fatigue in accom (unaided): vision F7  
 f7vs126: Near vision (with glasses): vision F7'  
 f7vs127: Point of accom (with glasses) cm, i: vision: F7  
 f7vs128: Point of accom (with glasses) cm, ii: vision: F7  
 f7vs129: Point of accom (with glasses) cm, iii: vision: F7  
 f7vs130: Mean accom (with glasses): vision: F7  
 f7vs131: Fatigue in accom (with glasses): vision F7  
 f7vs132: Maximum accomodation (unaided): vision: F7  
 f7vs133: Maximum accomodation (aided): vision: F7  
 f7vs134: Effect of glasses on accomodation: vision: F7

### 3.7.8 Stereopsis

This was measured using the Randot Stereotest. This book test uses polarizing spectacles to dissociate the eyes and has a number of pictures of varying perceived 'depth'.

The child was given the polarised glasses to wear, over their own glasses if worn, and asked first to look at the animals and then the circles. If the child could correctly identify the forward projecting circle in the first triplet, successive triplets were tried until the child said that they could not find the next one or made a mistake. The previous triplet was checked again and then the next one. If they still could not proceed, the previous triplet was taken as their stereoacuity. If they proceeded accurately, they were tested on successive triplets until they made a mistake, when the checking procedure was repeated.

If they could not see any triplets or animals, then the Randot Preschool test (Book 3) was used. The child was asked to identify the black and white pictures, and then to look at the stereograms. If they could identify correctly two of the pictures in the "800" sec/arc (lower) set of stereograms, their stereoacuity was scored as 800. If they could pass at 800, they were tested on the 400 pictures. If they passed at that, the Randot circles were tried again. If they still could not get any circles or animals or geometric shapes, they were scored as having 800 sec/arc. If on retesting they were correct on some part of the Randot test correct, they were scored accordingly. If they could not see even the 800 sec/arc targets on the Randot Preschool test, they were scored as ST1. "0001" (could not see).

**F7VS135 Randot test result (sec/arc): vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20	2388	28.8	30.3	30.3
	25	1181	14.2	15.0	45.2
	30	1622	19.5	20.6	65.8
	35	4	.0	.1	65.8
	40	1043	12.6	13.2	79.1
	50	752	9.1	9.5	88.6
	60	1	.0	.0	88.6
	70	741	8.9	9.4	98.0
		72	.9	.9	98.9
	140	22	.3	.3	99.2
	200	32	.4	.4	99.6
	250	1	.0	.0	99.6
	400	30	.4	.4	100.0
	800	1	.0	.0	100.0
Missing	Total	7890	95.1	100.0	
	-9 Did not do vision	255	3.1		
	-2 Not done	152	1.8		
	Total	407	4.9		
Total		8297	100.0		

**F7VS136 Reason Randot not done : vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 couldnt see	122	1.5	80.3	80.3
	2 no goggles	1	.0	.7	80.9
	3 other refusal	8	.1	5.3	86.2
	4 other	21	.3	13.8	100.0
	Total	152	1.8	100.0	
Missing	-9 Did not do vision	255	3.1		
	-1 Test completed	7890	95.1		
	Total	8145	98.2		
Total		8297	100.0		

**3.7.9 Visual Acuity**

This was measured using the LogMAR test or the Cardiff Cards

### 3.7.9.1 LogMAR

This test was carried out with glasses if prescribed (unless not worn for six months or more). Time constraints meant that the test could not be carried out with and without glasses, this was disappointing to some parents who wanted to see how much difference the glasses made to visual acuities. The layout of the data sheet also meant that a binocular acuity could not be recorded which would have been relevant in children with nystagmus.

The child was seated on the chair four metres from the light box. The appropriate eye was occluded with a patch and ETDRS chart 1 placed on the light box. The child was asked whether they knew the alphabet and if not the carer was asked to sit near them with a matching card. The tester explained that some of the letters were very small and that if the child was not sure it was important to guess.

The child was then asked to read (or match) the first letter on each row and to go as far down the chart as possible. When they reached the point where they were unsure or made a mistake they were taken back up two rows and asked to read across the row, letter by letter, with the examiner marking off each letter seen on the datasheet. If the child did not read the whole row correctly then the next row up was tested until there was one line fully correct. The child was then asked to continue reading down the chart. If the child read a letter incorrectly (e.g. V for Y) the examiner could check with a large letter whether the child knew the correct name for that letter, otherwise any errors were noted by not crossing off that letter. If one letter on a line was seen, all the rest were attempted. If a child said that they were not sure, they were encouraged to guess.

Testing continued until they read a whole line wrong. A small number of children found guessing difficult or even stressful and some completely refused to guess at all. This was recorded in the 'comments' section by the examiner.

The test was then repeated using the same chart but with the child holding up a pinhole. It was sometimes difficult where the child had a short attention span to maintain their interest through this part of the test.

The child was then turned through 180 degrees to face the Pelli-Robson charts (see 10.15.) and contrast sensitivity was measured on the first eye. He was then turned back to face the ETDRS chart and the second eye was occluded. The ETDRS chart 2 was now used and the whole testing procedure repeated, including the pinhole.

If the child could not see any of the ETDRS letters, the chair was moved to 2m, 1m or 0.5m until at least the largest letters could be seen

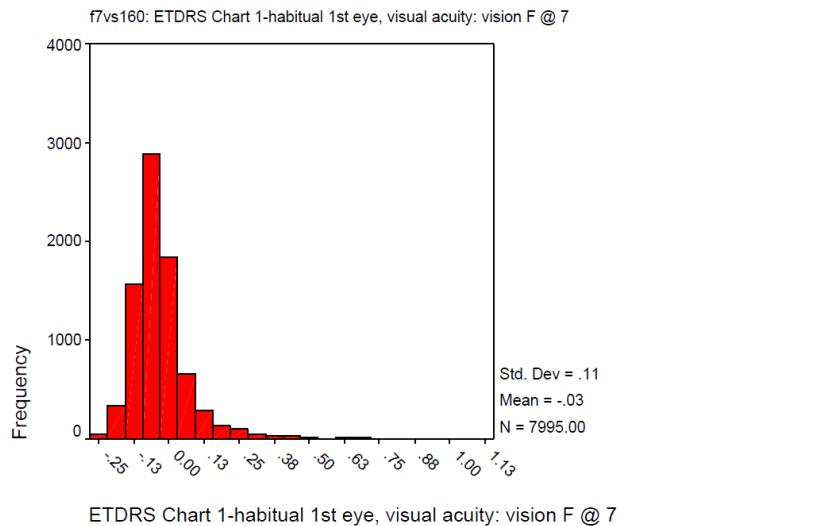
The examiner recorded whether glasses were worn, whether a matching card was used and the test distance used for each eye. The ETDRS charts were reproduced on the data sheet and the examiner marked off each letter read correctly below the lowest fully correct line. At the end of the session the number of letters in each column not seen, below that line, were counted. It was also recorded whether each part of the test, i.e. with and without pinhole, had been fully or partly completed.

Visual acuity for each test was later calculated according to the formula:

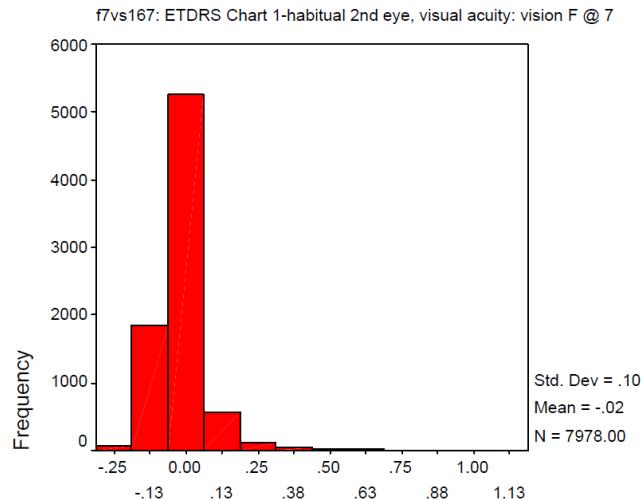
$$VA = -0.3 \times (\text{total errors} \times 0.02)$$

Also calculated was the 'best' visual acuity for each eye, which was the best (smallest) value and 'habitual' and 'habitual + pinhole'. This best acuity is intended as an estimate for the best corrected acuity for that eye.

f7vs141: Amalgamated test distance 1st eye: vision: F7  
 f7vs142: Amalgamated test distance 2nd eye: vision: F7  
 f7vs150: Test distance (m), (if not 4m) (v.1+2): vision: F7  
 f7vs151: Matching card used: vision: F7  
 f7vs152: Habitual state tested: vision: F7  
 f7vs153: Eye tested first: vision: F7  
 f7vs154: ETDRS Chart 1-habitual 1st eye (a): vision: F7  
 f7vs155: ETDRS Chart 1-habitual 1st eye (b): vision: F7  
 f7vs156: ETDRS Chart 1-habitual 1st eye (c): vision: F7  
 f7vs157: ETDRS Chart 1-habitual 1st eye (d): vision: F7  
 f7vs158: ETDRS Chart 1-habitual 1st eye (e): vision: F7  
 f7vs159: ETDRS Chart 1-habitual 1st eye, completion: vision: F7

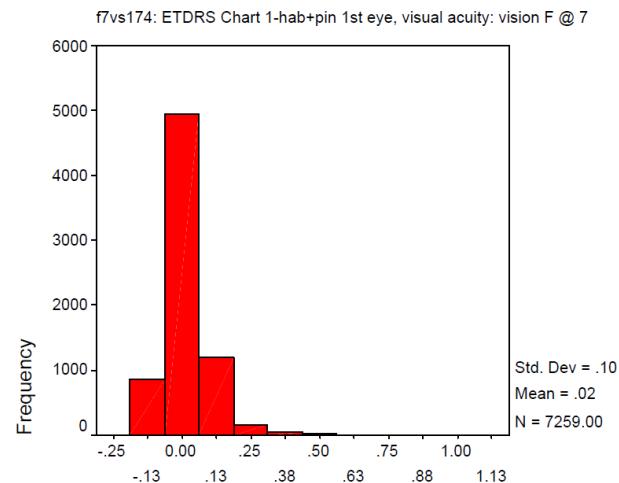


f7vs161: ETDRS Chart 1-habitual 2nd eye (a): vision: F7  
 f7vs162: ETDRS Chart 1-habitual 2nd eye (b): vision: F7  
 f7vs163: ETDRS Chart 1-habitual 2nd eye (c): vision: F7  
 f7vs164: ETDRS Chart 1-habitual 2nd eye (d): vision: F7  
 f7vs165: ETDRS Chart 1-habitual 2nd eye (e): vision: F7  
 f7vs166: ETDRS Chart 1-habitual 2nd eye, completion: vision: F7



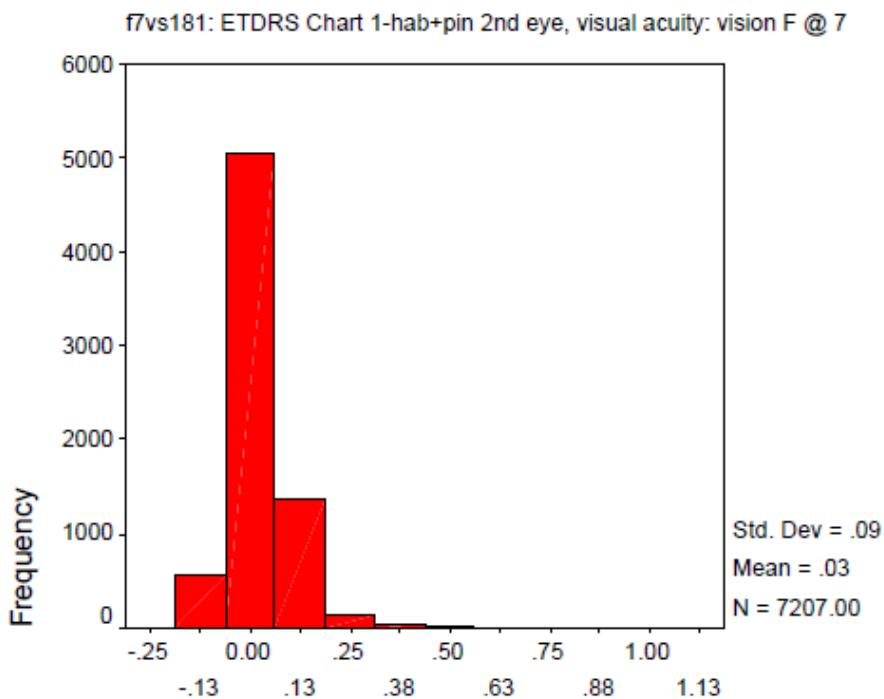
ETDRS Chart 1-habitual 2nd eye, visual acuity: vision F @ 7

- f7vs168: ETDRS Chart 1-hab+pin 1st eye (a): vision: F7
- f7vs169: ETDRS Chart 1-hab+pin 1st eye (b): vision: F7
- f7vs170: ETDRS Chart 1-hab+pin 1st eye (c): vision: F7
- f7vs171: ETDRS Chart 1-hab+pin 1st eye (d): vision: F7
- f7vs172: ETDRS Chart 1-hab+pin 1st eye (e): vision: F7
- f7vs173: ETDRS Chart 1-hab+pin 1st eye, completion: vision: F7

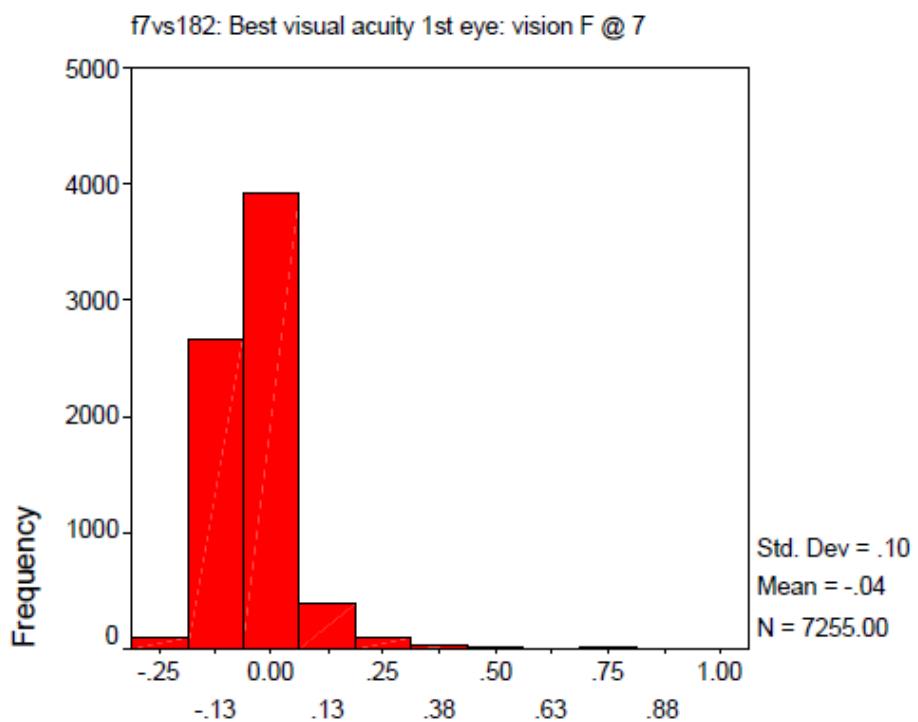


ETDRS Chart 1-hab+pin 1st eye, visual acuity: vision F @ 7

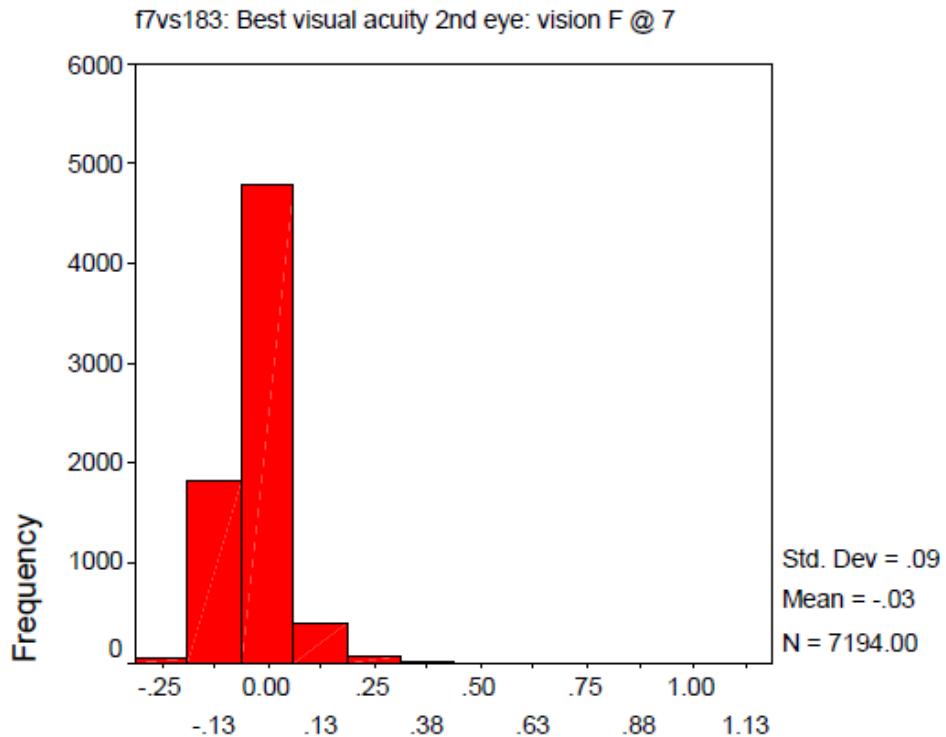
- f7vs175: ETDRS Chart 1-hab+pin 2nd eye (a): vision: F7
- f7vs176: ETDRS Chart 1-hab+pin 2nd eye (b): vision: F7
- f7vs177: ETDRS Chart 1-hab+pin 2nd eye (c): vision: F7
- f7vs178: ETDRS Chart 1-hab+pin 2nd eye (d): vision: F7
- f7vs179: ETDRS Chart 1-hab+pin 2nd eye (e): vision: F7
- f7vs180: ETDRS Chart 1-hab+pin 2nd eye, completion: vision: F7



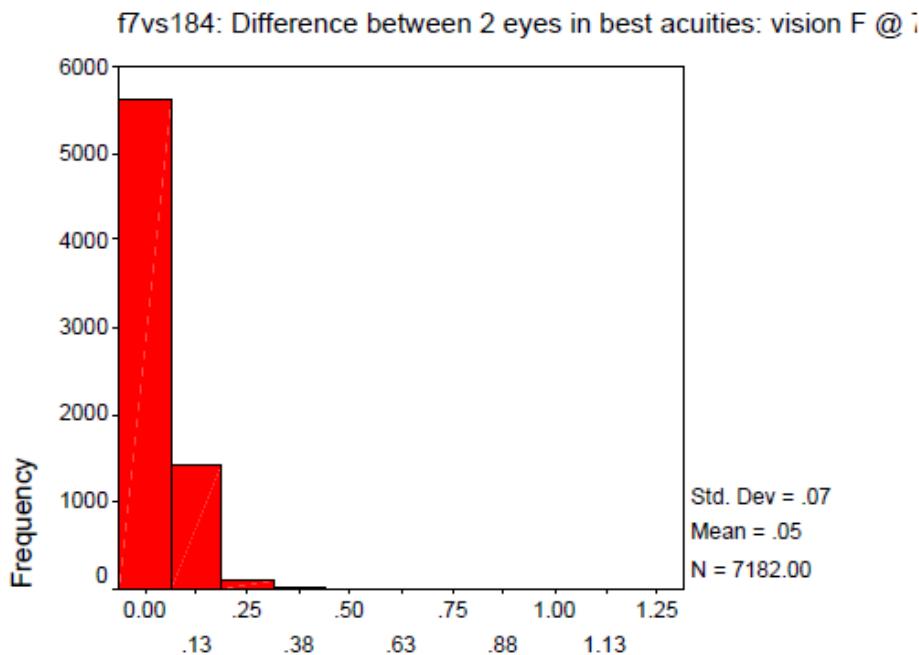
ETDRS Chart 1-hab+pin 2nd eye, visual acuity: vision F @ 7



Best visual acuity 1st eye: vision F @ 7



Best visual acuity 2nd eye: vision F @ 7

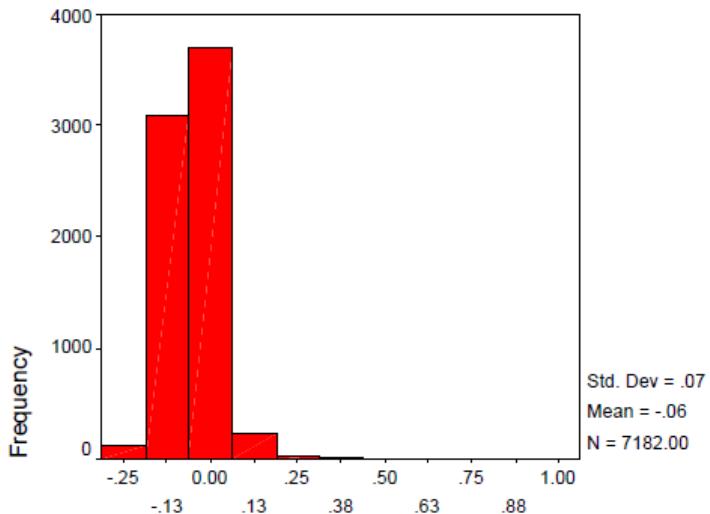


Difference between 2 eyes in best acuities: vision F @ 7

f7vs185: Effect of pinhole 1st eye: vision: F7

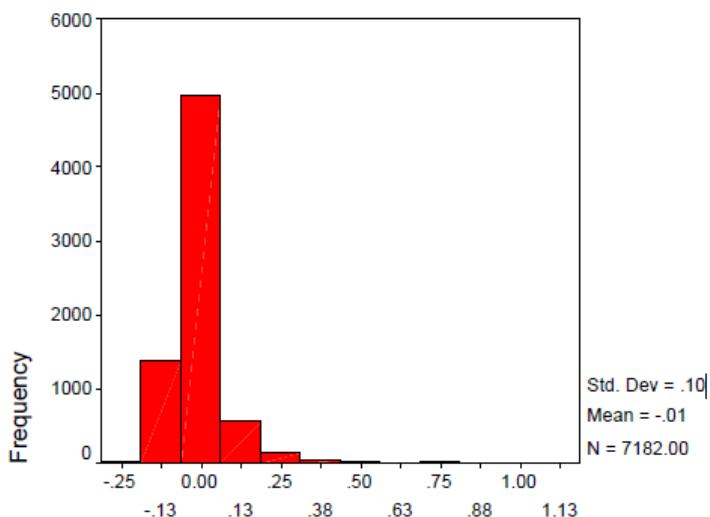
f7vs186: Effect of pinhole 2nd eye: vision: F7

f7vs187: Best visual acuity: vision F @ 7



Best visual acuity: vision F @ 7

f7vs188: Worst visual acuity: vision F @ 7



Worst visual acuity: vision F @ 7

f7vs189: Habitual crowding in 1st eye: vision: F7

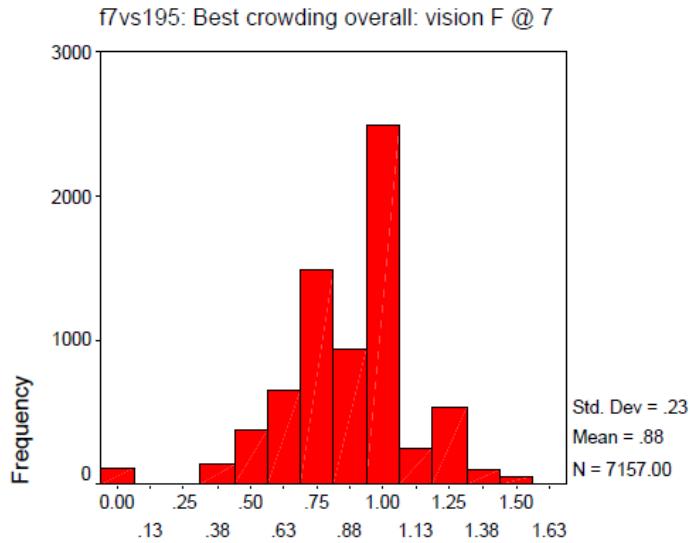
f7vs190: Habitual crowding in 2nd eye: vision: F7

f7vs191: Hab+pinhole crowding in 1st eye: vision: F7

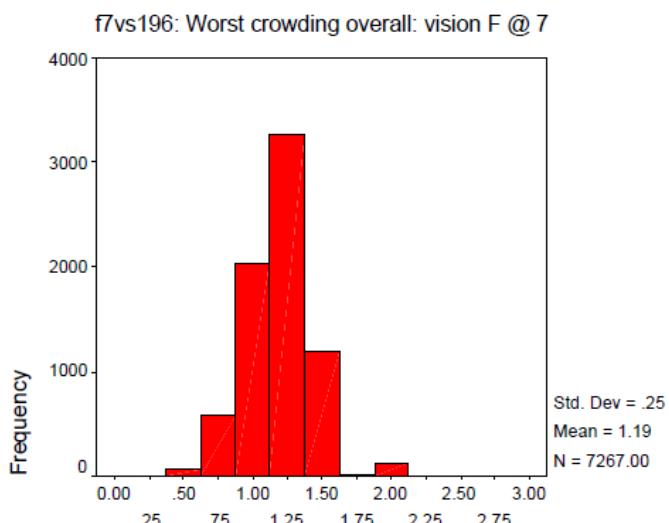
f7vs192: Hab+pinhole crowding in 2nd eye: vision: F7

f7vs193: Best crowding 1st eye: vision: F7

f7vs194: Best crowding 2nd eye: vision: F7



Best crowding overall: vision F @ 7



Worst crowding overall: vision F @ 7

### 3.7.9.2 Cardiff Cards

Children who were behaviourally unable to do the letter based ETDRS test (even using a matching card) were tested with the Cardiff cards. These are A4 sized cards with a grey background and lack & white pictures of varying sizes on either the top or the bottom of the card. The examiner holds the card 1 metre in front of the child and predicts from the child's eye movements whether the picture is at the top or bottom of the card. Successful prediction of where the picture is 2 out of 3 times means the next smallest picture is shown, until the child's eye movements no longer indicate the site of the picture.

This test was used at a distance of 1m and the smallest acuity level at which the child could identify the location of all three pictures was noted.

**F7VS200 Cardiff cards R eye: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.1	1	.0	5.3	5.3
	.3	2	.0	10.5	15.8
	.4	1	.0	5.3	21.1
	.5	1	.0	5.3	26.3
	.6	2	.0	10.5	36.8
	.7	1	.0	5.3	42.1
	9.9	11	.1	57.9	100.0
	Total	19	.2	100.0	
Missing	-9.0 Did not do vision	255	3.1		
	-1.0 missing	8023	96.7		
	Total	8278	99.8		
Total		8297	100.0		

**F7VS201 Cardiff cards L eye: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.1	1	.0	5.0	5.0
	.3	2	.0	10.0	15.0
	.4	2	.0	10.0	25.0
	.5	1	.0	5.0	30.0
	.6	1	.0	5.0	35.0
	.7	1	.0	5.0	40.0
	9.9	12	.1	60.0	100.0
	Total	20	.2	100.0	
Missing	-9.0 Did not do vision	255	3.1		
	-1.0 missing	8022	96.7		
	Total	8277	99.8		
Total		8297	100.0		

**3.7.10 Contrast Sensitivity**

This was measured using the Pelli-Robson chart.

Contrast sensitivity is the ability to perceive differences in contrast over the spectrum of spatial frequencies. The Pelli-Robson is a commercially available test consisting of an 86 cm x 63 cm chart containing 16 groups of uppercase Sloan letters of a constant size

(4.9 cm x 4.9 cm). On each line there are two groups, each containing three letters. At the recommended test distance of 1 metre, each letter subtends an angle of 3 degrees. Within each triplet, the letters have the same contrast and the contrast of all the letters in the first of these triplets is 100%. The contrast of each subsequent group is reduced by a factor of 0.707 (0.15 log unit). There are two charts each containing a series of different letters in this format. (4)

The Pelli-Robson chart was not used unless vision was at least 6/60, and the test was carried out with glasses if prescribed (unless not worn for six months or more).

After the visual acuity of the first eye had been measured, the child was turned through 180 degrees to face the Pelli-Robson chart 1. He was again asked to name (or match) the letters on the first chart, guessing if unsure, until a whole triplet was guessed wrongly. An intermediate triplet where all letters were seen was used a starting point. The individual letters seen were marked off on the datasheet. The visual acuity of the second eye was then measured, followed by the contrast sensitivity on that eye.

A score was measured by counting all the letters not seen after the final fully correct triplet.

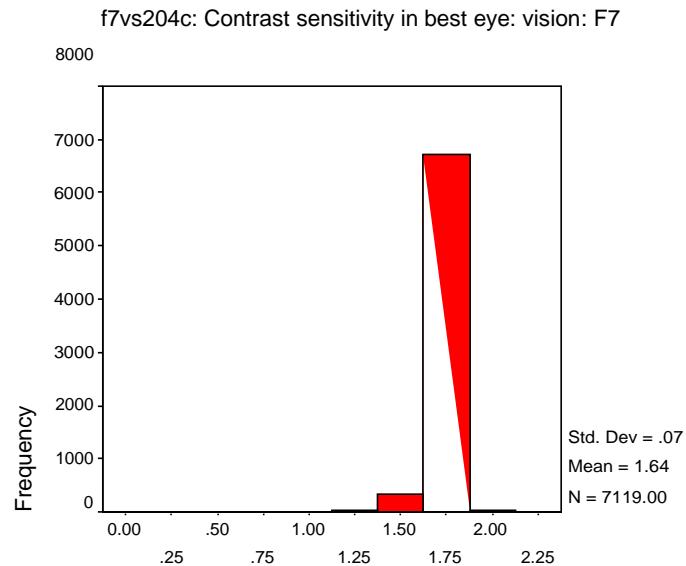
F7vs202: Pelli R. errors in contrast 1st eye: vision: F7

F7vs203: Pelli R. errors in contrast 2nd eye: vision: F7

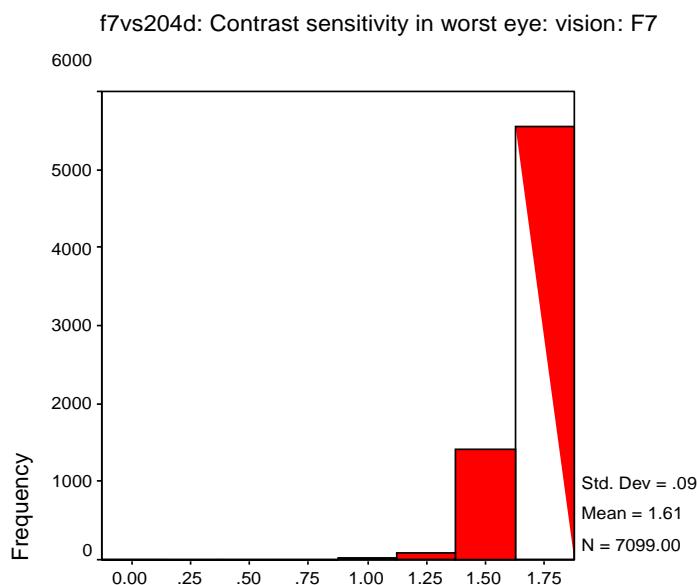
F7vs204: Pelli R. matching card used: vision: F7

F7vs204a : Contrast sensitivity in 1st eye: vision: F7

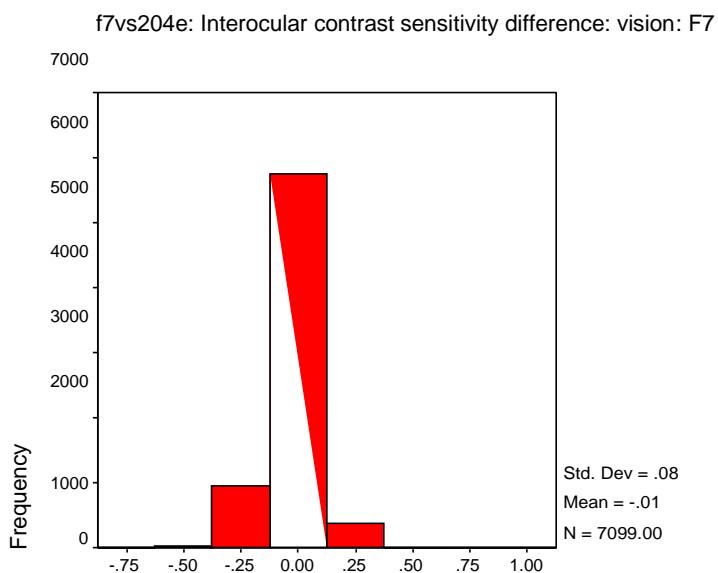
F7vs204b: Contrast sensitivity in 2nd eye: vision: F7



Contrast sensitivity in best eye: vision: F7



Contrast sensitivity in worst eye: vision: F7



Interocular contrast sensitivity difference: vision: F7

### 3.7.10 Worth's four dots test.

This test is used to demonstrate sensory fusion, the ability to appreciate two similar images, one with each eye, and to interpret them as one. The four lights consist of one red, one white and two green. The subject wears red/green goggles, the red before the right eye, which means that the red and white lights are seen by the right eye, the two green and the white by the left eye. This test is carried out at near and far distance. If four lights are seen at any distance then fusion is present. Two or three lights indicate suppression and five either weak or absent fusion.

This was carried out with glasses if worn. The room lights were turned off and red/green goggles were put on the child. S/he was shown the distance test and asked how many /he could see. If four, s/he was asked about the colour of the top (i.e. white) light and the reply was noted in the datasheet, i.e. red, green or red and green. If two, three or five lights were seen the child was asked what colours they were as a check that the answer made sense. An intermittent response was also recorded, e.g. if the child reported that the number changed from 4 to 5. The test was then repeated for near fixation, in this case the white light being at the bottom.

No allowance was made for children who were colour blind as the number of dots seen is the key not their colour.

F7vs090: 4 dot test at distance, pattern seen: vision: F7

F7vs091: 4 dot test at near, pattern seen: vision: F7

F7vs097: 4 dot test, at distance, main response (v.3): vision: F7

F7vs098: 4 dot test, at distance, interm response (v.3): vision: F7

F7vs099: 4 dot test, at distance, colour bottom dot (v.3): vision: F7

F7vs100: 4 dot test, at near, main response (v.3): vision: F7

F7vs101: 4 dot test, at near, interm response (v.3): vision: F7

F7vs102: 4 dot test, at near, colour bottom dot (v.3): vision: F7

#### F7VS103 Combined 4 dot test, at distance: vision F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	105	1.3	1.7	1.7
	3	81	1.0	1.3	3.0
	4	5943	71.6	95.9	98.9
	5	70	.8	1.1	100.0
	Total	6199	74.7	100.0	
Missing	-9 Did not do vision	255	3.1		
	-2 Not done	1826	22.0		
	-1 Missing	17	.2		
	Total	2098	25.3		
Total		8297	100.0		

**F7VS104 Combined 4 dot test, at near: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	245	3.0	3.7	3.7
	3	78	.9	1.2	4.9
	4	5856	70.6	88.4	93.2
	5	449	5.4	6.8	100.0
	Total	6628	79.9	100.0	
Missing	-9 Did not do vision	255	3.1		
	-2 Not done	1385	16.7		
	-1 Missing	29	.3		
	Total	1669	20.1		
Total		8297	100.0		

### 3.7.11 Autorefraction

This was carried out using the Canon R50 autorefractor.

Still with the lights off the child was seated at the autorefractor. Any glasses were taken off and the child asked to put his chin on the chin rest and forehead against the bar. Monocular measurements were then taken three times with each eye, in order to obtain an average, which was the entered value. If the child wore glasses the “over-refraction” button was pressed and the measurements repeated with the glasses. The printout was stapled to the datasheet and the average entered in the appropriate box on the datasheet. It was also recorded whether the child wore bifocals and whether the present glasses were the most recent pair.

f7vs205: Autoref R eye, sphere: vision: F7  
 f7vs206: Autoref R eye, plus cylinder: vision: F7  
 f7vs207: Autoref R eye, axis: vision: F7  
 f7vs208: Autoref R eye, spherical equiv: vision: F7  
 f7vs209: Autoref R eye, completion code (v.2+3): vision: F7  
 f7vs210: Autoref L eye, sphere: vision: F7  
 f7vs211: Autoref L eye, plus cylinder: vision: F7  
 f7vs212: Autoref L eye, axis: vision: F7  
 f7vs213: Autoref L eye, spherical equiv: vision: F7  
 f7vs214: Autoref L eye, completion code (v.2+3): vision: F7  
 f7vs215: Anisometropia (sphere): vision: F7  
 f7vs216: Anisometropia (spherical equiv): vision: F7  
 f7vs217: Over-ref R eye, sphere (v.2+3): vision: F7  
 f7vs218: Over-ref R eye, plus cylinder (v.2+3): vision: F7  
 f7vs219: Over-ref R eye, axis (v.2+3): vision: F7  
 f7vs220: Over-ref R eye, completion code (v.2+3): vision: F7  
 f7vs221: Over-ref L eye, sphere (v.2+3): vision: F7  
 f7vs222: Over-ref L eye, plus cylinder (v.2+3): vision: F7  
 f7vs223: Over-ref L eye, axis (v.2+3): vision: F7  
 f7vs224: Over-ref L eye, completion code (v.2+3): vision: F7  
 f7vs225: Bifocals, reading add present: vision: F7

### Finishing the vision session

When all the tests had been completed the parent was given a brief summary of the results and any eligible child (manifest strabismus or best visual acuity having a value of 0.2 or less for either eye) was asked back for a second vision test. If the child or carer preferred not to attend again then details of where they had previously seen for eye examinations was entered on the form. Any other relevant ophthalmic comments could also be added. The child's booklet was filled in and placed back with the paperwork that went round to all the sessions with the child.

**F7VS230 Approach for future visit to eye hospital: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 no	146	1.8	25.9	25.9
	2 yes	418	5.0	74.1	100.0
	Total	564	6.8	100.0	
Missing	-9 Did not do vision	255	3.1		
	-1 missing	7478	90.1		
	Total	7733	93.2		
Total		8297	100.0		

### 3.7.12 Questionnaire

A questionnaire was sent to the carer some time before the visit, which they were asked to complete and bring with them on the day. It consisted partly of questions about visual problems and partly about the child's diet, which was discussed during the allergy session. The vision questionnaire consisted of six main questions A1 to A6. At the end of the vision session the Examiner went through the questionnaire with the carer, answering any queries and checking that the questions had been understood, and making amendments (with the carer's consent) if necessary e.g. sometimes there was confusion between squint and 'lazy eye' and also some parents omitted to mention that the child had attended an Optometrist.

A.1. The carer was asked whether any blood relation of the study child had ever had a squint (described as a "turn" in one eye) or a lazy eye (described as an eye that does not see well even with glasses, or for which patching treatment had been given). If the answer was yes, then the next question was about the relationship of that person to the child, i.e. mother, father, brother/sister, uncle/aunt, cousin, grandparent or any other. The answers were separated for squint and lazy eye.

- f7vs250: Blood relation has a squint: vision (q): F7
- f7vs251: Blood relation has a lazy eye: vision (q): F7
- f7vs252: Mother has a squint: vision (q): F7
- f7vs253: Father has a squint: vision (q): F7
- f7vs254: Brother/sister has a squint: vision (q): F7
- f7vs255: Uncle/aunt has a squint: vision (q): F7
- f7vs256: Cousin has a squint: vision (q): F7
- f7vs257: Grandparent has a squint: vision (q): F7
- f7vs258: Other relative has a squint: vision (q): F7
- f7vs259: Mother has a lazy eye: vision (q): F7
- f7vs260: Father has a lazy eye: vision (q): F7
- f7vs261: Brother/sister has a lazy eye: vision (q): F7
- f7vs262: Uncle/aunt has a lazy eye: vision (q): F7
- f7vs263: Cousin has a squint: lazy eye (q): F7
- f7vs264: Grandparent has a lazy eye: vision (q): F7
- f7vs265: Other relative has a lazy eye: vision (q): F7

Variables have been derived indicating whether a first degree or second degree relative has a squint or lazy eye. First degree relative defined as mother, father or sibling; second degree relative defined as uncle/aunt, grandparent or cousin.

**F7VS266A 1st degree relative has squint: vision (q) F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 Yes	749	9.0	9.3	9.3
	2.00 No	7293	87.9	90.7	100.0
	Total	8042	96.9	100.0	
Missing	-9.00 Did not do vision	255	3.1		
Total		8297	100.0		

**F7VS267A 1st degree relative has a lazy eye: vision (q) F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 Yes	836	10.1	10.4	10.4
	2.00 No	7206	86.9	89.6	100.0
	Total	8042	96.9	100.0	
Missing	-9.00 Did not do vision	255	3.1		
Total		8297	100.0		

**F7VS266B 2nd degree relative has squint: vision (q) F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 Yes	943	11.4	11.7	11.7
	2.00 No	7099	85.6	88.3	100.0
	Total	8042	96.9	100.0	
Missing	-9.00 Did not do vision	255	3.1		
Total		8297	100.0		

**F7VS267B 2nd degree relative has a lazy eye: vision (q) F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 Yes	869	10.5	10.8	10.8
	2.00 No	7173	86.5	89.2	100.0
	Total	8042	96.9	100.0	
Missing	-9.00 Did not do vision	255	3.1		
Total		8297	100.0		

**F7VS268 1st degree relative has squint or lazy eye: vision (q) F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 Yes	1306	15.7	16.2	16.2
	2.00 No	6736	81.2	83.8	100.0
	Total	8042	96.9	100.0	
Missing	-9.00 Did not do vision	255	3.1		
Total		8297	100.0		

**F7VS269 2nd degree relative has squint or lazy eye: vision (q) F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 Yes	1476	17.8	18.4	18.4
	2.00 No	6566	79.1	81.6	100.0
	Total	8042	96.9	100.0	
Missing	-9.00 Did not do vision	255	3.1		
	Total	8297	100.0		

A.2. This question was whether anyone had ever thought that the study child had an eye problem. If the answer was yes, then the next question covered who this was. The possible answers being Parent, GP, Health Visitor, Orthoptist at a screening clinic, Teacher, Relative/friend, School nurse, Orthoptist at Children in Focus clinic or any other.

- f7vs270: Anyone thought child has/had eye problem: vision (q): F7  
 f7vs271: Mum/partner thought Child had eye problem: vision (q): F7  
 f7vs272: GP thought Child had eye problem: vision (q): F7  
 f7vs273: Health visitor thought Child had eye problem: vision (q): F7  
 f7vs274: Orthoptist at screening clinic thought Child had eye problem: vision (q): F7  
 f7vs275: Teacher thought Child had eye problem: vision (q): F7  
 f7vs276: Relative/friend thought Child had eye problem: vision (q): F7  
 f7vs277: School nurse thought Child had eye problem: vision (q): F7  
 f7vs278: Children of the 90s thought Child had eye problem: vision (q): F7  
 f7vs279: Other person thought Child had eye problem: vision (q): F7  
 f7vs280: Other person who thought Ch had eye problem: vision (q): F7

A.3. This covered whether the child had ever been seen by an eye specialist and if yes where and for how many visits. The locations might be at a Health Centre/Clinic, Bristol Eye Hospital, an Eye clinic in another hospital, an Optician's or Optometrist's shop, a private Eye doctor or Ophthalmologist or any other place.

- f7vs290: Ever seen an eye specialist: vision (q): F7  
 f7vs291: Been to health centre/clinic: vision (q): F7  
 f7vs292: No visits to health centre: vision (q) : F7  
 f7vs293: Been to BEH: vision (q): F7  
 f7vs294: No visits to BEH: vision (q): F7  
 f7vs295: Been to Eye clinic in other hospital: vision (q): F7  
 f7vs296: No visits to eye clinic in other hospital: vision (q): F7  
 f7vs297: Been to Opticians: vision (q): F7  
 f7vs298: No visits to opticians: vision (q): F7  
 f7vs299: Been to private eye Dr: vision (q): F7  
 f7vs300: No visits to private eye Dr: vision (q): F7  
 f7vs301: Been to Other place: vision (q): F7  
 f7vs302: No visits to other place: vision (q): F7

A.4. This question asked if any one had needed to take time off work to take the child on these visits and if so who that was and for how many hours.

- f7vs305: Anyone taken time off work to take child to eye specialist: vision (q): F7
- f7vs306: Mother taken time off: vision (q): F7
- f7vs307: No hours mother taken off: vision (q): F7
- f7vs308: Father taken time off: vision (q): F7
- f7vs309: No hours father taken off: vision (q): F7
- f7vs310: Other carer taken time off: vision (q): F7
- f7vs311: No hours other carer taken off: vision (q): F7

A5. The carer was asked for details of any treatment i.e. whether the child had had glasses, patches for the better eye, eye drops or an eye operation. If the answer was yes for any of these then further details were asked i.e. how many pairs of glasses, for how many months was the patch worn, how many bottles of drops were given and how many operations.

- f7vs320: Child had glasses: vision (q): F7
- f7vs321: Pairs of glasses: vision (q) :F7
- f7vs322: Child had patches: vision (q): F7
- f7vs323: Months child had patch: vision (q): F7
- f7vs324: Child had eye drops: vision (q): F7
- f7vs325: Bottles of drops: vision (q): F7
- f7vs326: Child had eye operation: vision (q): F7
- f7vs327: Number of operations: vision (q): F7

A6. The carer was asked if any money had been spent on eye treatments or glasses for the study child and if so how much.

- f7vs328: Spent money on eye treatment/glasses: vision (q): F7
- f7vs329: Amount spent on eye treatment/glasses: vision (q): F7

Further variables have been created that were used in the study based on randomised control trial part of 3 year screening, offered/received state screening (Williams *et al*, 2002; 2003).

Offered state screening (F7VS800) reflects the child's presence on contemporary clinic lists of orthoptic screening clinics kept at the Bristol eye hospital. These lists were photocopied, anonymised and the NHS child health numbers were entered onto a database together with the outcome of their screening attendance (attended, failed to attend, attended elsewhere). The data were then linked to the main ALSPAC database using the NHS child health numbers.

**F7VS800 Offered state screening: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes, attended	1352	16.3	16.8	16.8
	2 Yes, failed to attend	568	6.8	7.1	23.9
	3 Attended elsewhere	110	1.3	1.4	25.2
	4 No	6012	72.5	74.8	100.0
	Total	8042	96.9	100.0	
Missing	-9 Did not do vision	255	3.1		
Total		8297	100.0		

**F7VS800A Received state screening: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 No	6690	80.6	83.2	83.2
	2 Yes	1352	16.3	16.8	100.0
	Total	8042	96.9	100.0	
Missing	-9 Did not do vision	255	3.1		
	Total	8297	100.0		

**F7VS805 Part of 3 year study: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Invited into CIF	1118	13.5	14.7	14.7
	2 Invited in Controls	832	10.0	10.9	25.7
	3 Eligible but not invited	465	5.6	6.1	31.8
	4 No	5187	62.5	68.2	100.0
	Total	7602	91.6	100.0	
Missing	-9 Did not do vision	255	3.1		
	-1 Missing	440	5.3		
	Total	695	8.4		
Total		8297	100.0		

**F7VS806 Received ALSPAC screening: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 No	6389	77.0	79.4	79.4
	2.00 Yes at 3	1548	18.7	19.2	98.7
	3.00 Yes before 3 but not at 3	105	1.3	1.3	100.0
	Total	8042	96.9	100.0	
	Missing	255	3.1		
Total		8297	100.0		

**F7VS810 Offered any orthoptic screening: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 No	4596	55.4	57.1	57.1
	2 Yes	3446	41.5	42.9	100.0
	Total	8042	96.9	100.0	
	Missing	255	3.1		
Total		8297	100.0		

**F7VS815 Received any orthoptic screening: vision F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 No	5334	64.3	66.3	66.3
	2 Yes	2708	32.6	33.7	100.0
	Total	8042	96.9	100.0	
Missing	-9 Did not do vision	255	3.1		
	Total	8297	100.0		

### 3.7.13 Glossary

<b>Adnexae</b>	Tissues near the eye e.g. eyelids
<b>Amblyopia</b>	Reduced visual acuity in an otherwise apparently healthy eye, despite correction of any refractive error.
<b>Astigmatism</b>	A refractive error that has a different magnitude in the different meridia of the eyes.
<b>Convergence</b>	The ability to make the visual axes converge towards each other such that an object of regard approaching the observer is viewed by the fovea of each eye.
<b>Dioptrē</b>	Unit of lens power. One Dioptrē is the power of a lens that brings parallel light to a point focus at 1m from the lens.
<b>Esophoria</b>	Condition where the visual axes converge towards each other, but only when the eyes are dissociated (i.e. latent).
<b>Esotropia</b>	Condition where the visual axes converge towards each other, but only when the eyes are dissociated (i.e. latent).
<b>Exophoria</b>	Condition where the visual axes diverge away from each other, but only when the eyes are dissociated (i.e. latent).
<b>Exotropia</b>	Condition where the visual axes diverge away from each other, that is present during binocular viewing (i.e. manifest).
<b>Refractive error</b>	The focusing error of the eye, such that the image of the object of regard is brought to focus in front of (myopia – short sight) or behind (hypermetropia – long sight) the retina. Described as the strength of the corrective lenses needed to bring the image of the object of regard to focus exactly on the retina.
<b>Spatial frequency</b>	Measure of the size of a visual stimulus.
<b>Spherical refractive error</b>	Magnitude of the spherical component of refraction.
<b>Stereopsis</b>	The ability to perceive depth by detecting the disparity in the horizontal positions of parts of the object of regard, as viewed by the two eyes. Measured in seconds/arc.
<b>Strabismus</b>	A misalignment of the visual axes such that the fovea of the two eyes are not directed at the same object.

### 3.8 Child's diet

The dietary intake of the child was investigated using a 3-day record of everything the child ate or drank. The dietary diary was sent to the parent a week before their child's clinic appointment. They were asked to record everything the child ate or drank for a 3-day period, including one weekend day. Instructions were given regarding how to record foods eaten at school. The dietary records included detailed information about foods and drinks consumed, brands used, and weights in household measures or taken from information given on the packaging of the food, as well as information about plate waste. When the parent brought the child to the clinic, they were interviewed by someone trained by the nutrition team, with the aim of ensuring the completeness of the record with regard to type/brand of food/drink and the amount eaten/drunk.

This dietary analysis uses data from the fifth edition of McCance & Widdowson's food tables as well as supplements to the tables, and is constantly being updated as information about new foods becomes available. As such, the data is stored elsewhere and will not be shown here.

**f7dd100 Number of days the dietary data was collected: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	260	3.1	3.6	3.6
	2.00	996	12.0	13.7	17.2
	3.00	6026	72.7	82.8	100.0
	Total	7282	87.8	100.0	
Missing	-1.00 Missing	1011	12.2		
	Total	8293	100.0		

**Average weight of dietary intake** uses the food groups specified in the UK's National Diet and Nutrition Survey to calculate a mean average in grams per day for each food group [f7dd200 to f7dd290].

**Estimated nutrient intakes** Nutrient mean averages are in grams, milligrams or micrograms per day [f7dd301 to f7dd346]. A more detailed description of how these were derived can be found in Glynn *et. al.*, 2005.

Glynn L., Emmett P., Rogers, I., ALSPAC Study Team. (2005). 'Food and nutrient intakes of a population sample of 7-year-old children in the south-west of England in 1999/2000 - what difference does gender make?' *Journal of Human Nutrition and Dietetics*. 18 (1): 7-19. DOI: 10.1111/j.1365-277X.2004.00582.x

**Energy intake** (kcal) is captured by the continuous variable f7dd408, which is the mean average of the recorded days of consumption (Glynn *et. al.*, 2005). Total energy intake (kcal) is also available for each day separately in three continuous variables [f7dd409], f7dd410 and f7dd411]. The coefficient of variation is captured by [f7dd412].

## Summary of food group variables available

## Descriptive statistics: n=7282

	Min	Max	M	SD
f7dd200 DV: High fibre breakfast cereals mean weight (g/day): NDNS food group: F7	.00	255.00	16.0225	23.65295
f7dd201 DV: Other breakfast cereals mean weight (g/day): NDNS food group: F7	.00	238.00	15.3733	18.01203
f7dd202 DV: Sweet biscuits mean weight (g/day): NDNS food group: F7	.00	178.00	20.6314	18.68277
f7dd203 DV: Coated and fried white fish, shellfish mean wt (g/day): NDNS food grp: F7	.00	166.67	8.1299	15.88501
f7dd204 DV: Other white fish, shellfish, fish dishes mean wt (g/day): NDNS food grp: F7	.00	215.00	2.2269	11.59493
f7dd205 DV: Oily fish mean weight (g/day): NDNS food group: F7	.00	180.00	3.8289	11.44477
f7dd206 DV: Yoghurt and fromage frais mean weight (g/day): NDNS food group: F7	.00	416.67	36.4901	46.74871
f7dd207 DV: Puddings and icecreams mean weight (g/day): NDNS food group: F7	.00	1935.0	44.4434	50.63361
f7dd208 DV: Buns, cakes, pastries and fruit pie mean weight (g/day): NDNS food group: F7	.00	305.00	28.0853	29.57866
f7dd209 DV: Crisps and savoury snacks mean weight (g/day): NDNS food group: F7	.00	100.00	17.6376	13.65171
f7dd210 DV: Sugar confectionery mean weight (g/day): NDNS food group: F7	.00	500.00	11.3701	21.55667
f7dd211 DV: Chocolate confectionery mean weight (g/day): NDNS food group: F7	.00	155.00	15.9600	17.37703
f7dd212 DV: Sugar, preserves and sweet spreads mean weight (g/day): NDNS food group: F7	.00	132.33	8.5102	10.83543
f7dd213 DV: Baked beans mean weight (g/day): NDNS food group: F7	.00	400.00	16.7887	28.84930
f7dd214 DV: Meat pies and pastries mean weight (g/day): NDNS food group: F7	.00	290.00	5.4730	15.84567
f7dd215 DV: Coated chicken and turkey mean weight (g/day): NDNS food group: F7	.00	170.00	9.9857	18.19210
f7dd216 DV: Chicken, turkey and dishes mean weight (g/day): NDNS food group: F7	.00	305.00	16.6112	23.83894
f7dd217 DV: Liver and dishes mean weight (g/day): NDNS food group: F7	.00	225.00	.9099	6.70756
f7dd218 DV: Lamb and dishes mean weight (g/day): NDNS food group: F7	.00	215.00	5.0247	15.47769
f7dd219 DV: Offal (excluding liver) mean weight (g/day): NDNS food group: F7	.00	30.00	.0132	.53804
f7dd220 DV: Pork and dishes mean weight (g/day): NDNS food group: F7	.00	180.00	4.8289	13.81879
f7dd221 DV: Beef and dishes mean weight (g/day): NDNS food group: F7	.00	205.50	12.7286	24.66197
f7dd222 DV: Burgers and kebabs mean weight (g/day): NDNS food group: F7	.00	204.00	4.0070	12.50230
f7dd223 DV: Sausages mean weight (g/day): NDNS food group: F7	.00	206.67	9.1000	16.25430
f7dd224 DV: Other meat and meat products mean weight (g/day): NDNS food group: F7	.00	192.50	2.6791	9.31294
f7dd225 DV: Eggs and egg dishes mean weight (g/day): NDNS food group: F7	.00	175.00	7.7482	15.93836
f7dd226 DV: White bread mean weight (g/day): NDNS food group: F7	.00	361.67	56.3308	39.58691
f7dd227 DV: Brown and granary bread mean weight (g/day): NDNS food group: F7	.00	175.00	2.5138	10.33483
f7dd228 DV: Softgrain white bread mean weight (g/day): NDNS food group: F7	.00	120.00	.9239	7.02963
f7dd229 DV: Wholemeal bread mean weight (g/day): NDNS food group: F7	.00	207.33	8.1974	20.85909
f7dd230 DV: Other bread mean weight (g/day): NDNS food group: F7	.00	152.00	3.1958	11.11085
f7dd231 DV: Butter mean weight (g/day): NDNS food group: F7r	.00	94.33	2.5340	6.40131
f7dd232 DV: Full-fat polyunsaturated margarine mean weight (g/day): NDNS food group: F7	.00	56.00	5.5076	7.32574
f7dd233 DV: Low-fat polyunsaturated margarine mean weight (g/day): NDNS food group: F7	.00	31.00	.1336	1.28907
f7dd234 DV: Full-fat non-polyunsaturated margarine mean wt (g/day): NDNS food grp: F7	.00	45.33	2.2609	5.15459
f7dd235 DV: Low-fat non-polyunsaturated margarine mean weight (g/day): NDNS food grp: F7	.00	45.00	.8153	3.32962
f7dd236 DV: Polyunsaturated cooking fat mean weight (g/day): NDNS food group: F7	.00	19.00	.0597	.51971
f7dd237 DV: Non-polyunsaturated cooking fat mean weight (g/day): NDNS food group: F7	.00	10.33	.0347	.31507
f7dd238 DV: Ham and bacon mean weight (g/day): NDNS food group: F7	.00	133.00	7.9085	12.21666
f7dd239 DV: Fried/roast potatoes and chips mean weight (g/day): NDNS food group: F7	.00	311.67	48.6956	40.04802
f7dd240 DV: Other potatoes mean weight (g/day): NDNS food group: F7	.00	275.00	29.7767	35.29878
f7dd241 DV: Raw carrots mean weight (g/day): NDNS food group: F7	.00	150.00	1.7783	7.60378
f7dd242 DV: Cooked carrot smean weight (g/day): NDNS food group: F7	.00	224.00	10.7042	14.23828
f7dd243 DV: Green leafy vegetables mean weight (g/day): NDNS food group: F7	.00	166.67	10.1035	15.75841
f7dd244 DV: Peas mean weight (g/day): NDNS food group: F7	.00	135.00	6.0804	10.68627
f7dd245 DV: Green and runner beans mean weight (g/day): NDNS food group: F7	.00	70.00	1.4398	5.17779
f7dd246 DV: Cooked and canned tomatoes mean weight (g/day): NDNS food group: F7	.00	154.00	.8296	5.74255
f7dd247 DV: Raw tomatoes mean weight (g/day): NDNS food group: F7	.00	127.50	4.5645	11.58403
f7dd248 DV: Other salad and raw vegetables mean weight (g/day): NDNS food group: F7	.00	406.67	7.1126	14.95354
f7dd249 DV: Other cooked vegetables mean weight (g/day): NDNS food group: F7	.00	180.67	9.0421	15.47454
f7dd250 DV: Legumes mean weight (g/day): NDNS food group: F7	.00	90.00	.5786	4.11498
Valid N (listwise)				

## Summary of food group variables available

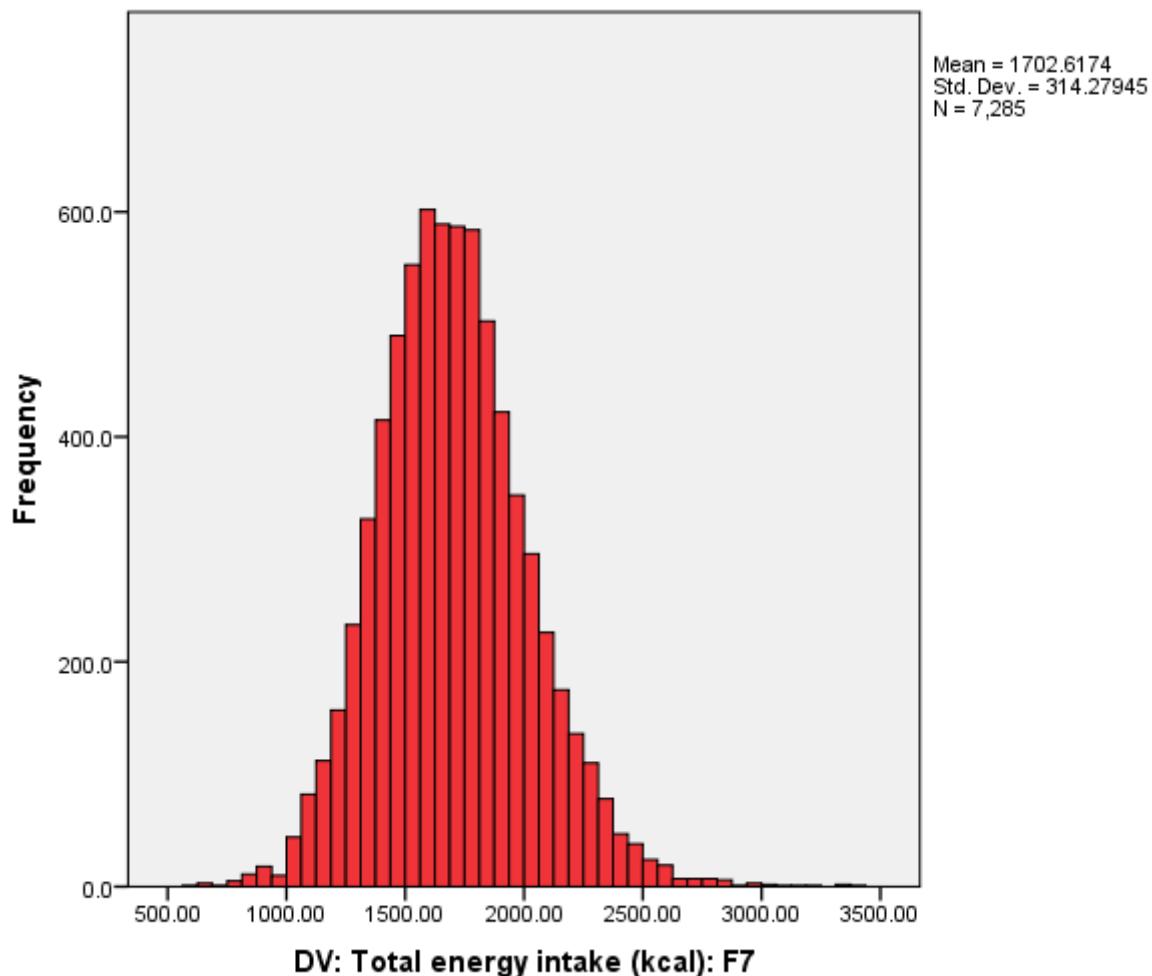
## Descriptive statistics: n=7282

	Min	Max	M	SD
f7dd251 DV: Vegetable dishes mean weight (g/day): NDNS food group: F7	.00	280.00	4.0955	16.11666
f7dd252 DV: Cheese mean weight (g/day): NDNS food group: F7	.00	117.67	11.2836	14.81767
f7dd253 DV: Fruit juice mean weight (g/day): NDNS food group: F7	.00	1633.33	88.4938	136.85859
f7dd254 DV: Whole milk mean weight (g/day): NDNS food group: F7	.00	1389.33	129.8704	182.38939
f7dd255 DV: Semi-skimmed milk mean weight (g/day): NDNS food group: F7	.00	1306.00	120.2553	167.67762
f7dd256 DV: Skimmed milk mean weight (g/day): NDNS food group: F7	.00	953.67	5.4710	35.40662
f7dd257 DV: Soya milk mean weight (g/day): NDNS food group: F7	.00	896.00	1.3893	22.19182
f7dd258 DV: Goats and sheeps milk mean weight (g/day): NDNS food group: F7	.00	625.00	.6249	13.48814
f7dd259 DV: Other milk and cream mean weight (g/day): NDNS food group: F7	.00	336.00	1.4581	8.56673
f7dd260 DV: Fruit canned in syrup mean weight (g/day): NDNS food group: F7	.00	160.00	.9828	7.47607
f7dd261 DV: Fruit canned in juice mean weight (g/day): NDNS food group: F7	.00	240.00	1.6694	10.11807
f7dd262 DV: Citrus fruit mean weight (g/day): NDNS food group: F7	.00	291.67	10.4821	26.47267
f7dd263 DV: Apples and pears mean weight (g/day): NDNS food group: F7	.00	340.00	30.8267	42.49075
f7dd264 DV: Bananas mean weight (g/day): NDNS food group: F7	.00	250.00	16.6797	29.39139
f7dd265 DV: Other fruit mean weight (g/day): NDNS food group: F7	.00	598.67	19.7230	41.96818
f7dd266 DV: Pasta, rice, pizza etc. mean weight (g/day): NDNS food group: F7	.00	494.00	48.3472	50.28901
f7dd267 DV: Nuts mean weight (g/day): NDNS food group: F7	.00	85.33	1.7342	5.80242
f7dd268 DV: Vitamins - label only: NDNS food group: F7	.00	14.00	.1041	.45008
f7dd269 DV: Medicines - label only: NDNS food group: F7	.00	33.67	.4166	2.01330
f7dd270 DV: Soup mean weight (g/day): NDNS food group: F7	.00	252.00	5.3948	21.63066
f7dd271 DV: Normal squashes and cordials mean weight (g/day): NDNS food group: F7	.00	418.33	7.3659	23.54767
f7dd272 DV: Normal fizzy drinks and made-up squash mean wt (g/day): NDNS food grp: F7	.00	1300.00	76.0944	133.22402
f7dd273 DV: Diet squashes and cordials mean weight (g/day): NDNS food group: F7	.00	500.00	36.7459	48.36640
f7dd274 DV: Diet fizzy drinks and made-up squash mean weight (g/day): NDNS food grp: F7	.00	2300.00	104.3029	161.76304
f7dd275 DV: Alcoholic drinks mean weight (g/day): NDNS food group: F7	.00	148.50	.2477	3.05104
f7dd276 DV: Milk-based sauces mean weight (g/day): NDNS food group: F7	.00	97.67	.9894	4.93428
f7dd277 DV: Water and flavoured water mean weight (g/day): NDNS food group: F7	.00	1750.00	143.8833	189.70407
f7dd278 DV: Tomato-based sauces mean weight (g/day): NDNS food group: F7	.00	112.00	3.0168	7.33194
f7dd279 DV: Other sauces mean weight (g/day): NDNS food group: F7	.00	209.67	11.3062	14.01484
f7dd280 DV: Herbs and spices mean weight (g/day): NDNS food group: F7	.00	5.00	.0198	.18084
f7dd281 DV: Sugar-free confectionery mean weight (g/day): NDNS food group: F7	.00	33.33	.0496	.57514
f7dd282 DV: Savoury biscuits and crackers mean weight (g/day): NDNS food group: F7	.00	100.00	1.8235	5.47442
f7dd283 DV: Powdered drinks e.g. drinking chocolate mean wt (g/day): NDNS food grp: F7	.00	1200.00	1.6773	19.19522
f7dd284 DV: Soya products mean weight (g/day): NDNS food group: F7	.00	232.00	.9264	6.92863
f7dd285 DV: Salty flavourings mean weight (g/day): NDNS food group: F7	.00	24.00	.3927	1.24422
f7dd286 DV: Cod liver oil - label only: NDNS food group: F7	.00	10.00	.0100	.22683
f7dd287 DV: Herbal tea mean weight (g/day): NDNS food group: F7	.00	316.67	.5488	9.05395
f7dd288 DV: Tea infusion mean weight (g/day): NDNS food group: F7	.00	1050.50	32.0498	83.47878
f7dd289 DV: Instant coffee granules/powder mean weight (g/day): NDNS food group: F7	.00	4.33	.0048	.09828
f7dd290 DV: Coffee infusion/made-up instant coffee mean wt (g/day): NDNS food grp: F7	.00	480.00	2.0300	17.72417

## Summary of estimated nutrient intake variables available

## Descriptive statistics: n=7282

	Min	Max	M	SD
f7dd300 DV: Fluoride drops - label only: NDNS food group: F7	.00	5.00	.0023	.06855
f7dd301 DV: Water intake (g) DD mean: F7	22.32	3448.21	1075.5003	329.84469
f7dd302 DV: Protein intake (g) DD mean: F7	19.85	136.24	55.7049	12.85560
f7dd303 DV: Fat intake (g) DD mean: F7	17.26	165.72	68.8726	16.38621
f7dd304 DV: Carbohydrate intake (g) DD mean: F7	70.33	487.48	229.4338	46.22308
f7dd305 DV: Energy intake (kcal) DD mean: F7	597.12	3413.12	1702.6175	314.26713
f7dd306 DV: Energy intake (kj) DD mean: F7	2519.63	14328.61	7161.7552	1319.53259
f7dd307 DV: Saturated fatty acid intake (g) DD mean: F7	4.82	73.86	27.7478	8.18916
f7dd308 DV: Monounsaturated fatty acid intake (g) DD mean: F7	5.69	64.48	23.1461	5.81052
f7dd309 DV: Polyunsaturated fatty acid intake (g) DD mean: F7	2.15	37.32	10.6916	3.69654
f7dd310 DV: Dietary cholesterol intake (mg) DD mean: F7	.94	743.58	168.1483	74.82845
f7dd311 DV: Total sugar intake (g) DD mean: F7	18.54	374.76	109.3124	33.58705
f7dd312 DV: Starch intake (g) DD mean: F7	.00	279.10	117.6937	26.01506
f7dd313 DV: Southgate fibre (old type) intake (g) DD mean: F7	.00	49.07	15.5737	4.48052
f7dd314 DV: Non-starch polysaccharide (fibre) intake (g) DD mean: F7	.00	34.12	10.4422	3.23263
f7dd315 DV: Sodium intake (mg) DD mean: F7	664.06	5241.60	2314.1561	559.04169
f7dd316 DV: Potassium intake (mg) DD mean: F7	583.43	6120.59	2212.2132	541.48355
f7dd317 DV: Calcium intake (mg) DD mean: F7	159.70	2472.60	787.7768	274.35646
f7dd318 DV: Magnesium intake (mg) DD mean: F7	73.25	464.91	198.6873	49.39390
f7dd319 DV: Phosphorus intake (mg) DD mean: F7	332.81	2361.81	1047.1673	260.07936
f7dd320 DV: Iron intake (mg) DD mean: F7	1.42	29.21	8.3424	2.24809
f7dd321 DV: Copper intake (mg) DD mean: F7	.14	10.68	.7499	.26968
f7dd322 DV: Zinc intake (mg) DD mean: F7	1.76	21.77	6.0702	1.67220
f7dd323 DV: Chloride intake (mg) DD mean: F7	483.72	7640.85	3383.4464	819.07576
f7dd324 DV: Manganese intake (mg) DD mean: F7	.18	6.88	2.0105	.78205
f7dd325 DV: Selenium intake (ug) DD mean: F7	7.38	187.33	52.5088	17.33563
f7dd326 DV: Iodine intake (ug) DD mean: F7	15.41	844.05	147.8229	72.70850
f7dd327 DV: Retinol intake (ug) DD mean: F7	.00	18002.71	367.7879	437.32730
f7dd328 DV: Carotene intake (ug) DD mean: F7	29.07	17045.66	1866.3027	1405.47865
f7dd329 DV: Vitamin D intake (ug) DD mean: F7	.00	21.91	2.3783	1.20595
f7dd330 DV: Vitamin E intake (mg) DD mean: F7	1.35	26.81	8.1276	3.08684
f7dd331 DV: Thiamin intake (mg) DD mean: F7	.29	25.36	1.4578	.87303
f7dd332 DV: Riboflavin intake (mg) DD mean: F7	.25	5.55	1.6488	.60130
f7dd333 DV: Niacin intake (mg) DD mean: F7	1.69	51.74	15.0494	4.66262
f7dd334 DV: Tryptophane/60 intake (mg) DD mean: F7	.21	27.51	11.2253	2.66243
f7dd335 DV: Vitamin B6 intake (mg) DD mean: F7	.28	6.24	1.7561	.54233
f7dd336 DV: Vitamin B12 intake (ug) DD mean: F7	.01	48.81	3.7254	1.94156
f7dd337 DV: Folate intake (ug) DD mean: F7	31.55	719.11	197.4129	64.15790
f7dd338 DV: Pantothenate intake (mg) DD mean: F7	.22	603.30	94.9732	71.30766
f7dd339 DV: Biotin intake (ug) DD mean: F7	4.59	113.76	25.0592	9.03560
f7dd340 DV: Vitamin C intake (mg) DD mean: F7	.27	643.37	79.8873	56.94737
f7dd341 DV: Alcohol intake (g) DD mean: F7	.00	6.33	.0316	.24925
f7dd342 DV: Trans fatty acid intake (g) DD mean: F7	.05	8.86	2.4865	.87048
f7dd343 DV: Retinol equivalent intake (ug) DD mean (caro/6+ret): F7	22.46	18234.29	678.8383	498.85116
f7dd344 DV: Niacin equivalent intake (mg) DD mean (niac+tr60): F7	6.41	68.24	26.2747	6.39288
f7dd345 DV: Mean intrinsic and milk sugars intake (g): F7	.00	143.57	30.8514	15.49977
f7dd346 DV: Mean non milk extrinsic sugars intake (g) (mainly sugar added to foods): F7	6.35	353.67	78.4610	29.23250

**F7dd400:**

Similarity between study children was measured by the sum of squares of differences in standardised average weights (grams per day, g/d) of foods consumed in each of the food groups specified above (see Glynn et al., 2005).

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
f7dd401 DV: Total energy intake (kcal) Day 1: F7	7282	229.60	4295.21	1719.1749	408.00264
f7dd402 DV: Total energy intake (kcal) Day 2: F7	7022	247.15	3649.07	1701.4926	400.91794
f7dd403 DV: Total energy intake (kcal) Day 3: F7	6026	47.90	3902.85	1694.9307	393.19226
f7dd404 DV: Coefficient of variation for total energy intake (kcal): F7	7022	.00	82.72	16.0536	9.65726
Valid N (listwise)	6026				

### 3.8.1 Dietary patterns

#### 3.8.1.1 Clusters:

To investigate dietary patterns in children over time, Northstone *et. al.* (2013) used cluster analysis to combine the study children attending clinic into four non-overlapping groups according to the similarity of foods consumed between children.

Northstone, K., Smith, A., Newby, P., & Emmett, P. (2013). 'Longitudinal comparisons of dietary patterns derived by cluster analysis in 7- to 13-year-old children'. *British Journal of Nutrition*. 109 (11): 2050-2058. doi:10.1017/S0007114512004072

- Processed      high consumption of processed foods, chips and soft drinks
- Healthy        high consumption of high-fibre bread, fruit, vegetables and water
- Traditional    high consumption of meat, potatoes and vegetables
- Lunch           high consumption of white bread, sandwich fillings and snacks

**f7dd500 DV: Clustering variable from food weights, diet diary: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Processed	1990	24.0	29.1	29.1
	2 Healthy	1709	20.6	25.0	54.1
	3 Traditional	1557	18.8	22.8	76.9
	4 Lunch	1579	19.0	23.1	100.0
	Total	6835	82.4	100.0	
Missing	-1 Missing	1458	17.6		
	Total	8293	100.0		

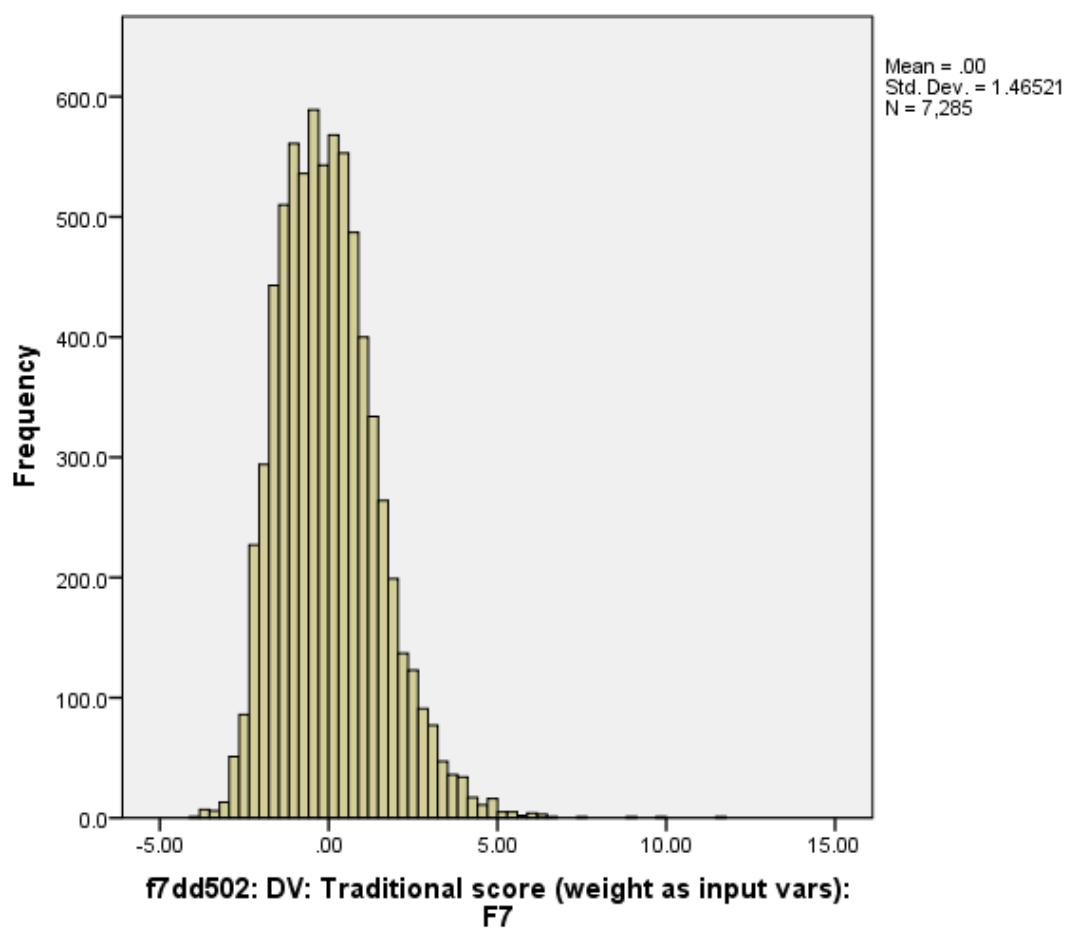
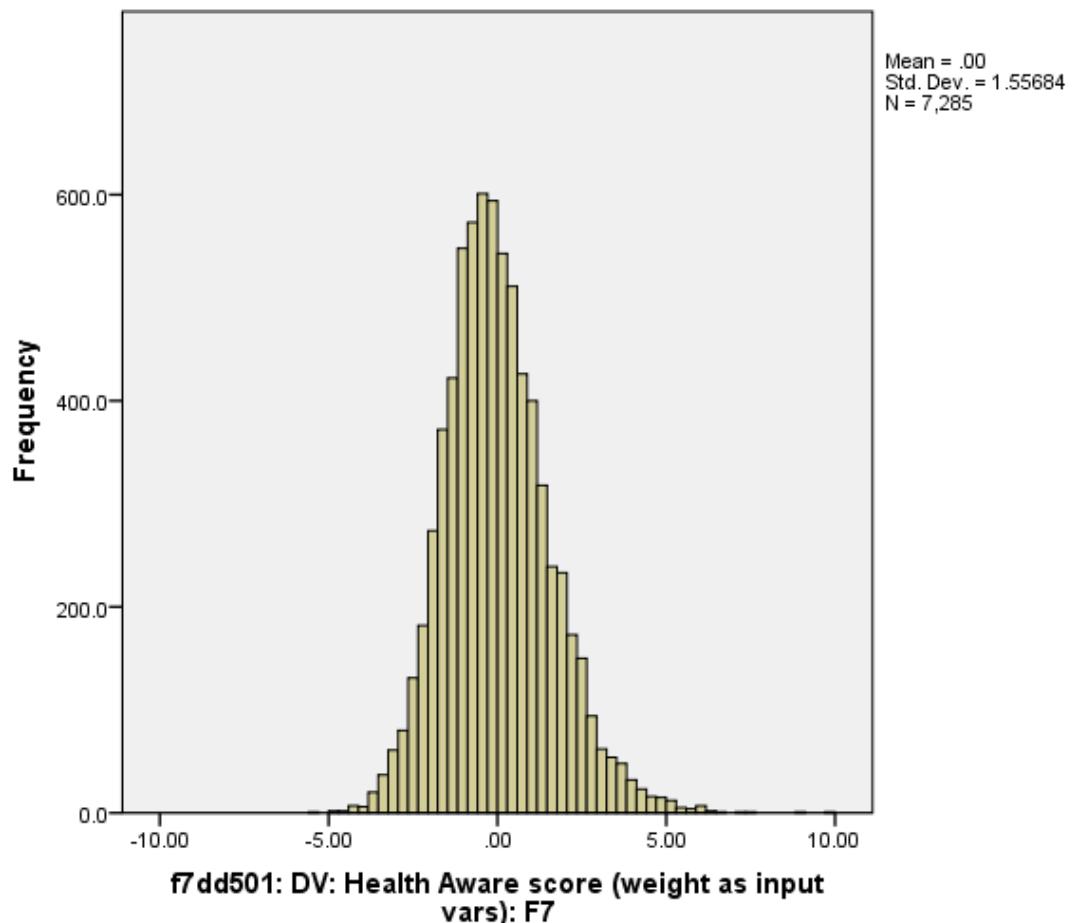
#### 3.8.1.2 Principal Components Analysis

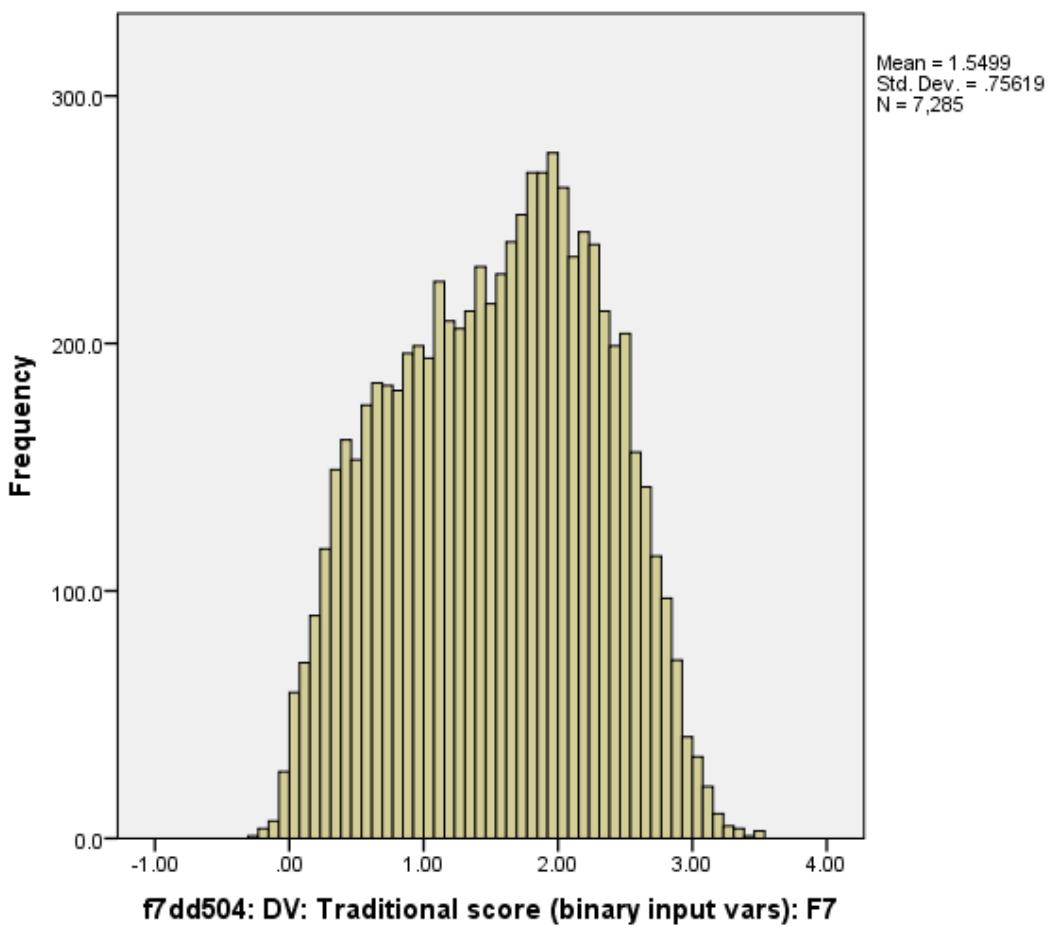
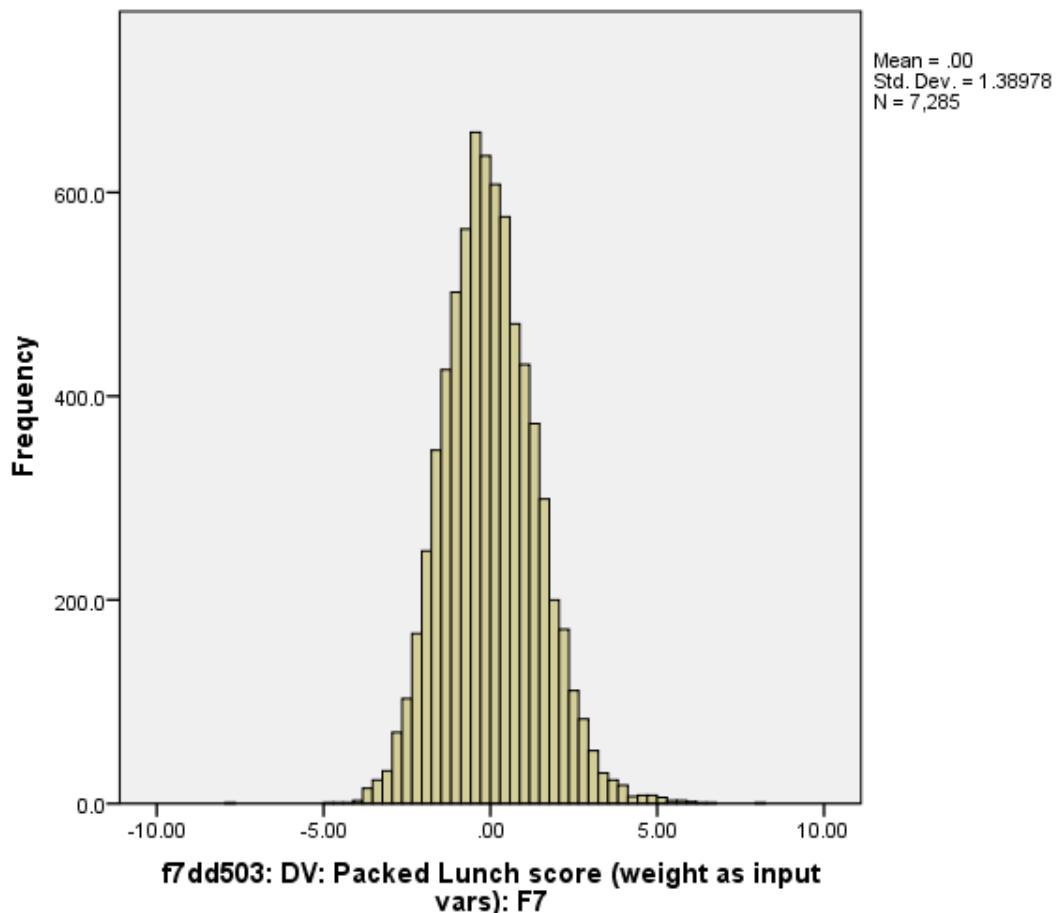
Smith *et. al* (2013) also derived dietary patterns using Principal Components Analysis (PCA). They used two different types of input variables 1) weight of food (grams per day) and 2) binary (food consumed/food not consumed) .

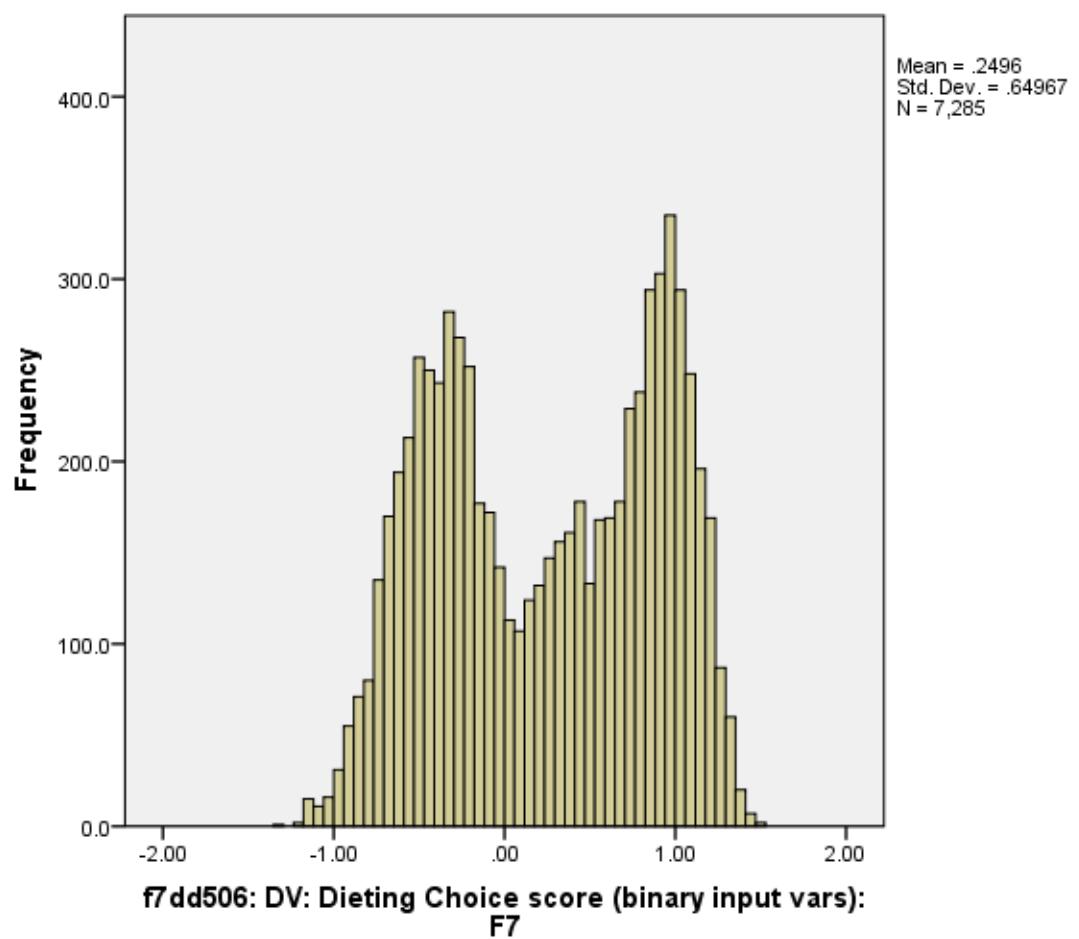
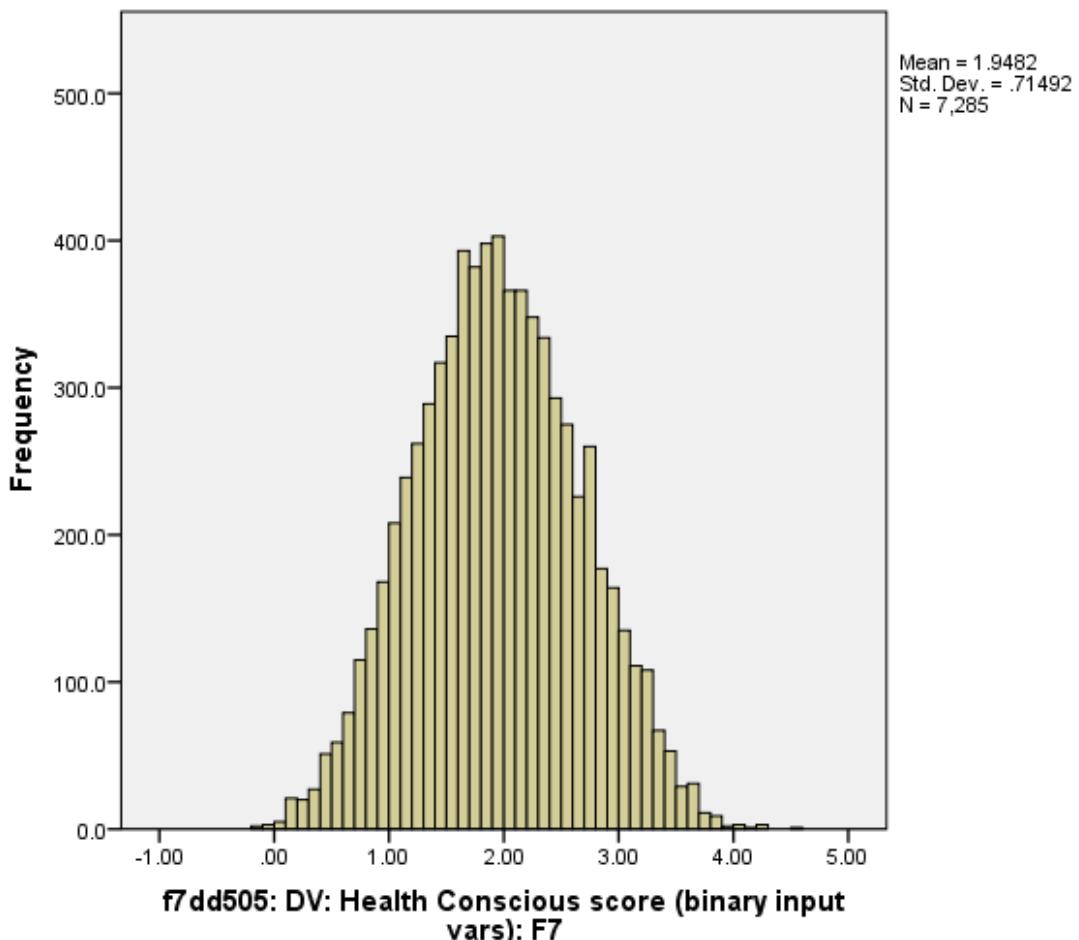
F7dd501 and f7dd507 are the derived pattern scores using these two methods.

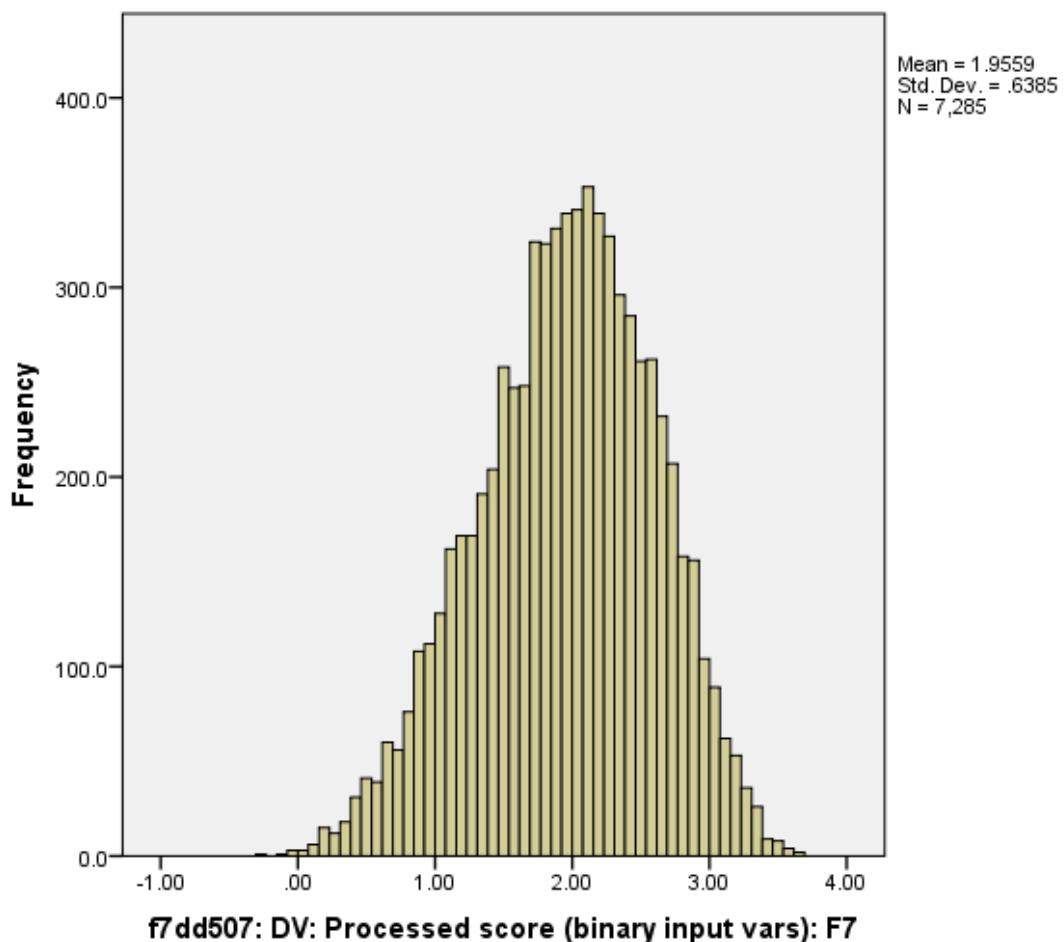
Smith, A., Emmett, P., Newby, P., & Northstone, K. (2013). 'Dietary patterns obtained through principal components analysis: The effect of input variable quantification'. *British Journal of Nutrition*. 109 (10): 1881-1891. doi:10.1017/S0007114512003868

	Min	Max	M	SD
f7dd501 DV: Health Aware score (weight as input vars): F7	-5.36	9.85	.0000	1.55684
f7dd502 DV: Traditional score (weight as input vars): F7	-4.10	11.64	.0000	1.46521
f7dd503 DV: Packed Lunch score (weight as input vars): F7	-7.87	8.13	.0000	1.38978
f7dd504 DV: Traditional score (binary input vars): F7	-.28	3.52	1.5499	.75619
f7dd505 DV: Health Conscious score (binary input vars): F7	-.17	4.52	1.9482	.71492
f7dd506 DV: Dieting Choice score (binary input vars): F7	-1.32	1.51	.2496	.64967
f7dd507 DV: Processed score (binary input vars): F7	-.27	3.66	1.9559	.63850









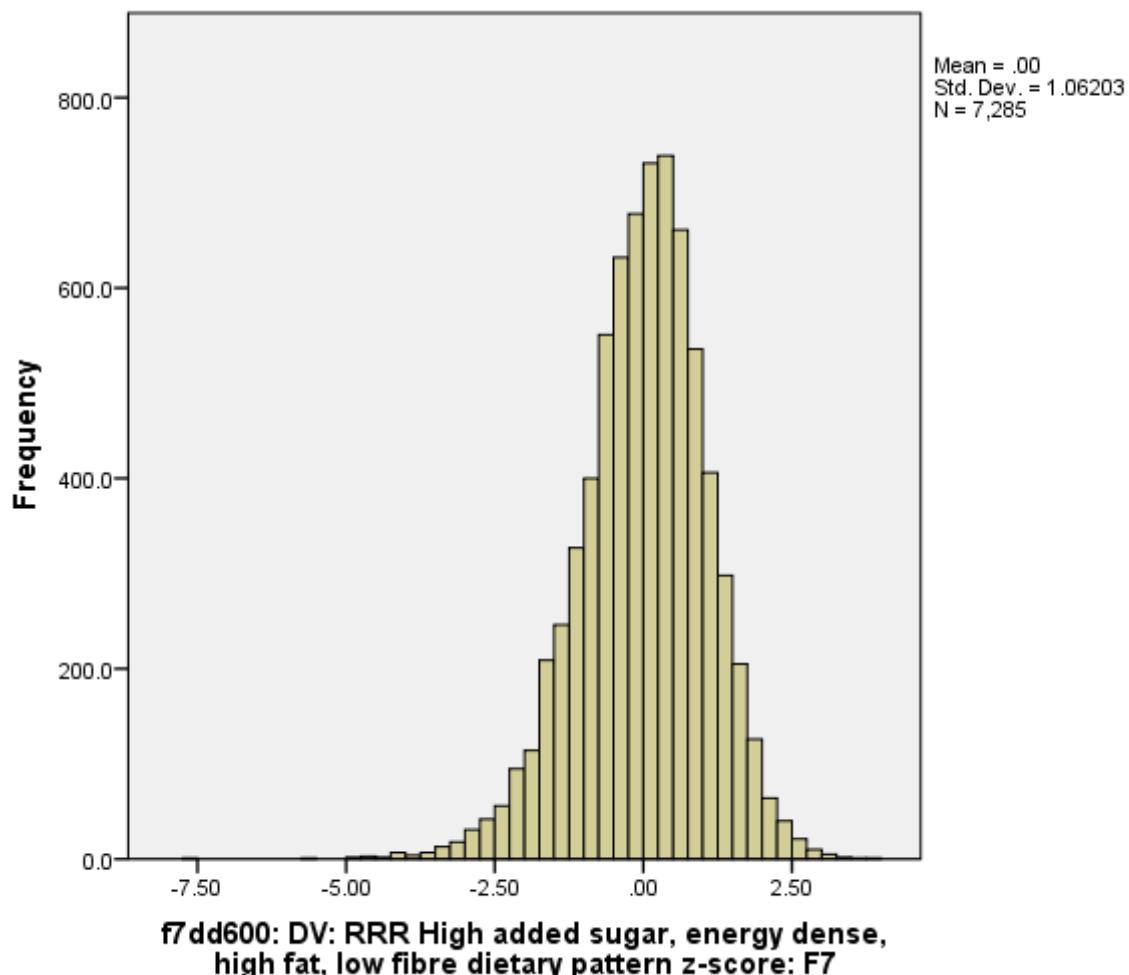
### 3.8.1.3 Reduced Rank Regression

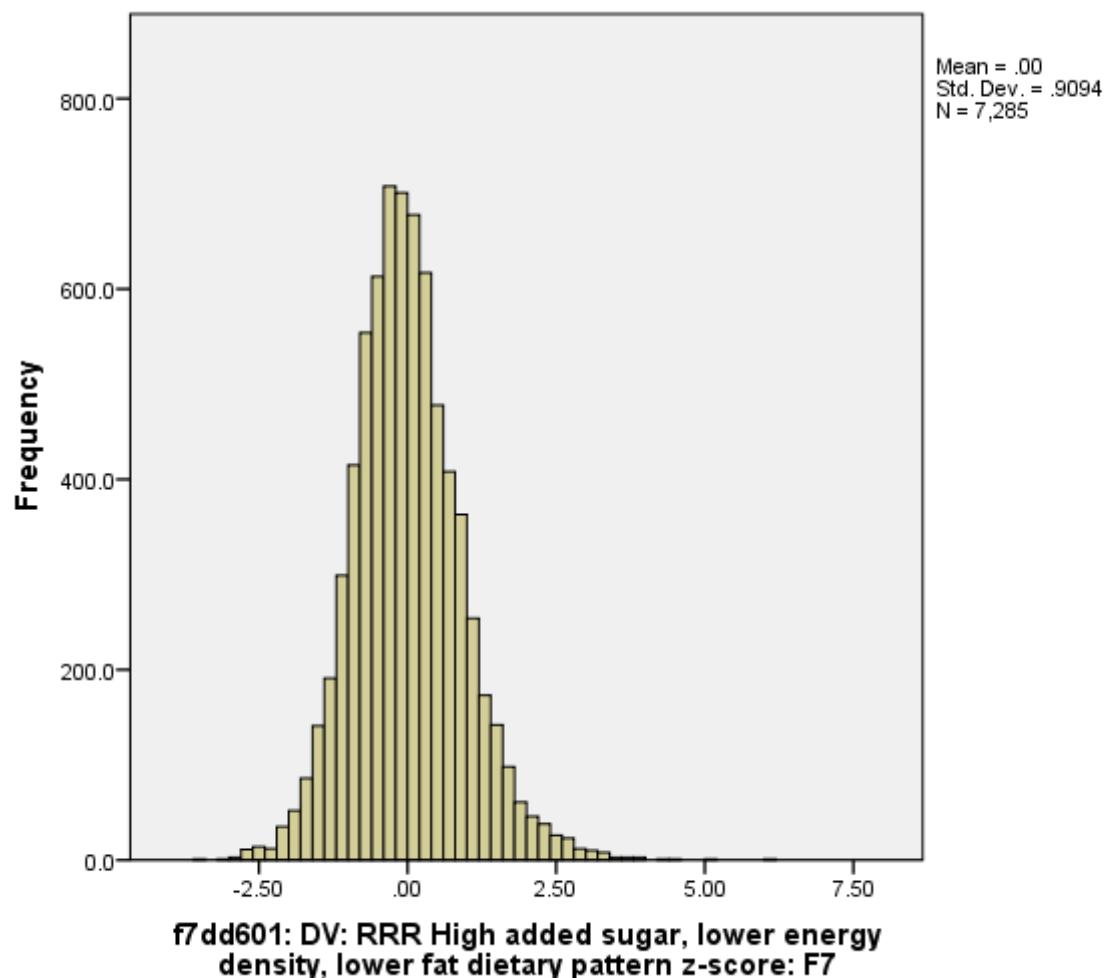
Ambrosini *et al* (2016) derived dietary patterns using reduced rank regression (RRR) at 7, 10 and 13 years of age. Two patterns were derived which explained the maximum variation in four response variables: Proportion of total energy from free sugar, proportion of total energy from total fat, dietary energy density as energy per gram of food consumed and dietary fibre density (grams of non-starch polysaccharide fibre per MJ of total energy). The first pattern identified was associated with greater dietary energy density, greater percent energy from free sugars and total fat, and lower fibre density. The second pattern was associated with greater percent energy from free sugars but lower percent energy from total fat and dietary energy density.

F7dd600 and F7dd601 are the two pattern scores derived using RRR described above.

For more details please see:

Ambrosini GL, Johns DJ, Northstone K, Emmett PM, Jebb SA. Free sugars and total fat are important characteristics of a dietary pattern associated with adiposity across childhood and adolescence. *J of Nutr*, 2016. doi:10.3945/jn.115.224659.





### 3.9 Maternal Interview

While the child was having the reading test the accompanying adult was interviewed elsewhere by the clinic receptionist. This 20- minute interview was designed to:

- 3.9.10 Talk through any queries the mother had with the study in general.
- 3.9.11 Ask for signed consent for access to educational and medical records.
- 3.9.12 Obtain permission to analyse the biological samples collected in pregnancy or at birth if we did not already have this.
- 3.9.13 Identify the actual group day care and nursery placements attended by the child.

This data on permissions is to be held elsewhere as it is dynamic and needs regularly updating.

**F7IN001 Interview with accompanying adult: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	8054	97.1	97.1	97.1
	2 No	243	2.9	2.9	100.0
	Total	8297	100.0	100.0	

**F7IN010 Who interview with: F7**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Mother	6931	83.5	86.9	86.9
	2 Father	328	4.0	4.1	91.0
	3 Grandparents	40	.5	.5	91.5
	4 Other relative	6	.1	.1	91.6
	5 Other (not related)	6	.1	.1	91.6
	12 Mum & dad	624	7.5	7.8	99.5
	13 Mum & gparent	10	.1	.1	99.6
	14 Mum & other relative	15	.2	.2	99.8
	15 Mum & Other	17	.2	.2	100.0
	123 Mum, Dad& gparent	1	.0	.0	100.0
	Total	7978	96.2	100.0	
Missing	-2 Did not do interview	244	2.9		
	-1 Missing	75	.9		
	Total	319	3.8		
	Total	8297	100.0		

## F7IN004 Interview staff: F7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	980	11.8	12.4	12.4
	2.00	57	.7	.7	13.1
	3.00	2	.0	.0	13.1
	4.00	73	.9	.9	14.1
	5.00	50	.6	.6	14.7
	6.00	312	3.8	3.9	18.6
	7.00	196	2.4	2.5	21.1
	8.00	283	3.4	3.6	24.7
	9.00	435	5.2	5.5	30.2
	10.00	281	3.4	3.6	33.8
	11.00	86	1.0	1.1	34.8
	12.00	482	5.8	6.1	40.9
	13.00	17	.2	.2	41.1
	14.00	214	2.6	2.7	43.9
	15.00	473	5.7	6.0	49.8
	16.00	28	.3	.4	50.2
	17.00	155	1.9	2.0	52.1
	18.00	89	1.1	1.1	53.3
	19.00	870	10.5	11.0	64.3
	20.00	167	2.0	2.1	66.4
	21.00	452	5.4	5.7	72.1
	22.00	319	3.8	4.0	76.1
	23.00	128	1.5	1.6	77.8
	24.00	823	9.9	10.4	88.2
	25.00	3	.0	.0	88.2
	26.00	18	.2	.2	88.4
	27.00	911	11.0	11.5	99.9
	28.00	4	.0	.1	100.0
	Total	7908	95.3	100.0	
Missing	-2.00 Did not do interview	243	2.9		
	-1.00 Missing	146	1.8		
	Total	389	4.7		
Total		8297	100.0		

#### 4. References

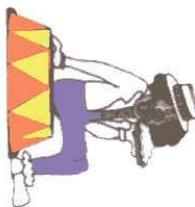
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## Appendix 1: Child's Booklet

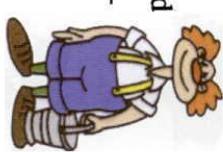
*Clowns can do all sorts of clever things.  
Write down the body bits that are missing.*

My \_\_\_\_\_ can think of the answers to this puzzle.

The clown sits on his \_\_\_\_\_



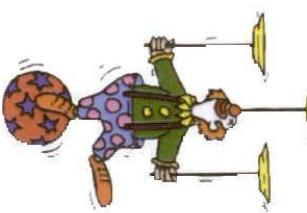
This bucket can be held  
in the \_\_\_\_\_



He can hop on  
his \_\_\_\_\_



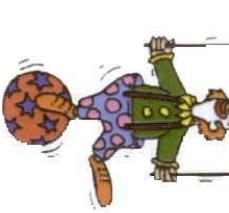
This face has  
a red \_\_\_\_\_



The clown is waving his  
\_\_\_\_\_ in the air.

1

He can balance plates  
on his \_\_\_\_\_ and  
with his \_\_\_\_\_



The clown is waving his  
\_\_\_\_\_ in the air.



— CHILDREN  
OF THE  
90S —



**FOCUS AT 7**

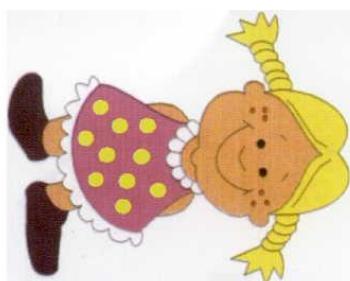
*THIS IS ME  
and my body*

?



Printed courtesy of MM Group  
Tel: 0117 966 6900 Fax: 0117 963 6737  
www.mimg.com

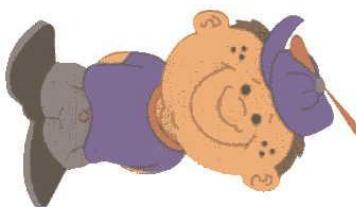




**Well Well Well**  
**I didn't know that!**

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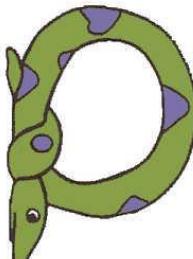
**It** takes 43 muscles to  
make a **smile**.  
The average child giggles  
around 150 times a day, but  
grows up laughing just  
times a day.



could much dept. stereo depth picture

much depth stereo

stereo depth picture



*It really true*

Your eyes blink around 26,000 times a day  
Tea flow out of tear ducts the corner of your eyes  
I'm having big tears out you nose too

My teacher  
filled this

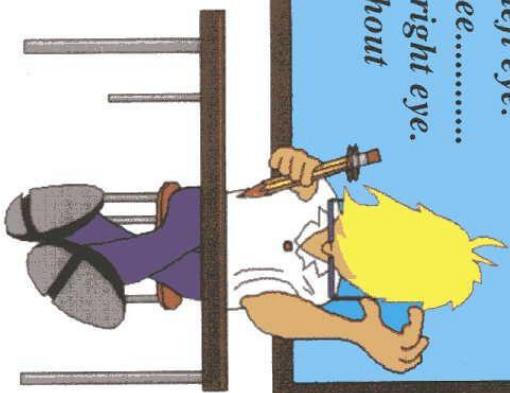
M

DCETI

1

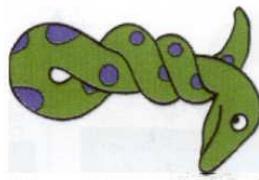
66

*I could see.....  
with my left eye.  
I could see.....  
with my right eye.  
With/without  
glasses*



## HOW LOUD IS LOUD?

The unit used to measure the loudness of sound is the **DECIBEL**



There are different pitches of sounds known as frequencies that make up speech.  
They are measured in **HERTZ**.

*The sounds 'oo' and 'ah' are at a frequency of 500 Hertz.*

*The sound 'i' is at a frequency of 2000 Hertz.  
The sound 'sss' is at a frequency of 4000 Hertz*

I listened to sounds at 2000Hz

In a quiet room I could hear at ..... decibels with my right ear.

In a quiet room I could hear at ..... decibels with my left ear.



**Did you Know?**



*A dog's ear has 17 muscles so it can turn in any direction?*

My blood pressure today was .....

It was taken with a Dinamap 9301 machine.

The heart is a powerful pump that sends blood all round your body.  
If all your blood vessels were placed end to end, they would stretch twice round the world!

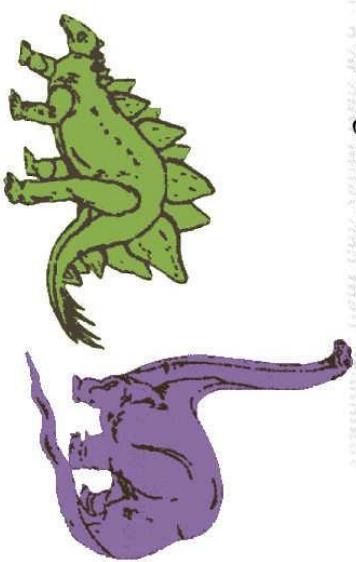
My pulse was ..... beats a minute.



**Busy ... Busy ... Blood**  
*At the end of every 24 hours, every blood cell in your body will have visited the heart over 1,000 times.*

**Q**  
**I gave a sample of blood to help prevent diseases and I got this sticker.**

**WHAT GOES HERE?**

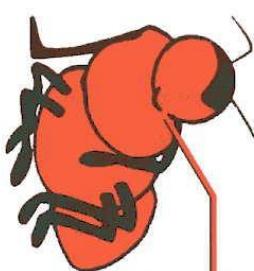


What are your favourite foods? Draw a mealtime picture.



My skin reacted to proteins from

<input type="checkbox"/>	Negative control	<input type="checkbox"/>	Dog
<input type="checkbox"/>	Positive control	<input type="checkbox"/>	Cat
<input type="checkbox"/>	Cladosporium	<input type="checkbox"/>	Cockroach
<input type="checkbox"/>	Grass pollen	<input type="checkbox"/>	Peanut
<input type="checkbox"/>	Sesame seed	<input type="checkbox"/>	Alternaria
<input type="checkbox"/>	Mixed nuts	<input type="checkbox"/>	Mixed trees
<input type="checkbox"/>	Cashew nut	<input type="checkbox"/>	Fish
<input type="checkbox"/>	Horse	<input type="checkbox"/>	Guinea pig
<input type="checkbox"/>		<input type="checkbox"/>	Hamster
<input type="checkbox"/>		<input type="checkbox"/>	House dust Mite (mixed)



You might be allergic to things that gave you a skin reaction today BUT not necessarily. **ALLERGIES ARE NASTY THINGS** Sometimes things we are allergic to don't give a skin reaction at all.

### Did You Know?

If you didn't clean your pillow for 10 years, half of its weight would be made up of dust mites and their droppings.

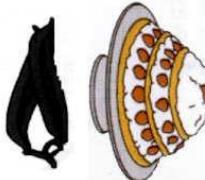
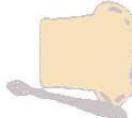
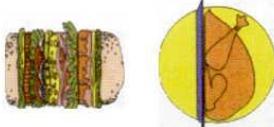
The dastardly dust mite's diet consists of flakes of dead skin and sweat, but its droppings do sometimes cause nasty allergies.

### MAKE AN IRON SANDWICH!

- Make an egg sandwich
- Eat the sandwich and drink some orange juice
- Wait a few days

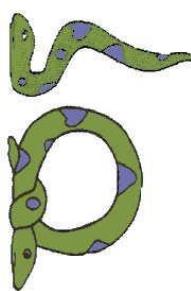
Iron from the food will now be part of your body

In total there's enough in the average body to make an iron nail about 7 cms long!



Can you count up all the snakes that are hiding on every page in this book?

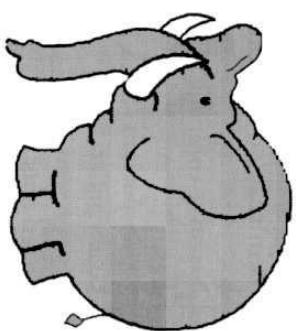
How many altogether?



***My measurements are***

My **height** is ..... cm  
without my shoes on.

I **weigh** ..... kg  
in my underclothes.

***Did You Know?***

*If you breathed out at 250 litres a minute you could inflate a  
big hot air balloon in 7 days!*

Lung function varies a lot between people,  
just like size and shape does.

My head circumference is

..... cm measured round the largest part

My arm circumference is

..... cm

measured midway between my shoulder and elbow

My waist circumference is

..... cm

measured midway between my lowest rib and the top of my hip  
bones.

My hip circumference is

..... cm measured round the largest part.

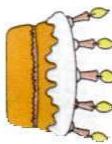
***Body Teasers***

**Q** Which is your longest bone? **A** Your thigh bone.

**Q** Which is the heaviest bit of you? **A** Your skin, it can weigh 4kg

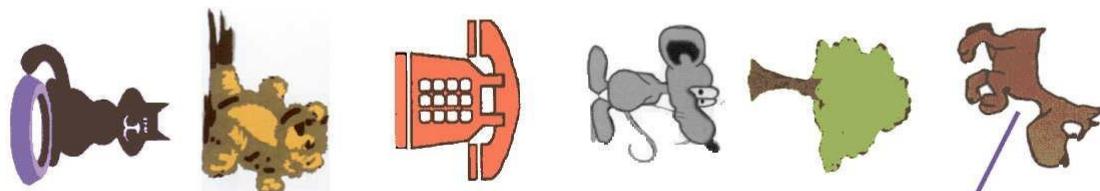


Bigger responses often go with  
conditions like asthma, but there  
are some people who have a big  
response and are completely  
healthy while others have asthma  
but don't respond at all.



What is your favourite thing to do  
in all the world?  
Write about it here.

5



Can you join the pictures that rhyme with each other?

Don't forget to count the snakes as well!



## Appendix 2: Personnel and Funding

**Focus visits manager:** Sue Sadler

**Clinical director:** Dr John Henderson

**Data Administration:** Sue Bonnell, Maureen Brennan, Kate Northstone

### Receptionist staff:

Patrick Bell, Beth Berry, Vilma Boyles, Joy Branscombe, Amanda Burston, Lisa Clarke, Rowena Dugdale, Jean Gathercole, Gulnaz Gill, Thomas Grinsted, Emma Head, Trish Hutchinson, Cheryl Johnson, Alison Kinnersley, Helen Loveridge, Zoe Lowrie, Maxine McRae, Elizabeth Miller, Lucy Parker, Alex Portch, Charlotte Purches, Linda Sanders, Lily Schlaen, Kate Sherlock, Lucy Southway, Anita Stanley, Kaija Turvey (TL), Janet Williams, Judy Willis

Trained by Kaija Turvey

Advised by Jennie Cross (for parent interviews)

### Measures/Bodystat:

Elizabeth Miller, Kate Sherlock, Hazel Blake (TL), Judith Grinstead, Kay Pavier, Pat Madeley, Rosie Tonkin, Sue Evans,

Trained by Les Cox, Lyn Ahmed, Hazel Blake

Advised and trained by Dr Hywel Williams (flexural dermatitis), Mr Peter Witherow (scoliosis),

Advised by Professor John Reilly for BI, Professor Mike Preece for anthropometry.

### Allergy:

Glen Saunders, Jan Wardle, Lyn Tucker, Rosie Hoggett, Emily Holman (*nee* James), Joy Branscombe, Kim Dennery, Pauline Church (TL), Susan Greer, Dorothy Collett.

Trained by Debbie Fox

Advised by Dr Gideon Lack, Professor David Strachan

### Hearing:

Jill Field, Lisa Collins (temp), Amanda Wyatt, Calum Mattocks, Joanna Merrylees, Lyn Sheppard (temp), Richard Edwards, Sally Jones (TL), Steve Gibbs – tymps only, Sylvia Campbell.

Trained by Sally Jones  
 Advised by Liz Midgeley

**Coordination:**

Amy Roe, Alison McGrath, Abbie Jordan, Amanda Wyatt, Calum Mattocks, Jean Gathercole, Faye Armstrong, Jane Vian, Clare Bell (TL), Jaidan D'arcy, James McGurk, Jeremy Horwood, Lucy Parker, Nicola Peacock, Rob Chillcot, Sarah Farthing, Sarah Ross, Zoe Lowrie.

Staff trained by Clare Bell  
 Advised by Professor Alan Emond

**Word:**

Lucienne Green, Lucy Parker, Mary Pears, Sarah Ross, Amy Roe, Alison McGrath, Abbie Jordan, Jean Gathercole(TL2), Faye Armstrong, Grace Windle, Jane Vian, Clare Bell (TL1), Jaidan D'arcy, James McGurk, Jeremy Horwood, Nicola Peacock, Rob Chillcot, Sarah Farthing, Victoria Fletcher-Wood, Zoe Lowrie.

Trained by Clare Bell

**Samples:**

Dorothy Collett, Emily Holman, Emily James, Glen Saunders, Joy Branscombe, Jan Wardle, Terry Portch, Lyn Booth, Lindy Tovey, Pauline Church (TL), Rosie Hoggett, Susan Greer.

Trained by Pauline Church  
 Advised by Richard Jones

**Vision:**

Angela Hay, Cath Wasley, Helen McCarthy, Maria Barnes, Margaret Howard, Julie Parker, Rhiannon Bader.

Staff trained and advised by Dr Cathy Williams

**Admin Team:**

Patrick Bell, Hazel Blake, Amanda Carmichael, Lucy Hunt (TL from 1.4.99), Tricia Hutchinson, Pauline Morgan (TL to 31.3.99), Janet Williams.

Staff trained by TLs and Amanda Carmichael  
 Advised by Jennie Cross for parent interviews)

**Funding secured**

*This data is being collated*

### Appendix 3: 'Please Bring' Questionnaire

**Please bring this questionnaire to Focus at 7 with you**

#### Section A: About your study child's eyes

A1. To your knowledge, has a blood relation of your study child ever had one of the following eye problems?

- |  | Yes                        | No                         |   |
|--|----------------------------|----------------------------|---|
| a) A squint (a "turn" in one eye)  | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | → <b>If no to both<br/>go to A2 below</b> |
| b) A lazy eye (or an eye that doesn't see well even with glasses, or patching treatment was given) | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |   |

If **yes**, to either of these questions above, please indicate their relationship to your study child:

c)	<b>A</b> <b>Is a relative with squint</b>	<b>B</b> <b>Is a relative with "lazy eye"</b>
i) Mother	<input type="checkbox"/> 1	<input type="checkbox"/> 1
ii) Father	<input type="checkbox"/> 1	<input type="checkbox"/> 1
iii) Brother/sister	<input type="checkbox"/> 1	<input type="checkbox"/> 1
iv) Uncle/aunt	<input type="checkbox"/> 1	<input type="checkbox"/> 1
v) Cousin	<input type="checkbox"/> 1	<input type="checkbox"/> 1
vi) Grandparent	<input type="checkbox"/> 1	<input type="checkbox"/> 1
vii) Other	<input type="checkbox"/> 1	<input type="checkbox"/> 1

A2. Has anyone ever thought that your study child has/had an eye problem?

- Yes  1      No  2 → **If no, go to A3 on page 2**

If  
**yes**,

please indicate below everyone who thought this :

- |                          |                            |   |                            |
|--------------------------|----------------------------|---|----------------------------|
| a) Yourself/your partner | <input type="checkbox"/> 1 | f) Relative/friend                        | <input type="checkbox"/> 1 |
| b) GP                    |                            | g) School nurse                           | <input type="checkbox"/> 1 |
| c) Health Visitor        |                            | h) Orthoptist at Children in Focus clinic | <input type="checkbox"/> 1 |
| d) Orthoptist at a       | <input type="checkbox"/> 1 |   | <input type="checkbox"/> 1 |

1

screening clinic

i) Other (please tick & describe)

e) Teacher

1

A3. Has your study child ever been seen by an eye specialist?

Yes 1

No 2

→ If no, please go to B1 on page 3

If yes,

please indicate all the places where your study child's eyes have been examined and the number of visits to each place (**do not include visits to Children in Focus clinics**).

	Yes	Number of visits
a) Health Centre/Clinic	1	→
b) Bristol Eye Hospital	1	→
c) Eye clinic in another hospital	1	→
d) At an optician's or optometrist's shop	1	→
e) By a private eye doctor or ophthalmologist	1	→
f) Other place	1	→

A4. Has anyone taken time off work to take your study child on these visits?

Yes 1

No 2

→ If no, please go to A5 below

If yes,

please indicate who, and how many hours taken off work in total:

	Yes	Number of hours
a) Mother	1	→
b) Father	1	→
c) Other carer	1	→

A5. Has your study child had any of the following?

	No	Yes	Number
a) Glasses	1	2	how many pairs in total?
b) Patches for the better eye	1	2	for how many months?
c) Eye drops	1	2	how many bottles in total?
d) An eye operation	1	2	how many operations?

A6. Have you spent any money on eye treatments or glasses for your study child?

**Amount**

No  <sub>1</sub>      Yes  <sub>2</sub> → If yes, write how much in £'s

### Section B: About your study child's food and drink

B1. a) What type of milk does your study child drink most often ?

full fat  <sub>1</sub>      semi-skimmed  <sub>2</sub>      skimmed  <sub>3</sub>      other  <sub>4</sub>

Please give full name from the carton/bottle (or colour of bottle top) most often drunk.

---

b) Does this child drink any other type of milk?

Yes  <sub>1</sub>      No  <sub>2</sub> → If no, go to B2a below

If yes, please give full names of these from the cartons/bottles (or colour of bottle tops).

---

....

B2. a) Does your study child have soft drinks e.g. squash, lemonade, coke, fruit juice, fizzy water?

Yes  <sub>1</sub>      No  <sub>2</sub> → If no, go to B3 on page 4

Please write in the enclosed diary full names and brands from the bottle or carton of any drinks used during the 3 days of the diary.

b) How often are these soft drinks low sugar, no added sugar or sugar free?

all of the time	<input type="checkbox"/> <sub>1</sub>	$\frac{3}{4}$ of time	<input type="checkbox"/> <sub>2</sub>	$\frac{1}{2}$ of time	<input type="checkbox"/> <sub>3</sub>
$\frac{1}{4}$ of time	<input type="checkbox"/> <sub>4</sub>	never	<input type="checkbox"/> <sub>5</sub>		

c) When this child has a drink of squash or fruit juice how does he/she drink it?

Never has squash or fruit juice  1

Drinks it quickly (less than 15 mins)  2

Drinks it slowly (15-45 mins)  3

Drinks it very slowly (more than 45 mins)  4

B2. d) When this child has a fizzy drink (including fizzy water) how does he/she drink it?

Never has a fizzy drink  1

Drinks it quickly (less than 15 mins)  2

Drinks it slowly (15-45 mins)  3

Drinks it very slowly (more than 45 mins)  4

B3. How often does your study child use a straw to drink through?

Never or rarely  1

Once a week  2

2-3 times a week  3

4-6 times a week  4

everyday some  5

everyday all  6

drinks

B4. a) How often does your study child chew chewing gum or bubble gum?

Never or rarely  1

Once a week  2

2-3 times a week  3

4-6 times a week  4

every day  5

b) What type or brand does he/she usually have? .....

c) Is this chewing gum sugar free?

Yes  1 No  2 Sometimes  3

B5. a) How often does your study child have a drink in bed at night?

Some nights  1      Every night  2      Never  3 → **Go to B5c below**

b) What type of drink does he/she have **most often**?

Please describe .....

c) How often does this child have something to eat in bed at night?

Some nights  1      Every night  2      Never  3 → **Go to B6 on page 5**

B5. d) What type of food does he/she have **most often** in bed?

Please describe .....

B6. What types of fat or oil do you use for your study child when frying or roasting?

Do not use fat or oil when frying or roasting  1 → **Go to B7 below**

If **used** please give full names and brands on the packets/bottles.

.....

.....

B7. Do you do any home baking e.g. cakes, pastry etc?

Yes  1      No  2 → **If no, go to B8a below**  
**If yes,**

What types of fat e.g. margarine, lard etc. do you use **most often** for home baking?

Please give full names and brands from the packet(s):

.....

.....

B8. a) What type of spreading fat (e.g. margarine, butter) do you usually use for your study child? **If not used at all go to B9a on page 6.**  
Please give full name and brand from the packet of the type used **most often**:

.....

b) How thickly is this spread for this child?

thick  1      medium  2      thin  3

c) Do you use any other types of spreading fat for this child?

Yes  1      No  2 → If no go to B9a on page 6

If yes, please give full names and brands of other spreading fats used:

---

d) How thickly is this other fat spread for this child?

thick  1      medium  2      thin  3

B9. a) What type of bread does your study child eat **most often**?

white	<input type="checkbox"/> 1	brown	<input type="checkbox"/> 2	wholemeal	<input type="checkbox"/> 3
granary	<input type="checkbox"/> 4	soft grain white	<input type="checkbox"/> 5	other	<input type="checkbox"/> 6

Please give full description

---

b) What sort of loaf do you **usually** use?

sliced  1      unsliced  2      sliced in shop  3

c) What thickness is the slice **usually**?

thick  1      medium  2      thin  3

d) Does your study child eat any other types of bread regularly?

Yes  1      No  2 → If no, go to B10a below

If yes,

Please give full description

---

e) What thickness is the slice usually?

thick  1      medium  2      thin  3

B10. a) How often does your study child **eat** the crusts off the edge of an ordinary slice of bread?

all of time  1 sometimes  2 never  3

b) How often does your child **eat** the crusts off the edge of a slice of **toast**?

all of time  1 sometimes  2 never  3

B11. a) How often do you add salt to your study child's food in cooking?

all of the time  1  $\frac{3}{4}$  of time  2  $\frac{1}{2}$  of time  3  
 $\frac{1}{4}$  of time  4 never  5

B11. b) How often is salt added to this child's food at the table?

all of the time  1  $\frac{3}{4}$  of time  2  $\frac{1}{2}$  of time  3  
 $\frac{1}{4}$  of time  4 never  5

B12. child? Are there any of the following foods which you avoid giving to your study

(Please tick all that apply).

a) Poultry  1  
c) Beef  1  
e) Eggs  1  
g) Milk  1  
i) None  1

b) Fish  1  
d) Other reat  1  
f) Cheese  1  
h) Butter  1  
j) Other  
(please describe)  1

.....

B13. Does your study child eat the fat on meat?

Yes, all of it  1  
No  3

Yes, some of it  2  
Never eats me  7

B14. Is your study child on any kind of special diet?

Yes  1

No  2

If yes, please describe

.....

### Lunch at School

B15. How many times during a **normal** school week (not weeekends) does your child have:

a) a school dinner  times

b) a packed lunch  times

c) lunch at home  times

B16. a) Does your study child have ~~any~~ extra vitamins or minerals as tablets or drops?

Yes  1

No  2

→ If no, go to C1below

If yes,

Please give full names and brands from the packet(s):

.....

b) How often does he/she take these vitamins?

every day  1

4-6 times  2  
a week

2-3 times  3  
a week

once a week  4

less than once a wee  5

### Section C:

C1. This questionnaire was completed by:

Yes

No

a) child's mother

1  
.....  
 1

2  
.....  
 2

b) child's father

c) someone else  
(please describe)

---

C2. Please give the date on which you completed this questionnaire

day

month

year

--	--

--	--

--	--	--	--

C3. Please give **your study child's** date of birth

day

month

year

--	--

--	--

1	9	9	
---	---	---	--

This study could not have been undertaken without the exceptional support and guidance of both the ALSPAC Steering Committees and the ALSPAC Ethics Committee. In addition we are privileged to have the collaboration support of those acknowledged in the text, together with contributions from the whole of the ALSPAC Study Team. Most of all, however, we are grateful to the parents and children who have taken part.