THE ALSPAC STUDY

F08 FILE

Focus @ 8

At around 8 years

Prepared by

The ALSPAC Study Team

Documentation giving frequencies, background and instructions for use.

Last updated for version 4a of the RELEASE file.

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CONTENTS

1. Organisation of Focus at 8

1.1 Background

The original study design had been for a detailed hands-on set of tests under standardised circumstances when the children were aged 7.

Although the initial plan had been to see all the children as a 'one-of' at age 7, the length of time to complete all the testing sessions raised the issue of validity or the results obtained towards the end of the day, when the children are tired.

Consequently we decided to test each child on 2 half-days, a year apart. The tests for the first half-day were mainly physical (see Focus@7 documentation) and those for the second half day at Focus@8 were mainly psychometric and psychological. Exactly which tests were in each half-day have been dictated by questions both of scientific validity and funding.

In order to determine the optimum way of testing and assessing children at age 8 we held a number of workshops to which a variety of experts in different fields contributed. In addition, a number of others who were unable to attend a particular workshop contributed useful comments.

1.2 Space and Time for Observations

In order to be able to invite the children of more than 11,000 active participants at the time of the Focus visit, we aimed to examine 32 children a day, 5 days a week for up to 25 months in two clinics. A variety of different observations with specialised equipment and trained assessors were undertaken.

We found that the most practical way to do this, given an estimated 3 hours of observations, was to divide the time available into units of 20 minutes and multiples of 20 minutes (see Figure 1.1) There were then 4 different orders in which the tests were carried out in each half-day. The order followed by each child was recorded to ensure that any order effect could be established and adjusted for if necessary. It was also noted whether or not the child ate breakfast and/or lunch that day, and whether he or she ate a biscuit offered before the IQ test.

Some of the items administered at 8.5 years covered sensitive subjects and we therefore introduced longer slots to include these so that we had longer to gain a good rapport with the children. For example, in the Posting Session, we interviewed the children on a sensitive subject, bullying, so we needed to have a slot long enough to have the child doing a planned task that was fun to do (the attention task involving circling spaceships) first before entering into the interview. We then needed time and space after the interview to finish on another fun task (the Opposite Worlds task). We also needed longer sessions for measures such as the WISC (IQ measure) and the Lung Function (Breathing) session.

We scheduled a break in Focus at 8 where there wasn't one at Focus @ 7. This was because the measures used involved more active participation from the children than the

measures used at 7 (for example, answering questions and carrying out tasks for an IQ assessment at 8, rather than being measured or weighed at 7). The timing of the breaks was worked out so that every child had a break separating the two slots involving a) measures of attention, (in the Posting Session, lasting 40 minutes) and b) IQ (in the Activities Session, lasting 60 minutes). Children were also given a short break during the Activities Session when they left the room to take part in a physical activity.

In order to see the 8 children in a half day (see Figure 1.1) in the clinic, 10 rooms were necessary: one for Speech and Language (SL), 2 for Lung Function (BS – Breathing session), 3 for the Posting Session (PS) and 4 for the Activities Session (AS).

1.3 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.

Figure 1.1: Schematic representation of testing 8 children per half day at age 8 in each of the 2 separate clinics

Child	1	2	3	4	5	6	7	8
Appt time	9.20	9.20	9.30	9.30	9.30	9.40	9.40	9.50
9.30	PS	SL						
9.40			AS	BS	AS			
9.50		BS				SL	PS	
10.00								AS
10.10	SL					PS		
10.20				AS				
10.30	BS	PS					SL	
10.40								
10.50			SL		PS		BS	
11.00						AS		
11.10			BS					PS
11.20	AS	AS						
11.30				SL	BS			
11.40							AS	
11.50			PS	PS				SL
12.00						BS		
12.10					SL			BS
12.20								
12.30								
12.40								
leaving time	12.30	12.30	12.40	12.40	12.40	12.50	12.50	13.00

Child	9	10	11	12	13	14	15	16
Appt time	13.30	13.30	13.40	13.40	13.40	13.50	13.50	14.00
13.40	PS	SL						
13.50			AS	BS	AS			
14.00		BS				SL	PS	
14.10								AS
14.20	SL					PS		
14.30				AS				
14.40	BS	PS					SL	
14.50								
15.00			SL		PS		BS	
15.10						AS		
15.20			BS					PS
15.30	AS	AS						
15.40				SL	BS			
15.50							AS	
16.00			PS	PS				SL
16.10						BS		
16.20					SL			BS
16.30								
16.40								
16.50								
leaving time	16.40	16.40	16.50	16.50	16.50	17.00	17.00	17.10

1.4 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 will encourage their friends to come if they are eligible.

Mothers (fathers or other carers) bring 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 which aims to make children healthier in the future.

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 proceeded:

a) A 3-minute turn-round time in each session so that a '20-minute' session actually meant 17 minutes, a '40-minute' session meant 37 minutes, and a '60 minute' session meant 57 minutes.

b) Anyone arriving late missed the first session they were scheduled for and went on to the second, or missed part of the content of a longer session.

c) If the clinic was running late, each tester tried to reduce what was attempted in the session.

d) If the morning sessions threatened to overrun with any child, the last session, or part of the session was missed out.

The door of each of the testing room was painted in a different colour with different themes in the room itself relating to that colour. This was done in order to make the visit seem more exciting and personal for each child (children wrote the colour of each of the rooms they visited in order into their booklet), but without distracting the

child from the sessions. The room the child was in for each session has been recorded.

1.5 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. The expected dates of delivery were between 1.4.91 and 31.12.92. All children were invited to Focus at 8 regardless of where they currently lived. They were invited to attend at about age 8½.

1.6 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 83 sets of twins (no triplets or quads) came to Focus at 8.

1.7 Repeated Sampling

Random error in the measurement of exposures weakens associations between possible explanatory variables and disease (De Clerk *et al,* 1989, Phillips & 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 were invited back for repeat measures at 8½ within 3 months of the initial examination. These will be used to conduct sensitivity analyses using a variety of techniques for assessing and correcting measurement error (Bashir & Duffy, 1997). The only session suitable for repetition was lung function. The learning effect of doing the other psychological and speech & language measures would invalidate repeats in these areas.

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 would be happy to do so, a random sample of one per day was identified and invited back to repeat the lung function test.

1.8 The Child's Booklet

In advance of the 8-year visit, each child was sent a booklet, 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.

1.9 Children with Special Needs

It was envisaged that some children with special needs would find some of the tests extremely difficult. Experts in the special needs field determined the best way of testing these children with the minimum of disruption to them and their families. Parents/carers were asked via telephone contact, 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.

1.10 The Clinic Site

It is important to note that problems with the rooms in which the sessions were held have been identified by the psychology team. Individual researchers may therefore want to take into account 'room' in their analyses. It was recorded for every session. It should also be noted that building works were being carried out in and around the vicinity of the clinic site, this may have caused disturbance or distraction in some sessions.

1.11 Schools visits

In order to maximize the number of children seen, some (n=54) were visited in their schools if they had been unable to attend their Focus at 8 visit. A variable is included on the release file flagging those cases who were seen in their school (F8012). The most important thing to note for these children is that they were significantly older than the target age of 8 ½ when they were eventually seen. This is however, reflected in the age of the child at testing (variables F8003a-c).

1.12 Release file version history

Release version 3c – December 2017

- Lung Function Session: The raw data for the lung function session has now been added to the release file, which includes measures of forced vital capacity, forced expiratory volume and forced expiratory flow (*f8lf100* to *f8lf106*). Note that some of the previous derived variables in this section (*f8lf110* to *f8lf116*), which were standardized z-scores of the raw data controlling for age and height, have been dropped as researchers can now use the raw data to derive their own standardized variables. Citations to the references in the lung function session have now also been included in the reference list.
- Articulatory Skills: Clarification for the 'AVG' acronym in table 3.4.4a has been added to show that it stands for 'Appropriate Voice Quality'.

Release version 4a – March 2017

- Speech and language session: Addition of 3 sets of variables, coding of the WOLD expressive language recordings [*f8sl300* to *f8sl322*], Dysfluency and stuttering [*f8sl400* to *f8sl408*] and Persistent Speech Disorder [*f8sl500*], totaling 33 variables.
- Variable labels have been altered; replacing Ch for Child, F@8 for F8 etc.
- Regarding new cases, the following text has been removed from section 2.4.:

> *"However, we recommend that these cases 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"*

2. Invitation and Attendance

2.1 Eligibility

Families were eligible to be invited to Focus at 8 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 only.

In addition a number of 'new cases' were also invited to attend, regardless of whether they attended Focus @ 7 or not (see section 2.4).

2.2 Invitations and attendance

The parents of the children who were eligible to be invited to Focus at 8 were sent an initial letter, explaining about Focus at 8. These were sent three months before the ideal date of attendance for the child (i.e. when they were 8 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 to the Family Liaison team and an attempt was made to contact them 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 at 8 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 at 8 but were sent a slightly different initial letter.

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 at 8 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 at 8 visit with one to Bristol for other reasons, such as visiting relatives.

The families who said they would like to attend following the initial letter were sent an invitation letter giving a visit date and time which they were asked to confirm.

Using the 13971 children alive at 1 year of age (i.e. excluding the 'new cases') as the baseline for attendance to focus @ 8. A total of 1222 (8.7%) were no longer eligible, using the definition in section 2.1 and were therefore not approached. Of those eligible, 3684 (28.9%) 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). 1281 (10.0%) responded to the initial letter stating that they did not want to attend F8. 635 had

appointments made for them but failed to attend on the day. A total of 7488 children attended the Focus at 8 clinic, it is important to note that this includes 317 'new cases'.

Reason Child did not attend F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not eligible for invite	1222	17.9	17.9	17.9
	2 Invited/no response	3684	54.0	54.0	71.9
	3 Invited/refused	1281	18.8	18.8	90.7
	4 Appt made, DNA	635	9.3	9.3	100.0
	Total	6822	100.0	100.0	

2.3 Re-invites

It was originally anticipated that approximately 3% of attendees would come back for a second visit to check reliability. The children only came back to repeat the lung function session as any possible learning effect may have reduced the repeatability of the psychological tasks.

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 (F8030 – to be created once LF data available).

Please note the difference between reinvites and revisits (see section 2.8).

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 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 316 new cases attended Focus at 8 (compared to 456 at Focus @ 7).

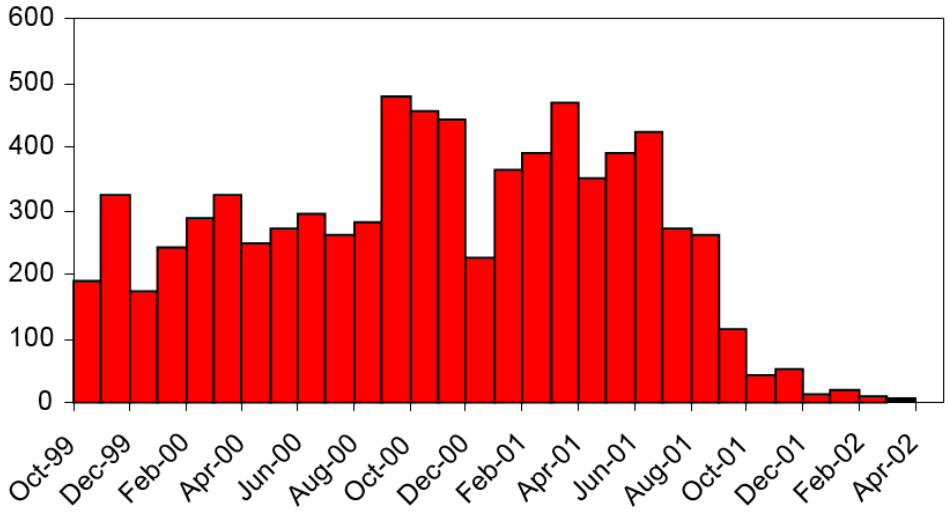
A variable is included on the release file flagging those cases who were new to ALSPAC from Focus @ 7 onwards (F8010). Note, that many of these 'new cases' also attended Focus @ 7.

F8010 Child is new case: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	317	4.2	4.2	4.2
	2 No	7171	95.8	95.8	100.0
	Total	7488	100.0	100.0	

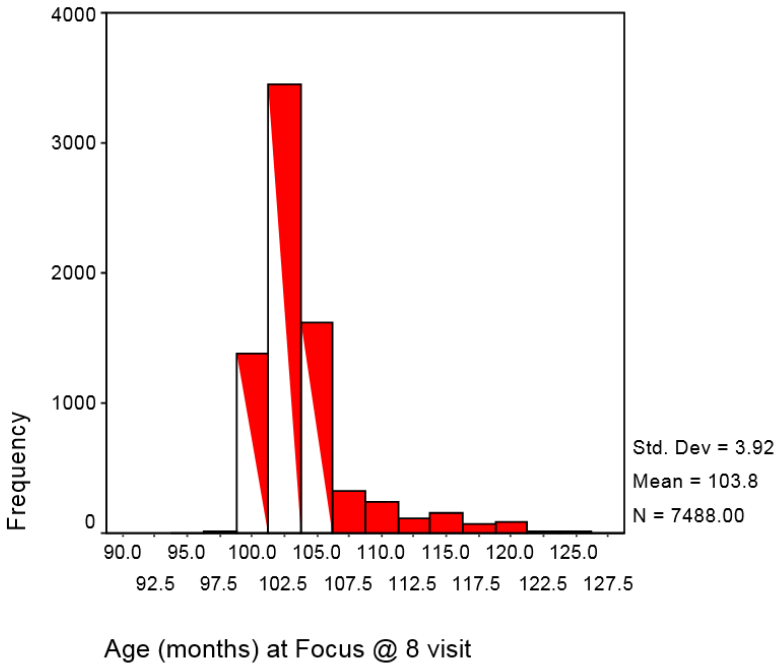
2.5 Month and year of attendance

The Focus at 8 clinics ran from October 1999 through until December 8th 2001 (although some children were seen in school beyond this date). Month and year of visit are included on the release files (F8001 and F8002 respectively). The chart below shows the attendance throughout this period (the tail at the right are those children who were seen in schools (see section 1.9).



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 (F8003a), weeks (F8003b) and months (F8003c), enabling the user to be as accurate as they choose. The chart below shows the distribution of age in months.



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 F8020 to F8023). 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 get to complete their lung function session during their visit they were offered the chance to return on another day to complete. This included those children who were deemed to be high risk for the Lung function session and needed a Doctor present (see section 3.2). A Flag is available to indicate these children (F8004).

F8004 Child came back for revisit to complete lung function: F @ 8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 Yes	254	3.4	3.4	3.4
	2.00 No	7234	96.6	96.6	100.0
	Total	7488	100.0	100.0	

Additional age, month and year have been provided for these revisits (F8006a-c, F8007 and F8008).

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

2.9 Biases in attendance

Table 2.9.1 overleaf gives an indication of the differences in the demographic characteristics of those children who attended Focus at 8 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 316 new cases have not been included here since the majority of information is not available for these cases (leaving 7173 cases for comparison).

It can be seen that a significantly greater proportion of children with higher educated and older mothers attended Focus at 8 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. There was no difference in mean gestation.

Table 2.9.1: Differences in characteristics of Focus at 8 attendees compared to non-attendees

	Attendees (n=7173)	Non-attendees alive at 1 year (n=6798)	Non-attendees, active at time of invite (n=5600)
Gender			
Boy	3593 (50.1%)	3621 (53.3%)	3397 (52.9%)
Girl	3878 (49.9%)	3177 (46.7%)	3021 (47.1%)
		χ^2=13.96 (p<0.0001)	χ^2=10.82 (p=0.001)
Maternal education			
< O level	1506 (21.8%)	2218 (40.3%)	2116 (41.1%)
O level	2416 (34.9%)	1884 (34.3%)	1753 (34.0%)
A level or higher	2996 (43.3%)	1395 (25.4%)	1284 (24.9%)
		χ^2=631.31 (p<0.0001)	χ^2=648.77 (p<0.0001)
Maternal age			
< 20	229 (3.2%)	773 (11.4%)	753 (11.7%)
21-24	824 (11.5%)	1508 (22.2%)	1443 (22.5%)
25-29	2851 (39.8%)	2548 (37.5%)	2399 (37.4%)
30-34	2379 (33.2%)	1477 (21.7%)	1367 (21.3%)
35+	888 (12.4%)	494 (7.3%)	456 (7.1%)
		χ^2=827.03 (p<0.0001)	χ^2=860.70 (p<0.0001)
Housing tenure			
Owner-occupier	5801 (83.3%)	3761 (62.1%)	3485 (61.2%)
Council/HA	628 (9.0%)	1449 (23.9%)	1401 (24.6%)
Other	531 (7.6%)	851 (14.0%)	810 (14.2%)
		χ^2=775.47 (p<0.0001)	χ^2=812.10 (p<0.0001)
Ethnicity of child			
White	6543 (96.1%)	4929 (93.4%)	4602 (93.2%)
Non-white	263 (3.9%)	346 (6.6%)	337 (6.8%)
		χ^2=45.09 (p<0.0001)	χ^2=51.78 (p<0.0001)
Mean maternal age	29.14 (sd=4.6)	26.79 (sd=5.1)	26.76 (sd=5.1)
		t=28.75 (p<0.0001)	t=29.43 (p<0.0001)
Mean birthweight	3415 (sd=554)	3366 (sd=567)	3365 (sd=566)
		t=5.22 (p<0.0001)	t=5.25 (p<0.0001)
Mean gestation	39.44 (sd=1.9)	39.42 (sd=1.9)	39.41 (sd=1.9)
		t=0.63 (p=0.532)	t=0.58 (p=0.561)

3. THE OBSERVATIONS

General Information

At Focus at 8 there were four separate sessions known as:

1. Speech and Language (20 minute slot)
2. Lung Function (50 minute slot)
3. Posting Session (40 minute slot)
4. Activities Session (60 minute slot)

The posting and activities sessions were each composed of a number of measures, one of which was gender behaviour (Toys and activities – T&A). This was measured in either session depending on the time available, i.e. if a child went through the activities session first, T&A would have been measured at the end if time was available. Otherwise it was performed in the posting session later in the day. The measures collected in each session are shown in Table 3.1.

Four different data sheets were used within each of Activities and Posting sessions (shown in Table 3.1). Some of these sheets were used to record the results for several different measures. The data collected were keyed, stored and cleaned in separate files according to the data sheet rather than the session. Once all the data had been cleaned they were merged into a single file and made available for analysis.

Table 3.1: Order of measures within the posting and activities session and the code for the form used to collect the data.

Session and measure	Data sheet Code
Activities Session	
DANVA faces (computer)	LOC
WISC (10 subtests and forwards/backwards digit span test)	WSC
Self esteem (posting)	LOC
DANVA voices (computer)	LOC
Gender (posting) If time available	TAA
Behaviour during session	BAS
Posting Session	
Attention: Sky search; Motor Control; Dual Task	ATT
Locus of Control (direct questions)	LOC
Friends and School (direct questions)	FP
Friends and Peers (direct questions)	FP
Antisocial Activities (posting)	FP
Attention: Opposite World;	ATT
Gender (posting) If time available	TAP
Behaviour during session	BPR

NB: Locus of control was originally in the Activities session, but was moved early on into the posting session, however, the record sheet kept the code LOC.

The parents or guardians were asked not to accompany the children into the Activities and Posting Sessions. It was explained that *some* children might find it distracting if parents were there and that it was important to keep conditions as similar as possible for all children in order to obtain consistency in the data collection. It was also explained that the children would be told that any answers they gave would be confidential and that it may be breaking the agreement if a parent or guardian were present. They were also reassured that any activity was voluntary and the child was free to stop at any time. Parents were *not* prevented from accompanying their children if they felt strongly about it. However, certain parts of the sessions were not carried out in this case (locus of control, friends and school, friends and peers, antisocial activities, self-esteem) as we did not wish to put children in an uncomfortable position or to collect data we could not be confident about.

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 several 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 were used to record the data (see Table 3.1). The datasheets were filed into folders and sent for double-keying on a weekly basis. The folders were returned with an electronic version of the data. A member of the research computing team performed a variety of error checks on the data and error reports were sent to the Focus teams responsible for that data. Corrections were made and an unclean file was made available to a member of the statistics team, who performed the final stage of the cleaning process.

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

A note about *all* coded comments. These codes have been obtained from comments made during the sessions. They do not form the main set of data but are rather included here for the interest of the researcher. These comments variables will include information that was *not* systematically collected for *all* children (unlike the main data variables). For example, some children may have offered additional information that has been coded (in order to keep records as comprehensive as possible) but this information would not necessarily have been sought from all children. Similarly, some testers may have made observations about the session that other testers may not have made. This is in contrast to official behavioural variables which have been collected systematically on all children. Researchers may or may not wish to look at these comments variables.

There is a standard variable naming system throughout Focus at 8. Variables relevant to the whole visit are named F8***, where *** is a three digit number. The remaining data is named according to the data sheet it was collected on using the format F8xx***, where xx is a two letter abbreviation for that data sheet (e.g. fp for friends & peers) 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 F8xx004 represents the tester within each session. The abbreviations used in the variable labelling are shown below.

PO: Posting session overall
LC: Locus of Control
FP: Friends and Peers
FS: Friends and Schools
AA: Antisocial Activities
GB: Gender Behaviour
BP: Behaviour during Posting session

AC: Activities session overall
DV: DANVA
WS: WISC
SE: Self Esteem

SL: Speech and language

LF: Lung function

3.1 Posting Session

Variables indicating whether the Child entered the posting session, if they did not the reason why not and the tester for that session are detailed below. These data apply to Attention, Locus of Control, Friends & Schools, Friends & Peers and Antisocial Activities.

F8PO001 Child entered Posting session: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7451	99.5	99.5	99.5
	2 No	37	.5	.5	100.0
	Total	7488	100.0	100.0	

F8PO001A Reason Child did not do Friends & Peers session: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 No staff	1	.0	.0	.0
	2 Ch left early	8	.1	.1	.1
	3 Ch arrived late	10	.1	.1	.3
	4 Ch/family refused	3	.0	.0	.3
	7 Ch did session	7451	99.5	99.7	100.0
	Total	7473	99.8	100.0	
Missing	-1 Missing	15	.2		
Total		7488	100.0		

F8PO010 Posting session - Room: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Gold	3	.0	.0	.0
	2 Green	5	.1	.1	.1
	3 Purple	1888	25.2	25.3	25.4
	5 Silver	1	.0	.0	25.5
	6 Yellow	1515	20.2	20.3	45.8
	7 Orange	2331	31.1	31.3	77.1
	8 Green spot	4	.1	.1	77.1
	9 Red spot	3	.0	.0	77.2
	10 Orange spot	1099	14.7	14.7	91.9
	11 Purple spot	529	7.1	7.1	99.0
	12 Green HH	10	.1	.1	99.2
	13 Red HH	10	.1	.1	99.3
	14 In School	53	.7	.7	100.0
	Total	7451	99.5	100.0	
Missing	-2 Did not start Posting Session	37	.5		
Total		7488	100.0		

F8PO004 Posting session Tester: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	228	3.0	3.1	3.1
	2	244	3.3	3.3	6.3
	3	325	4.3	4.4	10.7
	4	271	3.6	3.6	14.3
	5	170	2.3	2.3	16.6
	6	21	.3	.3	16.9
	7	301	4.0	4.0	20.9
	8	277	3.7	3.7	24.7
	9	382	5.1	5.1	29.8
	10	92	1.2	1.2	31.0
	11	192	2.6	2.6	33.6
	12	287	3.8	3.9	37.4
	13	440	5.9	5.9	43.3
	14	372	5.0	5.0	48.3
	15	381	5.1	5.1	53.5
	16	211	2.8	2.8	56.3
	17	129	1.7	1.7	58.0
	18	324	4.3	4.3	62.4
	19	237	3.2	3.2	65.5
	20	175	2.3	2.3	67.9
	21	238	3.2	3.2	71.1
	22	253	3.4	3.4	74.5
	23	254	3.4	3.4	77.9
	24	197	2.6	2.6	80.5
	25	230	3.1	3.1	83.6
	26	306	4.1	4.1	87.7
	27	155	2.1	2.1	89.8
	28	180	2.4	2.4	92.2
	29	298	4.0	4.0	96.2
	30	216	2.9	2.9	99.1
	31	65	.9	.9	100.0
	Total	7451	99.5	100.0	
Missing	-2 Did not start Posting Session	37	.5		
Total		7488	100.0		

3.1.1 Attention

Research has strongly indicated that there are functionally and anatomically distinct attention systems, including a system for voluntarily maintaining attention in the absence of strong environmental facilitation and a system for selection. The importance of attentional control systems for the allocation for attention across different tasks simultaneously has also been recognised. A number of attention tasks, developed by Tom Manly and Ian Robertson at the MRC Applied Psychology Unit in Cambridge, UK and Vicki Anderson at the University of Melbourne in Australia, have been designed to show normal variation within a normal population and to distinguish children with attention problems from those without. The tasks of theirs used here, taken from the TEACh, the Tests of Everyday Attention for Children (adapted from the adult version by Robertson, 1996) reflect different aspects of attention and appear to measure selective attention, the ability to divide attention between two tasks and attentional control.

At the beginning of the session, the psychologist noted whether the child was accompanied by an adult and the handedness of the child. Instructions for testers and datasheets can be found in Appendix two.

F8AT010 Attention session - Adult accompanied Ch: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 No	7210	96.3	99.1	99.1
	2 Child request	39	.5	.5	99.6
	3 Parent request	16	.2	.2	99.8
	4 Both	4	.1	.1	99.9
	5 Staff	2	.0	.0	99.9
	6 All	6	.1	.1	100.0
	Total	7277	97.2	100.0	
Missing	-2 Did not start Posting/Att Session	173	2.3		
	-1 Missing	38	.5		
	Total	211	2.8		
Total		7488	100.0		

F8AT013 Attention session - Handedness: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Left	877	11.7	12.0	12.0
	2 Right	6414	85.7	88.0	100.0
	Total	7291	97.4	100.0	
Missing	-2 Did not start Posting/Att Session	173	2.3		
	-1 Missing	24	.3		
	Total	197	2.6		
Total		7488	100.0		

Selective Attention and Motor Control: Sky Search

Description of tasks

This task examines the child's efficiency in filtering information and rejecting irrelevant/distracting information. The child has to circle pairs of identical spaceships from an array of non-identical and identical spaceships as quickly as possible, whilst trying to avoid missing any sets of spaceships out, or making any errors.

Selective Attention

The child was introduced to the task as "playing some outer space games". The tester explained that there were lots of spaceships which always travelled around in pairs, and that in some pairs the two spaceships are identical and in some pairs the two spaceships are different. The tester illustrated the former by circling a pair where they were identical, roughly and quickly. The child was first asked to work through a practise sheet and circle the identical pairs as quickly as possible but not missing any out. The child was asked to tick a box on the sheet to indicate that he/she had circled all the identical pairs he/she could find. Errors during the practice were gone through with the child. After the practise, a larger sheet was presented to the child containing more pairs of spaceships (twenty of which were identical), and the child was asked to do the same. The time taken was recorded in seconds.

F8AT020 Att Sky Search Started: F8

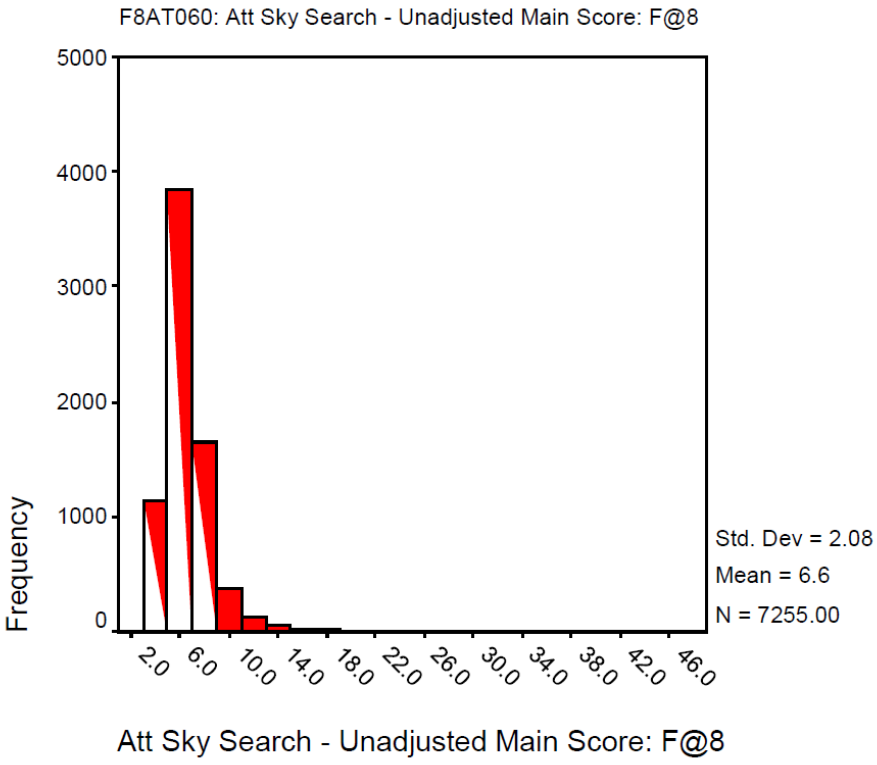
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7306	97.6	99.9	99.9
	2 No	9	.1	.1	100.0
	Total	7315	97.7	100.0	
Missing	-2 Did not start Posting/Att Session	173	2.3		
Total		7488	100.0		

Motor Task

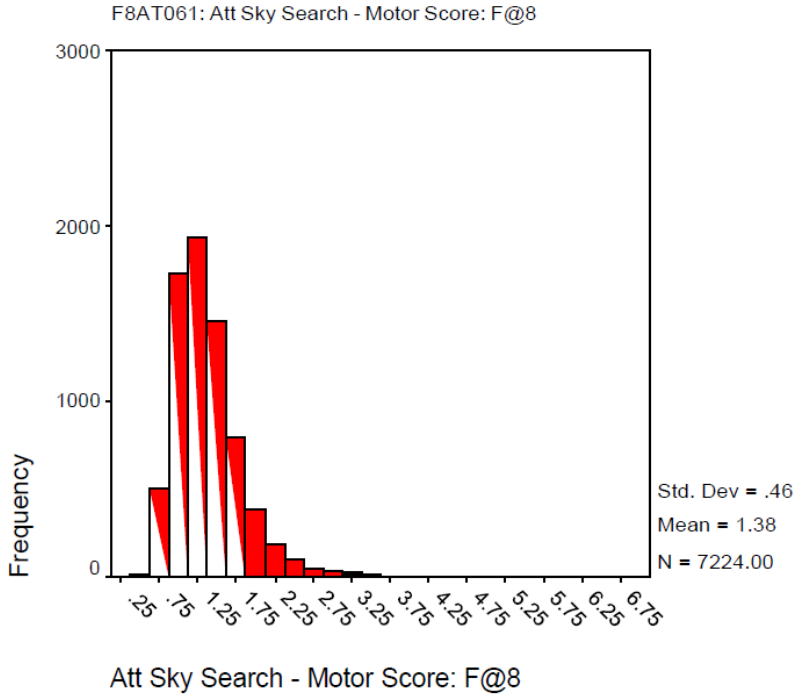
The above task for selective attention was repeated but with the non-identical pairs of spaceships removed, such that only twenty identical pairs remained (but in a different array from the first sheet). The aim of this task was to identify how quickly the child was at this motor task so that motor performance could be controlled for.

Variables for selective attention and motor control

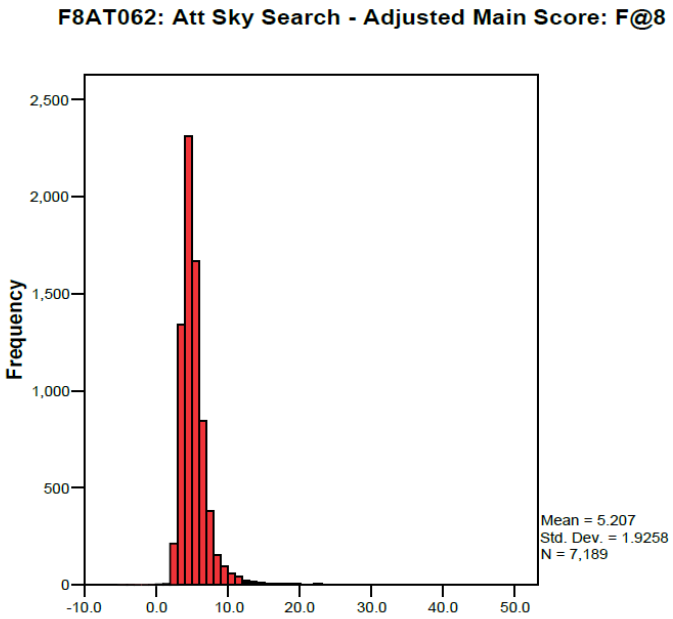
The selective attention task's main score F8AT060, before adjusting for motor speed, according to the TEACh was calculated as the time taken (in secs) for the Sky Search task (F8AT025) divided by the number of spaceship pairs correctly circled (20, minus the total number of pairs missed out, F8AT037), that is the average time taken to find each pair.



The motor score, F8AT061 is calculated as the time taken (in secs) for the motor task (F8AT041) divided by the number of pairs of spaceships correctly circled (20 minus F8AT045): average time to find each pair.



The final selective attention score is F8AT062, calculated as the first score, F8AT060, minus the motor score, F8AT061, thus adjusting for motor speed.



For those researchers not familiar with attention tasks, it is recommended that you use this final score, F8AT062 as the only selective attention score.

A normative score, F8AT065, has also been created, as per the manual instructions, however, this should be used with extreme caution as the original sample used by the authors to create the normative scores was small (~100 cases of relevant age). The children are divided into percentile bands based on the main score (represented in the labels of F8AT065) and the values represent age-scale scores

F8AT065 Att Sky Search - Normative Score: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 <0.2	60	.8	.8	.8
	2 0.2-0.6	44	.6	.6	1.4
	3 0.6-1.5	72	1.0	1.0	2.4
	4 1.5-3.3	111	1.5	1.5	4.0
	5 3.3-6.7	217	2.9	3.0	7.0
	6 6.7-12.2	511	6.8	7.1	14.1
	7 12.2-20.2	792	10.6	11.0	25.1
	8 20.2-30.9	1877	25.1	26.1	51.2
	9 30.9-43.4	1040	13.9	14.5	65.7
	10 43.4-56.6	1122	15.0	15.6	81.3
	11 56.6-69.2	730	9.7	10.2	91.5
	12 69.2-79.8	389	5.2	5.4	96.9
	13 79.8-87.8	186	2.5	2.6	99.5
	15 93.3-96.7	24	.3	.3	99.8
	16 96.7-98.5	14	.2	.2	100.0
	Total	7189	96.0	100.0	
Missing	-3 Did not do task	9	.1		
	-2 Did not start Posting/Att Session	173	2.3		
	-1 Missing	117	1.6		
	Total	299	4.0		
Total		7488	100.0		

Other variables which may be of interest include the number of non-identical spaceships that were incorrectly circled by the child (F8AT036), which would have added time to the child's task; whether the child kept going back to check whether they had failed to circle any of the identical pairs once they had reached the end of the sheet but before ticking the box to acknowledge that the task was over (some children spent almost as much time again checking the task as circling the spaceships in the first place): F8AT031; and the strategy that the child used to search for the identical spaceships - F8AT030 - the 'normal' strategy was to scan amongst the pairs methodically, either vertically or horizontally; 'random' meant that the child had not used such an apparent strategy and had appeared to search for identical pairs randomly (often resulting in many identical pairs being missed out); 'random/normal' meant that the child had started off with an apparently normal strategy and had then changed to a random strategy, or vice versa); 'other' meant that the child had used a different, but not as random as 'random', strategy, for example, scanning using a pattern.

Some children were still confused by the main task (F8AT023) even after clear instruction, practice (problems with practice: F8AT022), and re-explanation.

Dividing Attention: Dual Task

Description of task

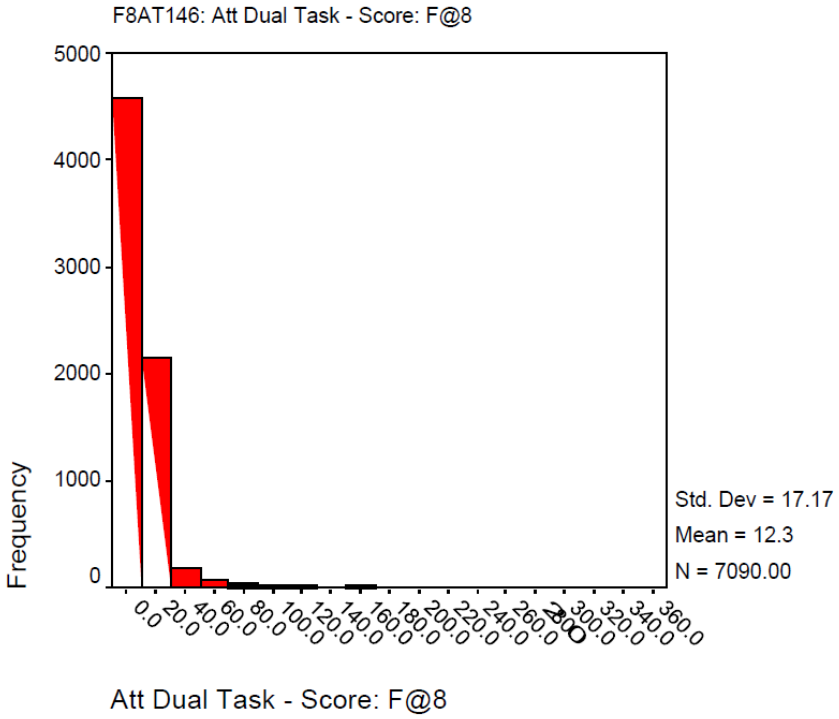
The selective attention task was repeated, but this time, the child also had to count the number of spaceship noises played together in series of differing lengths throughout the task. This task was also preceded by a practice attempt, and difficulties with the procedure discussed with the child. As before, emphasis was put on the speed of circling all the identical pairs of spaceships, without missing any out, but this time also telling the tester how many spaceship sounds he or she had heard at the end of each sequence of noises. The time taken to complete the task was recorded, as was the number of identical pairs missed out (or incorrectly circled) and the response to each of the attempts at counting.

F8AT100 Att Dual Task Started: F8

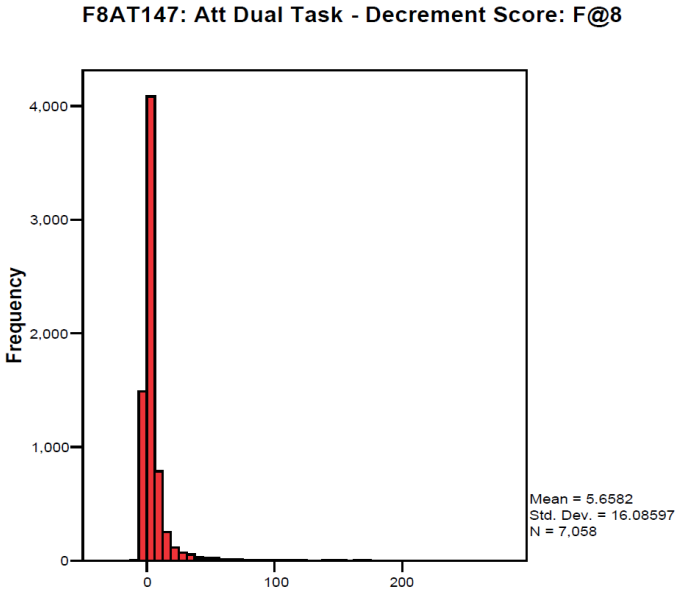
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7199	96.1	98.4	98.4
	2 No	116	1.5	1.6	100.0
	Total	7315	97.7	100.0	
Missing	-2 Did not start Posting/Att Session	173	2.3		
Total		7488	100.0		

Variables for dual task

The dual task score, F8AT146 was calculated as the time taken for the task (F8AT145), divided by the number of correctly identified pairs of spaceships circled (20 minus F8AT155), and then weighting this score according to the child's performance with the counting part of the task, by dividing this score by F8AT133, which was calculated by working out the number of series of spaceship noises the child counted correctly (F8AT136, although if he or she did not score any correctly, a score of 1 was given) divided by the number of series he or she heard before completing the task (F8AT137).



The dual task decrement score, F8AT147 was calculated by taking the selective attention task's score prior to adjusting for motor performance, F8AT060 from the score created from the dual task score itself, F8AT146, and so adjusting for the increased decrement in score to the selective attention task when a further task (counting the spaceship noises on the tape) was added.



A normative score, F8AT148, has also been created, as per the manual instructions, however, this should be used with extreme caution as the original sample used by the authors to create the normative scores was small (~100 cases of relevant age). The children are divided into percentile bands based on the main score (represented in the labels of F8AT148) and the values represent age-scale scores.

F8AT148 Att Dual Task - Normative Score: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 <0.2	935	12.5	13.2	13.2
	2 0.2-0.6	167	2.2	2.4	15.6
	3 0.6-1.5	259	3.5	3.7	19.3
	4 1.5-3.3	261	3.5	3.7	23.0
	5 3.3-6.7	294	3.9	4.2	27.2
	6 6.7-12.2	378	5.0	5.4	32.5
	7 12.2-20.2	590	7.9	8.4	40.9
	8 20.2-30.9	783	10.5	11.1	52.0
	9 30.9-43.4	1032	13.8	14.6	66.6
	10 43.4-56.6	716	9.6	10.1	76.7
	11 56.6-69.2	895	12.0	12.7	89.4
	12 69.2-79.8	295	3.9	4.2	93.6
	13 79.8-87.8	235	3.1	3.3	96.9
	14 87.8-93.3	121	1.6	1.7	98.6
	15 93.3-96.7	30	.4	.4	99.1
	16 96.7-98.5	17	.2	.2	99.3
	17 98.5-99.4	8	.1	.1	99.4
	18 99.99.8	15	.2	.2	99.6
	19 >99.8	26	.3	.4	100.0
	Total	7057	94.2	100.0	
Missing	-3 Did not do task	116	1.5		
	-2 Did not start Posting/Att Session	173	2.3		
	-1 Missing	142	1.9		
	Total	431	5.8		
Total		7488	100.0		

For researchers not familiar with attention tasks, it is recommended that only the main dual attention task score (F8AT147) be used.

Other variables which may be of interest include the number of non-identical spaceships that were incorrectly circled by the child (F8AT154), which would have added time to the child's task, whether the child kept going back to check whether he or she had failed to circle any of the identical pairs once he or she had reached the end of the sheet but before ticking the box to acknowledge that the task was over (some children spent almost as much time again checking the task as circling the spaceships in the first place): F8AT143, the strategy that the child used to search for the identical spaceships (F8AT142) and if the child was unable or unwilling to perform two tasks at once, and only circled the spaceships during the breaks between having to count the noises (F8AT144). Again, as with the selective attention task, some children were still confused by the main dual task (F8AT141) even after clear instruction, practice (problems with practice: F8AT140), and re-explanation.

Attentional control: Opposite Worlds

Description of task

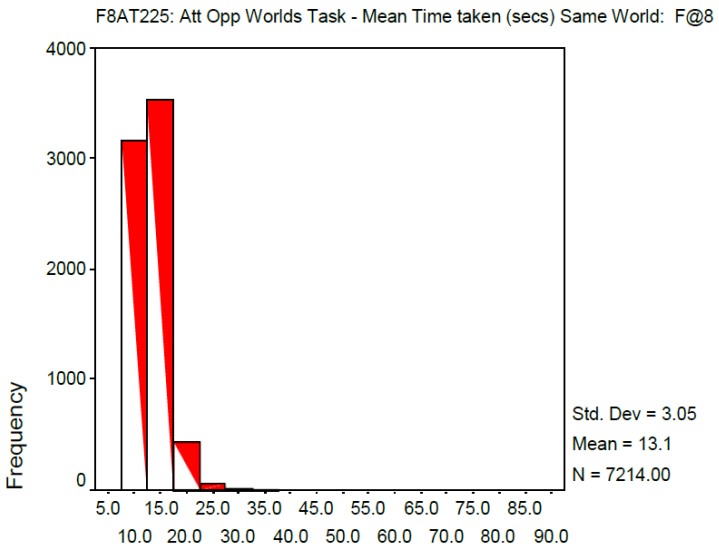
The opposite worlds subtask from the TEACh, is a basic kind of Stroop task, where the child
is required to give a verbal response that contradicts the visual information he or she is given. The child is shown a trail made up of the numbers 1 and 2 (with 24 numbers in total). In the 'same world' (control) condition, he or she must read the numbers out as they are, as quickly as possible (while the tester keeps his or her finger next to each in the trail until the child had read it correctly). In the 'opposite world' condition, the child has to inhibit a pre-potent (very familiar) response must call out 'two' when he or she reaches a 1 and 'one' when he or she reaches a 2 (and again, the tester keeps his or her finger by the number until the child has given the correct response). The child is given a demonstration of each condition and has a practice attempt at each before being reminded of the rules. There are four test trials: a same world trial, followed by two opposite world trials and finishing with another same world trial.

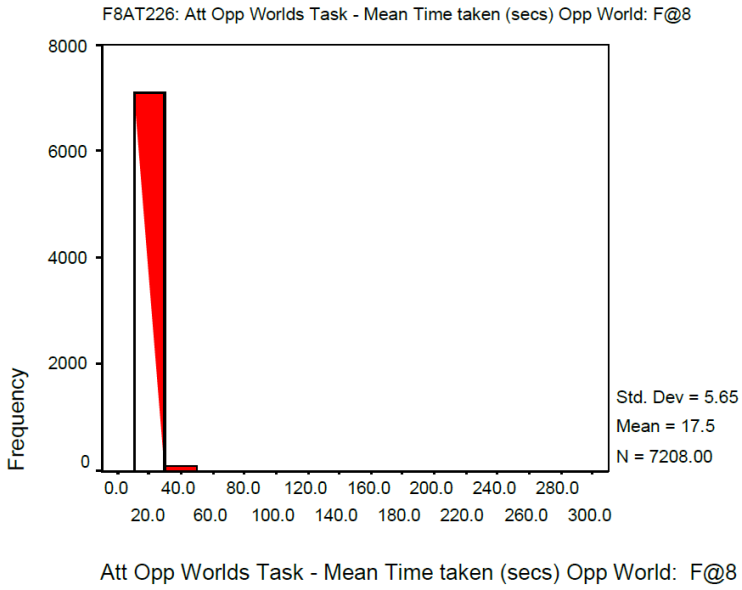
F8AT200 Att Opp Worlds Task Started: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7239	96.7	99.0	99.0
	2 No	76	1.0	1.0	100.0
	Total	7315	97.7	100.0	
Missing	-2 Did not start Posting/Att Session	173	2.3		
Total		7488	100.0		

Variables for attentional control

The mean time taken for the same world conditions is F8AT225, calculated from the same world trial times F8AT205 and F8AT220; the mean time taken for the opposite world condition is F8AT226, calculated from the opposite world trial times F8AT210 and F8AT215.





Some researchers might also wish to use F8AT226, the mean time taken for opposite world trials, on its own.

Normative scores, F8AT228 and F8AT229, have also been created, as per the manual instructions, however, these should be used with extreme caution as the original sample used by the authors to create the normative scores was small (~100 cases of relevant age). The children are divided into percentile bands based on the main score (represented in the labels of F8AT228 and F8AT229) and the values represent age-scale scores.

F8AT228 Att Opp Worlds Task - Normative score Same World: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 <0.2	1	.0	.0	.0
	2 0.2-0.6	1	.0	.0	.0
	4 1.5-3.3	3	.0	.0	.1
	5 3.3-6.7	2	.0	.0	.1
	6 6.7-12.2	3	.0	.0	.1
	7 12.2-20.2	2	.0	.0	.2
	8 20.2-30.9	3	.0	.0	.2
	9 30.9-43.4	7	.1	.1	.3
	10 43.4-56.6	16	.2	.2	.5
	11 56.6-69.2	26	.3	.4	.9
	12 69.2-79.8	34	.5	.5	1.4
	13 79.8-87.8	68	.9	.9	2.3
	14 87.8-93.3	76	1.0	1.1	3.4
	15 93.3-96.7	100	1.3	1.4	4.7
	16 96.7-98.5	177	2.4	2.5	7.2
	17 98.5-99.4	241	3.2	3.3	10.5
	18 99.99.8	290	3.9	4.0	14.6
	19 >99.8	6164	82.3	85.4	100.0
	Total	7214	96.3	100.0	
Missing	-3 Did not do task	76	1.0		
	-2 Did not start Posting/Att Session	173	2.3		
	-1 Missing	25	.3		
	Total	274	3.7		
Total		7488	100.0		

F8AT229 Att Opp Worlds Task - Normative score Opp World: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 <0.2	2	.0	.0	.0
	2 0.2-0.6	1	.0	.0	.0
	3 0.6-1.5	4	.1	.1	.1
	4 1.5-3.3	1	.0	.0	.1
	5 3.3-6.7	1	.0	.0	.1
	6 6.7-12.2	4	.1	.1	.2
	7 12.2-20.2	4	.1	.1	.2
	8 20.2-30.9	7	.1	.1	.3
	9 30.9-43.4	10	.1	.1	.5
	10 43.4-56.6	17	.2	.2	.7
	11 56.6-69.2	24	.3	.3	1.0
	12 69.2-79.8	48	.6	.7	1.7
	13 79.8-87.8	76	1.0	1.1	2.8
	14 87.8-93.3	120	1.6	1.7	4.4
	15 93.3-96.7	191	2.6	2.6	7.1
	16 96.7-98.5	330	4.4	4.6	11.7
	17 98.5-99.4	434	5.8	6.0	17.7
	18 99.99.8	693	9.3	9.6	27.3
	19 >99.8	5241	70.0	72.7	100.0
	Total	7208	96.3	100.0	
Missing	-3 Did not do task	76	1.0		
	-2 Did not start Posting/Att Session	173	2.3		
	-1 Missing	31	.4		
	Total	280	3.7		
Total		7488	100.0		

Other variables for this subtask include whether the child had problems during the practice (F8AT201) and with the main (F8AT202) task, and whether child had difficulty following instructions (F8AT203).

3.1.2 Locus of Control

Locus of control of reinforcement has been defined as the perception of a connection between one's actions and their consequences (Rotter, 1966). People who believe that an outcome is largely contingent upon their own behaviour are seen as having a more *internal* locus of control, whereas those who believe that luck, fate, chance or powerful others largely determine an outcome are considered to be more *external*. Measures of internality and externality have been shown to be associated with a number of different factors, including academic achievement (see Findley & Cooper, 1983; Kalechstein & Nowicki, 1997, for reviews), psychological well-being and beliefs (for example, see Lefcourt, 1983; 1982).

Locus of control appears to be an important factor in the choices people make (for example, a child with an internal locus of control, who perceives a connection between his or her behaviour, *trying hard at school*, and outcome, *academic achievement*, may be more likely to try hard at school). However, little is known about the *development* of individual differences in locus of control (e.g., see Carton & Nowicki, 1994). Research has shown that children who have an internal rather than an external locus of control are more likely to have parents who treat them consistently, give them more autonomy and provide a warmer, more supportive relationship. They are also reported as having experienced less stress and fewer life events (Carton & Nowicki, 1996). However, it is not known, for example, how much the development of an external locus of control arises from experiences the child has had little control over, or whether, for example, a child with an internal locus of control *encourages* more consistency, warmth and positivity from a parent.

The measure used in Focus at 8 was a shortened version of the Nowicki-Strickland Internal-External scale (NSIE scales) for preschool and primary children (the non-cartoon format of PPNSIE, the Preschool and Primary Nowicki-Strickland Internal-External scale), shortened in collaboration with the author (Steve Nowicki). The questions were read out to the child by the examiner (so it was not necessary that the child could read in order to complete this assessment) and the child was asked to respond with a yes/no answer. It was made clear by the tester that there were no right or wrong answers and that we were just interested in knowing how different people think and feel about different things. The children were reminded that their answers were confidential (see Instructions to testers in Appendix 2).

F8LC100 LoC started/at least one question answered appropriately: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7168	95.7	95.9	95.9
	2 No	303	4.0	4.1	100.0
	Total	7471	99.8	100.0	
Missing	-2 Did not start Session	17	.2		
Total		7488	100.0		

While asking the questions as shown in Table 3.1.2a, the tester maintained as much eye contact as possible and emphasised the points shown in italics. If the child did not initially appear to understand the question fully, the tester gave an explanation of the question but without using leading examples, and this confusion with the task or with individual questions was noted (F8LC130).

Table 3.1.2a: Questions asked in the Locus of Control session

No.	Question	Variable name
1.	Do you feel that wishing can make good things happen?	F8LC110
2.	Are people nice to you *no matter what you do*?	F8LC111
3.	Do you *usually* do badly in your school work even when you try hard?	F8LC112
4.	When a friend is angry with you is it hard to make that friend like you again?	F8LC113
5.	Are you surprised when your teacher praises you for your work?	F8LC114
6.	When bad things happen to you is it *usually* someone else's fault?	F8LC115
7.	Is doing well in your class-work just a matter of 'luck' for you?	F8LC116
8.	Are you *often* blamed for things that just aren't your fault?	F8LC117
9.	When you get into an argument or fight is it *usually* the other person's fault?	F8LC118
10.	Do you think that preparing for tests is a waste of time?	F8LC119
11.	When nice things happen to you is it usually because of 'luck'?	F8LC120
12.	Does planning ahead make good things happen?	F8LC121

Not all children would give either a yes or a no to each question, so the responses noted also include 'sometimes yes' and 'sometimes no' (where the child said 'sometimes' and when the tested said "OK, I'll write sometimes down for you, but if you had to say yes or no…., which would it be?" and 'don't know' very occasionally, when the child was not prepared to say either yes or no. Summary variables (with the suffix –a) have been created whereby if the child said 'sometimes yes' or 'sometimes no', the data has been recoded to Yes or No as appropriate. Frequencies of these variables are shown in table 3.1.2b.

Table 3.1.2b: Frequency of responses to Locus of Control questions from the 7169 children who started the task

Variable name	Yes	No	Ch said DK	Missing
F8LC110a	4340 (61.3%)	2738 (38.7%)	72	18
F8LC111a	3898 (55.3%)	3150 (44.7%)	86	34
F8LC112a	1438 (20.3%)	5656 (79.7%)	53	21
F8LC113a	3890 (54.5%)	3250 (45.5%)	22	6
F8LC114a	4858 (68.3%)	2251 (31.7%)	40	19
F8LC115a	3940 (56.2%)	3065 (43.8%)	131	32
F8LC116a	3350 (47.4%)	3723 (52.6%)	84	11
F8LC117a	4027 (56.5%)	3095 (43.5%)	32	14
F8LC118a	5263 (76.1%)	1656 (23.9%)	213	36
F8LC119a	1588 (22.3%)	5538 (77.7%)	31	11
F8LC120a	3360 (47.6%)	3693(49.4%)	99	16
F8LC121a	4913 (70.5%)	2059 (29.5%)	156	40

The tester noted whether the responses appeared truthful, whether the child seemed uncomfortable or bored during the task and whether the task was stopped prematurely (F8LC142, F8LC145, F8LC147 and F8LC148 respectively). Whether the child was confused (F8LC140) or upset (F8LC146) was also noted and the interviewer rated the child's attempt at the task as good, medium or poor (F8LC141).

Note, there was a general feeling amongst the team of testers that many of the study children had difficulty understanding some of the questions, in particular question number 12 regarding planning ahead (F8LC120), although these questions have been used many times before on the same-aged children. Some children also found the task somewhat upsetting (F8LC136).

The child's locus of control score (F8LC125) is calculated as the number of external answers he or she gives to the 12 questions (with 'sometimes yes' counting as 'yes' and 'sometimes no' counting as 'no') – external answers count as 'yes' for questions 1 to 11 (F8LC110 to F8LC120) and 'no' to question 12 (F8LC121). The higher the score, the more external the child is considered to be. Children who responded don't know to a question had to have their response put to missing. For this score, children who had at least one missing response do not have an overall score.

F8LC125 LoC - Locus of Control Score: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	13	.2	.2	.2
	1	65	.9	1.0	1.2
	2	203	2.7	3.2	4.4
	3	493	6.6	7.7	12.1
	4	821	11.0	12.9	25.0
	5	1013	13.5	15.9	40.9
	6	1147	15.3	18.0	58.8
	7	1071	14.3	16.8	75.6
	8	802	10.7	12.6	88.2
	9	480	6.4	7.5	95.7
	10	214	2.9	3.4	99.1
	11	58	.8	.9	100.0
	12	1	.0	.0	100.0
	Total	6381	85.2	100.0	
Missing	-2 Did not start/No qs answered approp	320	4.3		
	-1 < 12 Responses	787	10.5		
	Total	1107	14.8		
Total		7488	100.0		

F8LC128 LoC - Number of Responses missing: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	6381	85.2	89.0	89.0
	1	523	7.0	7.3	96.3
	2	146	1.9	2.0	98.4
	3	66	.9	.9	99.3
	4	25	.3	.3	99.6
	5	10	.1	.1	99.8
	6	11	.1	.2	99.9
	7	4	.1	.1	100.0
	10	2	.0	.0	100.0
	Total	7168	95.7	100.0	
Missing	-2 Did not start/No qs answered approp	320	4.3		
Total		7488	100.0		

Researchers may wish to use a locus of control score which divides children into those considered to be external and those not. F8LC126 (a three-level summary), children scoring in the upper quartile (scores of 8 and above) are classified as externalised and

those children scoring in the lower quartile (scores of 4 and below) are classified as internalised, while the remainder (scoring between 5 and 7 inclusive) are classified as neutral.

F8LC126 LoC - Locus of Control Summary Score I: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Internalised	1741	23.3	25.6	25.6
	2 Neutral	3416	45.6	50.3	75.9
	3 Externalised	1638	21.9	24.1	100.0
	Total	6795	90.7	100.0	
Missing	-2 Did not start/No qs answered approp	320	4.3		
	-1 < 6 Responses	373	5.0		
	Total	693	9.3		
Total		7488	100.0		

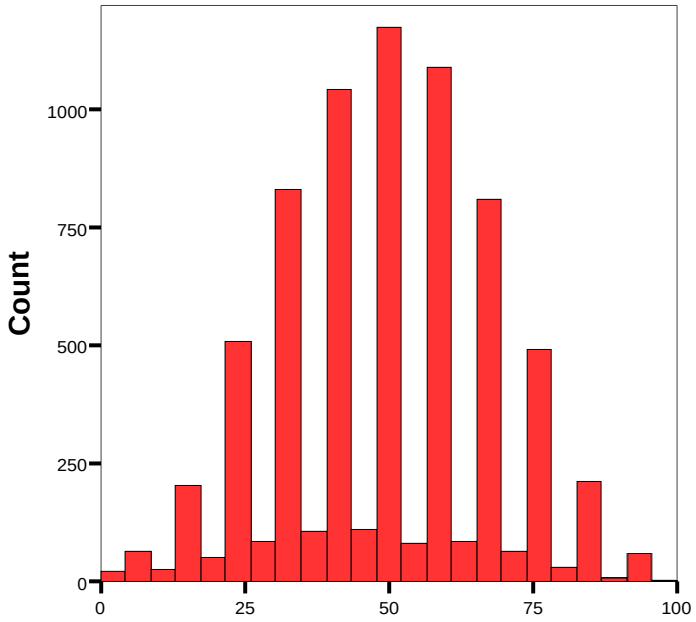
A further summary score (F8LC127) has been created which has two levels where children are divided by the median score. In the ALSPAC sample the median score was 6. Therefore children scoring 6 or below are classified as internalised and those scoring 7 or above are classified as externalised. It should be noted that 18% of children scored 6 exactly. Consequently diving at the median results in unequal numbers.

F8LC127 LoC - Locus of Control Summary Score II: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Internalised	4162	55.6	59.7	59.7
	2 Externalised	2814	37.6	40.3	100.0
	Total	6976	93.2	100.0	
Missing	-2 Did not start/No qs answered approp	320	4.3		
	-1 < 6 Responses	192	2.6		
	Total	512	6.8		
Total		7488	100.0		

For both summary variables, it was possible to calculate scores for some children who had not completed all questions (for example, a child who missed out two questions but had a loc score for the remaining ten questions of 2 must necessarily have been in the lowest quartile group for F8LC126 and in the lower group for F8LC127). Wherever it was possible to calculate these scores for children with missing values it was done, which means that there are fewer missing cases for the summary variables than for F8LC125.

F8LC129: LoC - Locus of Control Mean Score: F8



To overcome the possible bias that this method has introduced a mean score (F8LC129) has been created by dividing the child's overall score by the number of questions that they responded to and those who responded to less than 6 being excluded. As before two summary scores have been created based on these mean scores; the first (F8LC130) splitting into internal, neutral and external and the second (F8LC131) diving by the mean.

F8LC130 LoC - Locus of Control Mean Summary Score I: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Internalised	1788	23.9	25.0	25.0
	2 Neutral	3584	47.9	50.1	75.1
	3 Externalised	1779	23.8	24.9	100.0
	Total	7151	95.5	100.0	
Missing	-2 Did not start/No qs answered approp	320	4.3		
	-1 < 6 Responses	17	.2		
	Total	337	4.5		
Total		7488	100.0		

F8LC131 LoC - Locus of Control Mean Summary Score II: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Internalised	3043	40.6	42.6	42.6
	2 Externalised	4108	54.9	57.4	100.0
	Total	7151	95.5	100.0	
Missing	-2 Did not start/No qs answered approp	320	4.3		
	-1 < 6 Responses	17	.2		
	Total	337	4.5		
Total		7488	100.0		

NB A total of 31 children gave the same response to all items (“yes” to all questions, or “no” to all questions) regardless of whether they were external or internal items (see F8LC135). Responses for these children may be unreliable.

F8LC135 LoC - How Child answered items: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Answered Y to all	25	.3	.3	.3
	2 Answered N to all	6	.1	.1	.4
	3 Combination of answers	7137	95.3	99.6	100.0
	Total	7168	95.7	100.0	
Missing	-2 Did not start/No qs answered approp	320	4.3		
Total		7488	100.0		

Coded locus of control comments

F8LC150 refers to questions where the tester queried the accuracy of the answers, although he or she cannot be confident enough that it is inaccurate for us to change it. Generally, the numbers represent which question there was a query over. Where there are specific questions noted, this means that the tester believed the child had not understood the question and may have been guessing, or had deliberate not told the truth. Note that question numbers do not have a gap between them: if F8LC150 =1235, for example, it means that the tester was not confident about the answers to questions 1, 2, 3 and 5. 20 means that the tester queried the child’s answers in general (to all, or an unspecified number of, questions).

F8LC151 refers to the reasons why the child or tester stopped the session or why it did not happen in the standard way.

F8LC152 is a combination of different comments made by the tester about the session

F8LC153 refers to testers’ further comments about the child’s behaviour and demeanour

3.1.3 Friendships

This series of five questions (as shown in Table 3.1.3a) was based on questions from the Cambridge Hormones and Moods project Friendship questionnaire (Goodyer *et al*, 1989, 1990)

F8FP100 Bullying/Friends and schools: Started task: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7195	96.1	96.6	96.6
	2 No, Parent present	52	.7	.7	97.3
	3 No, Ch upset	9	.1	.1	97.4
	4 No, Not spec	195	2.6	2.6	100.0
	Total	7451	99.5	100.0	
Missing	-2 Did not start Posting Session	37	.5		
Total		7488	100.0		

Table 3.1.3a: Questions asked about Friendships

No.	Question	Variable name
1.	Are you happy with the number of friends you've got?	F8FS110
2.	How often do you see your friends outside of school?	F8FS111
3.	Do your friends understand you? (do they know what makes you happy or sad?)	F8FS112
4.	Do you talk to your friends about problems?	F8FS113
5.	Overall, how happy are you with your friends?	F8FS114

F8FS110 F&S Happy with no. of friends: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Very happy	5083	67.9	70.9	70.9
	2 Quite happy	1801	24.1	25.1	96.0
	3 Quite unhappy	167	2.2	2.3	98.3
	4 Unhappy	109	1.5	1.5	99.8
	5 Ch said DK	11	.1	.2	100.0
	Total	7171	95.8	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 missing	24	.3		
	Total	317	4.2		
Total		7488	100.0		

F8FS111 F&S Freq Child sees friends outside school: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Almost every day	1908	25.5	26.6	26.6
	2 More than once week	2353	31.4	32.8	59.4
	3 Less than once week	1682	22.5	23.4	82.8
	4 Hardly ever	1197	16.0	16.7	99.5
	5 Ch said DK	34	.5	.5	100.0
	Total	7174	95.8	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 missing	21	.3		
	Total	314	4.2		
Total		7488	100.0		

F8FS112 F&S Friends understand Ch: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Most of time	4293	57.3	59.9	59.9
	2 Sometimes	1883	25.1	26.3	86.2
	3 Not often	530	7.1	7.4	93.6
	4 Not at all	379	5.1	5.3	98.9
	5 Ch said DK	81	1.1	1.1	100.0
	Total	7166	95.7	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 missing	29	.4		
	Total	322	4.3		
Total		7488	100.0		

F8FS113 F&S Child can talk to friends about problems: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Most of time	3123	41.7	43.6	43.6
	2 Sometimes	2383	31.8	33.3	76.9
	3 Not often	673	9.0	9.4	86.3
	4 Not at all	963	12.9	13.4	99.7
	5 Ch said DK	22	.3	.3	100.0
	Total	7164	95.7	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 missing	31	.4		
	Total	324	4.3		
Total		7488	100.0		

F8FS114 F&S Child Overall happy with friends: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Very happy	5460	72.9	76.2	76.2
	2 Quite happy	1595	21.3	22.2	98.4
	3 Quite unhappy	76	1.0	1.1	99.5
	4 Unhappy	29	.4	.4	99.9
	5 Ch said DK	10	.1	.1	100.0
	Total	7170	95.8	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 missing	25	.3		
	Total	318	4.2		
Total		7488	100.0		

It is worth nothing that a significant minority of children found questions F8FS110 and F8FS114 difficult to answer, finding it difficult to distinguish between very happy (1) and quite happy (2).

A Friends score was created (F8FS120) by recoding F8FS110 to F8FS114 as follows (1=0)(2=1)(3=2)(4=3). A score of 0 denotes the most positive Friends score and 15 denotes the least positive. Children who responded don't know to at least 1 question were excluded from the score, as were those with at least one missing response.

F8FS120 F&S Friends score: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Positive friends score	528	7.1	7.4	7.4
	1	1060	14.2	14.9	22.3
	2	1276	17.0	17.9	40.1
	3	1267	16.9	17.8	57.9
	4	1000	13.4	14.0	71.9
	5	732	9.8	10.3	82.2
	6	483	6.5	6.8	88.9
	7	326	4.4	4.6	93.5
	8	174	2.3	2.4	95.9
	9	135	1.8	1.9	97.8
	10	68	.9	1.0	98.8
	11	40	.5	.6	99.3
	12	17	.2	.2	99.6
	13	13	.2	.2	99.8
	14	7	.1	.1	99.9
	15 Negative friends score	10	.1	.1	100.0
	Total	7136	95.3	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 <5 responses	59	.8		
	Total	352	4.7		
Total		7488	100.0		

3.1.4 Friends and Peers

A modified version of the Bullying and Friendship Interview Schedule (BFIS) (Wolke *et* al, 2000, 2001a, 2001b; Woods & Wolke, 2003) was conducted. It was shortened owing to time constraints. The interview comprised a short section about the child's school, followed by the four main sections about bullying.

About the child's school

The child was asked the following questions about their school:

Variable name	Question
F8FS130	Have you changed schools in the last year?
F8FS131	If yes, How long ago did you change schools?
F8FS132	Do you like school… How much?
F8FS133	Are you able to talk to a teacher alone…How often?

Frequencies for the variables F8FS130 to F8FS133 about the child's school are as follows:

F8FS130 F&S Changed schools in last year: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	559	7.5	7.8	7.8
	2 No	6602	88.2	91.9	99.7
	3 Ch said DK	22	.3	.3	100.0
	Total	7183	95.9	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 missing	12	.2		
	Total	305	4.1		
Total		7488	100.0		

F8FS131 F&S How long ago changed schools (mths): F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	14	.2	2.8	2.8
	1	30	.4	5.9	8.6
	2	39	.5	7.7	16.3
	3	44	.6	8.6	25.0
	4	31	.4	6.1	31.0
	5	51	.7	10.0	41.1
	6	52	.7	10.2	51.3
	7	45	.6	8.8	60.1
	10	39	.5	7.7	67.8
	11	32	.4	6.3	74.1
	99 Unknown	132	1.8	25.9	100.0
	Total	509	6.8	100.0	
Missing	-4 Not changed school	6602	88.2		
	-2 Did not start task	293	3.9		
	-1 missing	84	1.1		
	Total	6979	93.2		
Total		7488	100.0		

F8FS132 F&S Does Child like school: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes very much	2019	27.0	28.1	28.1
	2 Yes most of time	3781	50.5	52.6	80.8
	3 Not much	987	13.2	13.7	94.5
	4 No	392	5.2	5.5	100.0
	5 Ch said DK	3	.0	.0	100.0
	Total	7182	95.9	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 missing	13	.2		
	Total	306	4.1		
Total		7488	100.0		

F8FS133 F&S Is Child able to talk to teacher alone: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes often	1214	16.2	16.9	16.9
	2 Yes sometimes	2597	34.7	36.2	53.1
	3 Very rarely	1813	24.2	25.3	78.4
	4 No never	1531	20.4	21.3	99.7
	5 Ch said DK	23	.3	.3	100.0
	Total	7178	95.9	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 missing	17	.2		
	Total	310	4.1		
Total		7488	100.0		

Bullying

1. *Received* overt (direct) bullying - to establish overt victimisation, see Table 3.1.4a
2. *Given* overt (direct) bullying - to establish overt bullying, see Table 3.1.4b
3. *Received* relational (indirect) bullying - to establish relational victimisation, see Table 3.1.4a
4. *Given* relational (indirect) bullying - to establish relational bullying, see Table 3.4.1b

The child was asked about a series of events and whether any of them had ever happened to them *at school or to/from school* which involved other *children* in the six months preceding the child's visit to Focus at 8 (see Table 3.1.4a for these events). They were also asked whether they had ever been the perpetrators of any of these events (see Table 3.1.4b).

If a child responded 'Yes' to any bullying event which had happened to them, a series of follow-on questions were asked. These were:

- The frequency with which each event took place (Infrequently: 1-3 times in past 6 months; Frequently: more than 4 times in last 6 months but less than once a week; Very frequently: at least once a week);
- Who had done each to the child (a boy; a girl; more than 1 boy; more than 1 girl; a mixture);
- Whether the child had told a teacher (or other adult at school);
- Whether that adult had done anything to help;
- Whether the child told anybody at home about what had happened.

If a child responded 'Yes' to being the perpetrator to any bullying event only one follow-up question was asked, this was the frequency with which these events occurred.

Finally the child was asked why he/she thought that the events had happened (for both given and received). Table 3.1.4c indicates the relevant variable names for the reasons. Unfortunately, due to the nature of the data collection, if more than one event took place under each section it is not possible to distinguish, which reason(s) apply to which events.

The instructions to testers (see Appendix 2) describe how the interview was conducted (with emphasis on confidentiality and different methods of trying to get the children to understand the concept of ‘in the last six months’).

Table 3.1.4a: Questions asked as part of the 'Received' bullying sections

	Happened Y/N	Frequency	Who did it	Told teacher /other adult at school[c]	Teacher helped Y/N	Told someone at home
OVERT						
Had personal belongings taken	F8FP140	F8FP141	F8FP142	F8FP143	F8FP144	F8FP145
Been threatened/blackmailed	F8FP150	F8FP151	F8FP152	F8FP153	F8FP154	F8FP155
Been hit/beaten up	F8FP160	F8FP161	F8FP162	F8FP163	F8FP164	F8FP165
Been tricked in a nasty way	F8FP170	F8FP171	F8FP172	F8FP173	F8FP174	F8FP175
Been called bad/nasty names	F8FP180	F8FP181	F8FP182	F8FP183	F8FP184	F8FP185
RELATIONAL						
Others wouldn't play with them to upset them	F8FP330	F8FP331	F8FP332	F8FP333	F8FP334	F8FP335
Been made to do things didn't want to	F8FP340	F8FP341	F8FP342	F8FP343	F8FP344	F8FP345
Had lies/told nasty things said about them	F8FP350	F8FP351	F8FP352	F8FP353	F8FP354	F8FP355
Had games spoilt	F8FP360	F8FP361	F8FP362	F8FP363	F8FP364	F8FP365

Table 3.1.4b: Questions asked as part of the 'Given' bullying sections

	Happened Y/N	Frequency[a]
OVERT		
Taken Personal belongings from others	F8FP240	F8FP241
Threatened/blackmailed others	F8FP250	F8FP251
Hit/beaten up others	F8FP260	F8FP261
Tricked others in a nasty way	F8FP270	F8FP271
Called others bad/nasty names	F8FP280	F8FP281
RELATIONAL		
Wouldn't play with others to upset them	F8FP410	F8FP411
Got others to do things didn't want to	F8FP420	F8FP421
Told lies/ said nasty things about others	F8FP430	F8FP431
Spoilt other children's games	F8FP440	F8FP441

Table 3.1.4c: Reasons for the bullying events taking place

	Overt Received	Overt Given	Relational Received	Relational Given
Ethnicity	F8FP200	F8FP300	F8FP380	F8FP455
Gender	F8FP201	F8FP301	F8FP381	F8FP456
Appearance	F8FP202	F8FP302	F8FP382	F8FP457
Character Trait	F8FP203	F8FP303	F8FP383	F8FP458
Family/SES*	F8FP204	F8FP304	F8FP384	F8FP459
For fun	F8FP205	F8FP305	F8FP385	F8FP460
Felt like it	F8FP206	F8FP306	F8FP386	F8FP461
Retaliation	F8FP207	F8FP307	F8FP387	F8FP462
Don't know	F8FP208	F8FP308	F8FP388	F8FP463
Other	F8FP212	F8FP312	F8FP392	F8FP466

* SES: Socio-Economic Status

Finally, the child was asked whether anything else had happened to him or her at school that may be classed as bullying, done by other school children or if the

children that he or she normally played with had done anything else to upset the study child. This gave the child the chance to describe other events that had happened which did not easily fit into the above categories. Most of these events were later recoded by the tester into one of the other categories, or it was deemed that it did not constitute bullying and was not included in the final bullying derived variables. Similarly, the child was also asked whether he or she had done anything else to upset any other children at school or done anything else to upset the children that he or she normally played with. Again, these events were recoded into other bullying categories where appropriate, or not incorporated into the bullying derived variables if it was deemed that it did not constitute bullying.

A child was classed as an overt victim, if he/she was on the receiving end of any of the five components of overt bullying frequently (several times a month) or very frequently (several times a week) (F8FP470). Children who responded with seldom or never to having been bullied for each of the four questions were categorised as not being victims. In addition, children for whom no more than two questions were missing with the remaining items being seldom/never were classed as NOT being bullied.

F8FP470 Bullying, Child is overt victim: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	2441	32.6	34.3	34.3
	2 No	4678	62.5	65.7	100.0
	Total	7119	95.1	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 > 2 components missing	76	1.0		
	Total	369	4.9		
Total		7488	100.0		

Similarly, a child was classified as an overt bully if they had done any one of the overt bullying components to another child frequently (several times a month) or very frequently (several times a week (F8FP471).

F8FP471 Bullying, Child is overt bully: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	498	6.7	7.0	7.0
	2 No	6586	88.0	93.0	100.0
	Total	7084	94.6	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 > 2 components missing	111	1.5		
	Total	404	5.4		
Total		7488	100.0		

These two variables (F8FP470 and F8FP471) were combined to create a summary of overt bullying status (F8FP472). This was set to missing if either of the initial variables was missing. This is the main outcome variable for overt bullying.

F8FP472 Bullying, Overt bullying status: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Pure Bully	73	1.0	1.0	1.0
	2 Pure Victim	2000	26.7	28.2	29.3
	3 Bully-Victim	424	5.7	6.0	35.3
	4 Neutral	4586	61.2	64.7	100.0
	Total	7083	94.6	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 Missing	112	1.5		
	Total	405	5.4		
Total		7488	100.0		

The variables for relational bullying (victim: F8FP475 and bully F8FP476, combined: F8FP477) were created in exactly the same way.

F8FP475 Bullying, Child is relational victim: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	1144	15.3	16.4	16.4
	2 No	5814	77.6	83.6	100.0
	Total	6958	92.9	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 > 2 components missing	237	3.2		
	Total	530	7.1		
Total		7488	100.0		

F8FP476 Bullying, Child is relational bully: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	168	2.2	2.4	2.4
	2 No	6767	90.4	97.6	100.0
	Total	6935	92.6	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 > 2 components missing	260	3.5		
	Total	553	7.4		
Total		7488	100.0		

F8FP477 Bullying, Relational bullying status: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Pure Bully	51	.7	.7	.7
	2 Pure Victim	1020	13.6	14.7	15.5
	3 Bully-Victim	115	1.5	1.7	17.1
	4 Neutral	5746	76.7	82.9	100.0
	Total	6932	92.6	100.0	
Missing	-2 Did not start task	293	3.9		
	-1 Missing	263	3.5		
	Total	556	7.4		
Total		7488	100.0		

F8FP477 is the main outcome variables for relational bullying.

When asked sensitive questions in an interview, no matter how much emphasis is placed on confidentiality and acceptance of the child regardless of the answers he or she gives, it is possible that some children will not give honest or accurate replies. A range of strategies was used to aid the children in the understanding of the concept of 'things that have happened in the last six months' (a calendar wheel with pictures for different months, discussions of birthdays, recent events, holidays etc. Prompts were also used to try and find out about the frequency of different events described by the child. However, it is very likely that some children still gave answers that reflected confusion with the time scale discussed (this is likely to be the case with any study of young children). In order to account for this as well as possible, testers rated whether they felt that they were: confident; mostly confident; not really confident, or not confident as to the honesty/accuracy of the responses that the children had given in each of the four sections (F8FP480, F8FP481, F8FP482, F8FP483 for overt received, overt given, relational received and relational given, respectively). Testers also recorded whether the child had appeared upset (F8FP484), willing (F8FP485), anxious (F8FP486) or brash (F8FP487) during the interview and whether the parent accompanied the child into the session. Finally, the tester recorded whether the child was upset before the friends and peers session and did not wish to start, or the there was not sufficient time to do the interview, the friends and peers interview was not done and the reason noted (F8FP100)

If the interview was stopped prematurely this was recorded (F8FP488).

3.1.5 Antisocial Activities

Eleven questions regarding antisocial activities were taken from the Self-reported antisocial behavior for young children questionnaire (Loeber *et al*, 1989), and an additional example question and three dummy questions (which most children would be expected to have done before) were added to make the antisocial activities part of the session (see Table 3.15a).

Each of the fifteen questions was written onto a different envelope. The tester came round to the child's side of the table and showed a specially made post-box to the child, with two posting slots with *Ever* and *Never* above the slots, asking him or her if he or she could see that it said 'ever' above one slot and 'never' above the other. The child was shown the envelopes and told that it was a posting game where he or she would post each of the envelopes into one or other slot depending on whether the child had *ever* done what was on the envelope or had *never* done what was on the envelope. The activity on the first envelope, 'Have you *ever* been late for school?' was read out by the tester and shown simultaneously to the child. The tester stressed that if the child had ever done this, *even only once*, then he or she was to put it in the ever slot and that if he or she had never done it, *not even once*, then he or she would post it into the never slot. After this first example, the tester moved back to the other side of the table where he or she would be unable to see where the child was putting his or her envelopes. Confidentiality and acceptance of the child was stressed. For the remaining envelopes, the tester read the question out to the child (written for this purpose on the front and back of the envelope) whilst holding the envelope up between the two slots and showing it to the child, and made it clear that he or she could not see which slots the envelopes were being put into. The child then took the envelope and posted it into the appropriate slot.

Prompts were given for certain items as a matter of course (see Instructions to testers – Appendix Two) and questions were sometimes asked of children if they were unsure about certain items. For example, a child might be confused by the last question and say that she had kicked her cat, to which the tester would ask 'did you kick the cat *on purpose*? If you did it on *purpose*, then you'd put the envelope in the *ever* slot and if *didn't* do it on *purpose*, and you've *never* been cruel to an animal or bird *on purpose* then you'd put it in the *never* slot…' etc.

The task was carried out using the post-box in order to make the children feel as confident as possible that their answers were confidential and that the tester would not know what the child had answered while the child was in the room. As with all such tasks, it must be weighed up beforehand as to whether it is better to interview the child, where confusion may be easier to detect but the child may feel less willing to 'own up' to having done something, or to conduct the task differently where the child feels more in control of his or her answers and the task appears less threatening, but where it is possible that a small number of children may find the task somewhat confusing. Attempts were made to make the task as clear as possible (see Instructions to testers) and testers reported whether the child appeared to be :confused by the task (F8AA170), posting appropriately (F8AA173), uncomfortable with the task (F8AA174), upset with the task (F8AA175) and bored with the task (F8AA176). The child's attempt at the task was also reported (F8AA171).

Table 3.1.5a: Questions asked in the Antisocial Activities session

No.	Question	Variable name
e.g.	Have you *ever* been late for school?	
1	Have you *ever* stolen, or tried to steal, a bicycle or skateboard?	F8AA101
2	Have you *ever* taken something from a shop without paying for it?	F8AA102
3	Have you *ever* taken something out of somebody's house, garden or garage that did not belong to you?	F8AA103
4	[Dummy question] Have you *ever* talked in class when you were not meant to?	F8AA104
5	Have you *ever* taken something that does not belong to you from a car?	F8AA105
6	[Dummy question] Have you *ever* told a lie?	F8AA106
7	Have you *ever* drunk alcohol without your parents' permission?	F8AA107
8	Have you *ever* tried a cigarette?	F8AA108
9	[Dummy question] Have you *ever* been told off by a teacher?	F8AA109
10	Have you *ever* deliberately set fire, or *tried* to set fire to a building, a car or other property?	F8AA110
11	Have you *ever* carried a weapon in case you needed it in a fight?	F8AA111
12	Have you *ever* gone into or tried to go into a building to steal something?	F8AA112
13	Have you *ever* snatched someone's purse or wallet (or 'picked someone's pocket')?	F8AA113
14	Have you *ever* been cruel to an animal or bird *on purpose*?	F8AA114

Table 3.1.5b: Frequency of responses to antisocial activity questions from the 7209 children who started the task

Variable name	Yes	No	Missing
F8AA101	68 (0.9%)	7106 (99.1%)	44
F8AA102	303 (4.2%)	6871 (95.8%)	44
F8AA103	218 (3.0%)	6957 (97.0%)	43
F8AA104	5054 (70.8%)	2089 (29.2%)	75
F8AA105	101 (1.4%)	7074 (98.6%)	43
F8AA106	4749 (66.5%)	2397 (33.5%)	72
F8AA107	363 (5.1%)	6809 (94.9%)	46
F8AA108	226 (3.2%)	6948 (96.8%)	44
F8AA109	5793 (81.1%)	1347 (18.9%)	78
F8AA110	85 (1.2%)	7089 (98.8%)	44
F8AA111	616 (8.6%)	6555 (91.4%)	47
F8AA112	37 (0.5%)	7133 (99.5%)	48
F8AA113	75 (1.0%)	7094 (99.0%)	49
F8AA114	494 (6.9%)	6640 (93.1%)	84

The antisocial activities score (F8AA150) is the number of activities (out of 11, not including F8AA104, F8AA106 and F8AA109, the dummy questions) that the child admitted to having ever done before, with most children scoring zero (the individual questions are presented in Table 3.1.5a with their variable name).

F8AA150 Antisocial activities score: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	5515	73.7	77.4	77.4
	1	1062	14.2	14.9	92.3
	2	324	4.3	4.5	96.9
	3	131	1.7	1.8	98.7
	4	55	.7	.8	99.5
	5	18	.2	.3	99.7
	6	8	.1	.1	99.8
	7	4	.1	.1	99.9
	8	3	.0	.0	99.9
	9	1	.0	.0	99.9
	11	4	.1	.1	100.0
	Total	7125	95.2	100.0	
Missing	-2 Did not start task	270	3.6		
	-1 <11 responses	93	1.2		
	Total	363	4.8		
Total		7488	100.0		

Some children did not answer each of the 11 questions with an appropriate answer and therefore have no antisocial activities score for F8AA150. It was possible to calculate a summary score, which included some of these children (who had answered ever to at least two items), as indicated in F8AA151.

F8AA151 Antisocial activities score summary: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	5515	73.7	77.3	77.3
	1	1062	14.2	14.9	92.2
	2 2 or more	556	7.4	7.8	100.0
	Total	7133	95.3	100.0	
Missing	-2 Did not start task	270	3.6		
	-1 could not be categorised	85	1.1		
	Total	355	4.7		
Total		7488	100.0		

F8AA152 is the number of dummy questions that the child posted into the ever slot (out of three). Most children are likely to have spoken in class at least once when they were not meant to (F8AA104), told a lie (F8AA106) or to have been told off by a teacher (F8AA109). It is possible that we can be more confident of the answers of children who have answered ever to these three questions (although it is possible that some children are genuine in responding never to all three questions).

It is also worth noting that since the degree of the behaviour was not investigated, it is the child's idea of cruel and not an adult's that is asked about in F8AA114. Some children may have said that they had ever been cruel to an animal or bird on purpose, because they may have chased a bird, and thought that this was cruel. We cannot know the extent of this cruelty from these questions.

F8AA152 AA - No. of dummy questions Child said ever to: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	741	9.9	10.4	10.4
	1	945	12.6	13.2	23.6
	2	1712	22.9	24.0	47.6
	3	3740	49.9	52.4	100.0
	Total	7138	95.3	100.0	
Missing	-2 Did not start task	270	3.6		
	-1 <3 responses	80	1.1		
	Total	350	4.7		
Total		7488	100.0		

The testers recorded whether the child appeared to post appropriately (F8AA173); whether they appeared comfortable (F8AA174), upset (F8AA175) or bored (F8AA176) with the task and whether the task was stopped prematurely (F8AA177).

From the comments recorded by the testers a variable has been created indicating why the task was stopped (F8AA180) and one indicating where the tester queried the accuracy of the child's posting, giving details on which items and whether the child hesitated when posting any envelopes (F8AA181).

3.1.6 Gender behaviour

The masculinity and femininity of the study children was examined using an adapted and shortened form of the Preschool Activities Inventory (PSAI) (Golombok & Rust, 1993), known as the CAI (Childrens Activities Inventory). The PSAI was developed in order to distinguish between behaviours of boys and girls in relation to their degree of masculinity and femininity. It is a psychometrically constructed screening instrument specifically designed to differentiate between 'masculine' and 'feminine' boys and girls within a normal population of preschool children, that is, to differentiate *within* as well as *between* the sexes.

Test-retest reliability over a 1 year period was 0.64 (n=33) and split-half reliability was 0.88 (n=2,330). The inventory has been validated on boys and girls attending day care in 5 different centres. The inventory was completed by the mother while the day care teachers rated the boys independently on a 6-point scale ranging from 'much more boyish than average' to 'much less boyish than average'. The same procedure was followed for girls, but with 'girlish' substituted for 'boyish'. For boys, the correlation between the inventory score and the teachers ratings was 0.37 ($p<0.01$) and for girls the correlation was 0.48 ($p<0.0002$). The PSAI has been standardised on more than 2000 subjects in the UK.

The PSAI itself was completed by the child's mother for ALSPAC when the child was two-and-a-half and three-and-a-half years old.

For Focus@8 we used an adapted measure, shortened from 24 to 16 items by the authors, owing to time constraints. The method of conducting the task using post-boxes and envelopes was done with the full approval of the authors.

F8GB010 Gender started: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7185	96.0	96.0	96.0
	2 No	303	4.0	4.0	100.0
	Total	7488	100.0	100.0	

As explained in Section 3, this task was performed in either the activities or posting session depending on time. A variable has been created denoting which session it was performed in (F8GB010) and the tester who performed the task (F8GB004).

F8GB015 Gender - Which session done: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 Posting	4238	56.6	59.0	59.0
	2.00 Activities	2947	39.4	41.0	100.0
	Total	7185	96.0	100.0	
Missing	-2.00 Did not start task	303	4.0		
Total		7488	100.0		

Each envelope corresponded to a single item (see Table 3.1.6a), comprising two statements, one in blue writing, one in red, for example “Some children play with jewellery” (in blue) and “Other children don’t play with jewellery” (in red). The child was read out each statement and had to decide whether he or she was more like the child in the blue writing or the red (and consequently, whether to post the envelope into the blue or red post box), and then whether relevant statement was “sort of true for him/her” or “really true for him/her” (and consequently, whether to post the envelope into the “sort of true for me” or “really true for me” slot). This made the task more interesting for the child and allowed him or her to answer sensitive questions without the member of staff being able to see what the answers were. The child was also guaranteed confidentiality.

Table 3.1.6a: Statements shown on each envelope

No.	Statement 1 (Blue)	Statement 2 (Red)	Variable
e.g.	Some children enjoy playing board games a lot	Other children don’t enjoy board games at all	
1	Some children play with jewellery	Other children don’t play with jewellery	F8GB020
2	*Some children like playing computer games*	*Other children don’t like playing computer games*	*F8GB021*
3	Some children play with dolls	Other children don’t play with dolls	F8GB022
4	Some children play with tea sets	Other children don’t play with tea sets	F8GB023
5	*Some children play with toy guns*	*Other children don’t play with guns*	*F8GB024*
6	Some children play house, for example, cleaning and cooking	Other children don’t play house	F8GB025
7	*Some children play with boys*	*Other children don’t play with boys*	*F8GB026*
8	Some children pretend to be a female character, for example, a princess	Other children don’t pretend to be a female character	F8GB027
9	*Some children fight*	*Other children don’t fight*	*F8GB028*
10	*Some children like sports*	*Other children don’t like sports*	*F8GB029*
11	*Some children like climbing, for example, trees and fences*	*Other children don’t like climbing*	*F8GB030*
12	Some children play at taking care of babies	Other children don’t play at taking care of babies	F8GB031
13	Some children dress up in girlish clothes	Other children don’t dress up in girlish clothes	F8GB032
14	*Some children like to be outdoors*	*Other children don’t like to be outdoors*	*F8GB033*

15	*Some children enjoy wrestling with their friends*	*Other children don't enjoy wrestling with their friends*	*F8GB034*
16	Some children like pretty things	Other children don't like pretty things	F8GB035

Items in italics refer to more masculine activities

To ease the use of the data we have re-labelled the data:

Blue, Really true for me = Yes, definitely
Blue, Sort of true for me = Yes, a bit
Red, Sort of true for me = No, not really
Red, Really true for me = No, not at all
Blue, Unknown = Yes
Red, Unknown = No

Items were scored as follows:

Blue, Really true for me=1; Blue, Sort of true for me=2
Red, Sort of true for me=3; Red, Really true for me=4

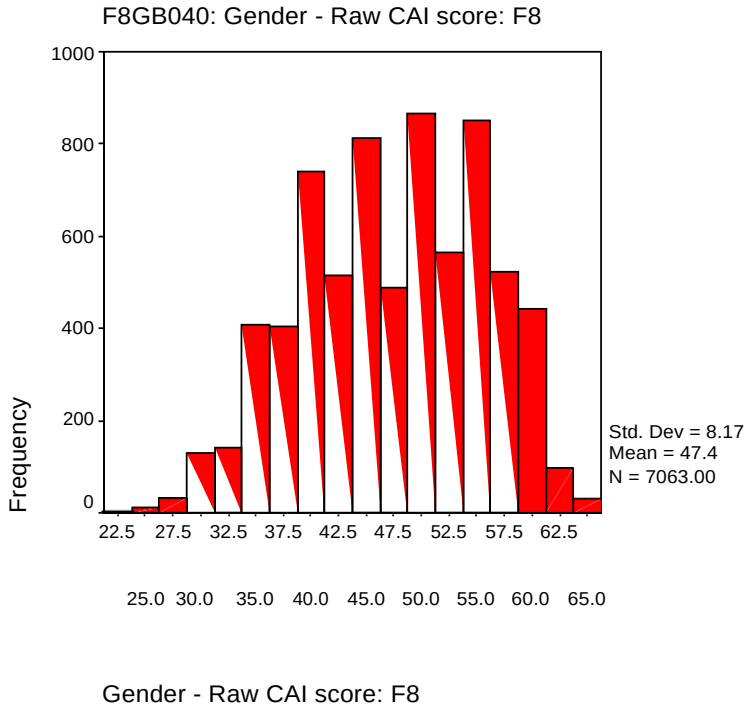
Summary variables were created for each item (with a suffix –a) determining whether the envelopes were posted into the blue post-box or the red one, irrespective of which slot. In a very small minority of cases it was not clear whether the child had posted the envelope into the 'really' or 'sort of' slot in the blue and red boxes (for example, the tester found the envelopes wedged in between when they went to remove them. For the purposes of the summary variables these have been recoded to blue or red as appropriate.

Table 3.1.6b: Frequency of responses to gender behaviour questions from the 7185 children who started the task

Variable name	Yes, definitely	Yes, a bit	No, not really	No, not at all
F8GB020	704 (9.8%)	1119 (15.6%)	1892 (26.3%)	3463 (48.2%)
F8GB021	5336 (74.4%)	1334 (18.6%)	276 (3.8%)	224 (3.1%)
F8GB022	689 (9.6%)	995 (13.9%)	1628 (22.7%)	3868 (53.9%)
F8GB023	411 (5.7%)	777 (10.8%)	1686 (23.5%)	4306 (60.0%)
F8GB024	1539 (21.5%)	1649 (23.0%)	1256 (17.5%)	2729 (38.0%)
F8GB025	723 (10.1%)	1383 (19.3%)	1686 (23.5%)	3385 (47.2%)
F8GB026	3435 (47.9%)	1849 (25.8%)	914 (12.7%)	972 (3.6%)
F8GB027	809 (11.3%)	1260 (17.6%)	1546 (21.5%)	3559 (49.6%)
F8GB028	1148 (16.0%)	1487 (20.7%)	1595 (22.2%)	2942 (41.0%)
F8GB029	4690 (65.4%)	1470 (20.5%)	476 (6.6%)	533 (7.4%)

F8GB030	3025 (42.2%)	2019 (28.2%)	1074 (15.0%)	1047 (14.6%)
F8GB031	1310 (18.3%)	1171 (16.3%)	1287 (17.9%)	3402 (47.4%)
F8GB032	1065 (14.9%)	1153 (16.1%)	1388 (19.4%)	3555 (49.6%)
F8GB033	4001 (55.9%)	2006 (28.0%)	611 (8.5%)	542 (7.6%)
F8GB034	1605 (22.4%)	1316 (18.4%)	1266 (17.7%)	2976 (41.5%)
F8GB035	1901 (26.5%)	1943 (27.2%)	14910 (20.8%)	1814 (25.4%)

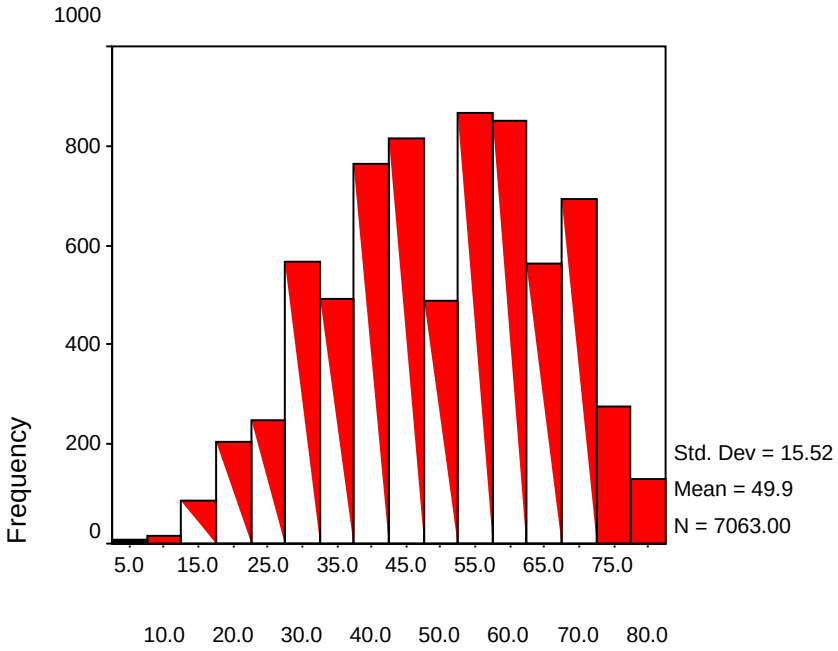
A raw CAI score (F8GB040) was calculated as the sum of all the feminine items (those in normal type in Table 3.1.6a) minus the sum of all the all masculine items (those in italics in Table 3.1.6a) plus 40.



This raw score is transformed to give pseudo T-scores (F8GB041) such that the expected boys score is 60, while the expected girls score is 40. A score of above 50 indicates that the child's activities are more typical of girl's behaviour than of boys, regardless of the child's gender. While scores below 50 indicates that the child's activities are more typical of boy's behaviour than girls. A summary variable has been created to indicate this (F8GB042). The transformation is as follows (Rust, Personal Communication; 2003):

CAI Score = (Raw Score – 47.5) X 1.9 + 50

F8GB041: Gender - CAI score: F8



Gender - CAI score: F8

F8GB042 Gender - CAI score summary: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 More typical Boy Behaviour	3443	46.0	48.7	48.7
	2 More typical Girl Behaviour	3620	48.3	51.3	100.0
	Total	7063	94.3	100.0	
Missing	-2 Did not start task	303	4.0		
	-1 < 16 responses	122	1.6		
	Total	425	5.7		
Total		7488	100.0		

The tester noted whether the child appeared confused with the task (F8GB050) and the child's attempt at the task (F8GB051) whether the responses appeared truthful (F8GB052) or were posted appropriately (F8GB053), whether the child seemed uncomfortable, upset or bored during the task (F8GB054, F8GB055, F8GB056) and whether the task was stopped prematurely (F8GB057).

3.2 Activities Session

Variables indicating whether the child entered the activities session, if they did not the reason why not and the room and tester for that session are detailed below. This data applies to DANVA, WISC and self esteem.

F8AC001 Child entered Activities session: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7471	99.8	99.8	99.8
	2 No	17	.2	.2	100.0
	Total	7488	100.0	100.0	

F8AC001A Reason Child did not do Activities session: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 Ch left early	3	.0	.0	.0
	3 Ch arrived late	2	.0	.0	.1
	7 Ch did session	7471	99.8	99.9	100.0
	Total	7476	99.8	100.0	
Missing	-1 Missing	12	.2		
Total		7488	100.0		

F8AC010 Activities session - room: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Gold	1796	24.0	24.0	24.0
	2 Green	1421	19.0	19.0	43.1
	4 Red	1554	20.8	20.8	63.9
	5 Silver	1394	18.6	18.7	82.5
	6 Yellow	2	.0	.0	82.6
	7 Orange	3	.0	.0	82.6
	8 Green spot	612	8.2	8.2	90.8
	9 Red spot	609	8.1	8.2	99.0
	10 Orange spot	2	.0	.0	99.0
	11 Purple spot	2	.0	.0	99.0
	12 Green HH	11	.1	.1	99.2
	13 Red HH	10	.1	.1	99.3
	14 In School	53	.7	.7	100.0
	Total	7469	99.7	100.0	
Missing	-2 Did not start Activities Session	17	.2		
	-1 Missing	2	.0		
	Total	19	.3		
Total		7488	100.0		

F8AC004 Activities session Tester: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	223	3.0	3.0	3.0
	2	200	2.7	2.7	5.7
	3	337	4.5	4.5	10.2
	4	247	3.3	3.3	13.5
	5	190	2.5	2.5	16.0
	6	15	.2	.2	16.2
	7	294	3.9	3.9	20.2
	8	294	3.9	3.9	24.1
	9	374	5.0	5.0	29.1
	10	94	1.3	1.3	30.4
	11	187	2.5	2.5	32.9
	12	291	3.9	3.9	36.8
	13	417	5.6	5.6	42.3
	14	417	5.6	5.6	47.9
	15	375	5.0	5.0	52.9
	16	194	2.6	2.6	55.5
	17	166	2.2	2.2	57.8
	18	326	4.4	4.4	62.1
	19	219	2.9	2.9	65.1
	20	195	2.6	2.6	67.7
	21	232	3.1	3.1	70.8
	22	231	3.1	3.1	73.9
	23	273	3.6	3.7	77.5
	24	205	2.7	2.7	80.3
	25	242	3.2	3.2	83.5
	26	328	4.4	4.4	87.9
	27	164	2.2	2.2	90.1
	28	168	2.2	2.2	92.3
	29	293	3.9	3.9	96.3
	30	228	3.0	3.1	99.3
	31	52	.7	.7	100.0
	Total	7471	99.8	100.0	
Missing	-2 Did not start Activities Session	17	.2		
Total		7488	100.0		

Further details about the activities session as a whole were recorded by the testers as shown below:

F8AC005: Whether Child did session in morning or afternoon
F8AC006: Whether the Child had had breakfast (if attending in the morning) F8AC007: Whether the Child had had lunch (if attending in the afternoon) F8AC008: Whether the Child had eaten a biscuit in reception
F8AC009: Whether the Child was accompanied by an adult
F8AC011: Whether the Child had been to school that morning (if attending in the afternoon)

3.2.1 DANVA: Non-verbal Accuracy

The ability to accurately assess nonverbal information is extremely important for effective communication and social interaction. Children who cannot use, for example, other people's facial expressions or tone of voice to gauge their reaction to a situation (or indeed, who misread others' nonverbal cues), are likely to face considerable disadvantage in social interactions. Two subtests of the DANVA (the Diagnostic Analysis of Nonverbal Accuracy, Nowicki & Duke, 1994) were administered in the eight year assessment in order to measure aspects of the child's ability to process nonverbal information.

The DANVA comprises seven subtests assessing receptive and expressive nonverbal information. The child faces and child paralanguage subtests were administered. The faces subtest comprises 24 photos of child faces, with each face showing one of four emotions: happiness, sadness, anger or fear. The photos are presented to the child for two seconds each and he or she must respond as to whether the person in the photo is happy, sad, angry or afraid. In the paralanguage subtest, the child is played a recording of 24 child voices saying the same neutral sentence ("I'm going out of the room now. I'll be back later") but again, expressing happiness, sadness, anger or fear. The child must say which of the four emotions is expressed after each recorded sentence has been played.

Voices Sub-test

A shortened version (16 items) of the DANVA voices was administered. These data are currently unavailable.

Faces sub-test

The full 24-item faces subtest was administered. The tester explained the procedure to the child and read out the four words, Happy; Sad; Angry and Fearful and ensured that the child understood their meaning. The child was placed in front of a computer screen on which each face was shown for approximately two seconds. As each picture appeared the child was asked to state which emotion the face was showing. Note, that the pictures were of either high or low intensity (i.e. the emotion displayed was easier to idenitfy or a little harder).

The vast majority of children performed the task on computer, where the data were stored (the tester clicked the appropriate response on the screen after the child gave each response). For the remainder there was a manual version for when the computer broke down or for those cases tested in schools (see variable F8DV101). In these cases the tester recorded the responses on to a datasheet. In some cases, despite the test being presented on the computer, the tester had to write down the child's responses on the datasheet (see variable F8DV102). Note, that the manual version was identical to the computer with version, with the exception that the first

picture, although displaying the same emotion and intensity was of a different child. It was noted by the testers that throughout the cohort the children found the computer version of this face more difficult than the manual version.

For all cases, the testers recorded on the datasheet whether they felt that the child was guessing any response and whether the speed with which the child responded was particularly quick or particularly slow.

f8dv100 DANVA Faces Task - Started: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Started	7303	97.5	97.8	97.8
	2 Did not start	167	2.2	2.2	100.0
	Total	7470	99.8	100.0	
Missing	-9 Did not do activities	18	.2		
Total		7488	100.0		

f8dv100a DANVA Faces Task - Reason not started: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 Computer slow to boot up	1	.0	2.0	2.0
	4 Computer very slow	4	.1	7.8	9.8
	5 Computer not working	42	.6	82.4	92.2
	8 Computer not working	2	.0	3.9	96.1
	9 Faces distorted on screen	2	.0	3.9	100.0
	Total	51	.7	100.0	
Missing	-9 Did not do activities	18	.2		
	-2 Child did task	7303	97.5		
	-1 No comments	116	1.5		
	Total	7437	99.3		
Total		7488	100.0		

f8dv101 DANVA Faces Task - Manual version: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	166	2.2	2.3	2.3
	2 No	7137	95.3	97.7	100.0
	Total	7303	97.5	100.0	
Missing	-9 Did not do activities	18	.2		
	-2 Did not start task	167	2.2		
	Total	185	2.5		
Total		7488	100.0		

f8dv102 DANVA Faces Task - Data source: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Computer	6164	82.3	84.4	84.4
	2 Data sheet	1139	15.2	15.6	100.0
	Total	7303	97.5	100.0	
Missing	-9 Did not do activities	18	.2		
	-2 Did not start task	167	2.2		
	Total	185	2.5		
Total		7488	100.0		

A simple variable has been created indicating the number of responses a child had recorded out of 24 (F8DV103). In all further variables, after consultation with Steve Nowicki, logical edits have been performed such that cases where there are more than one missing responses have been set to missing. For the 67 cases with only one missing response it has been assumed that they in fact got this face correct, for purposes of creating the final scores.

f8dv103 DANVA Faces Task - # responses: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	434	5.8	5.9	5.9
	1	29	.4	.4	6.3
	2	2	.0	.0	6.4
	3	1	.0	.0	6.4
	17	1	.0	.0	6.4
	18	2	.0	.0	6.4
	19	2	.0	.0	6.4
	21	4	.1	.1	6.5
	22	8	.1	.1	6.6
	23	67	.9	.9	7.5
	24	6753	90.2	92.5	100.0
	Total	7303	97.5	100.0	
Missing	-9 Did not do activities	18	.2		
	-2 Did not start task	167	2.2		
	Total	185	2.5		
Total		7488	100.0		

Table 3.2.1a overleaf presents the variable names for each face, the child's response, whether the child correctly identified the emotion, whether the tester felt the child was guessing and the speed of the response (if appropriate).

Table 3.2.1a: Variable names for the variables in the DANVA faces task

Face number	Emotion/ Intensity	Response	Correct	Guessing	Speed
1	Angry, low	F8DV110	F8DV111	F8DV112	F8DV113
2	Happy, high	F8DV120	F8DV121	F8DV122	F8DV123
3	Happy, low	F8DV130	F8DV131	F8DV132	F8DV133
4	Fearful, low	F8DV140	F8DV141	F8DV142	F8DV143
5	Sad, high	F8DV150	F8DV151	F8DV152	F8DV153
6	Sad, high	F8DV160	F8DV161	F8DV162	F8DV163
7	Angry, high	F8DV170	F8DV171	F8DV172	F8DV173
8	Happy, high	F8DV180	F8DV181	F8DV182	F8DV183
9	Angry, low	F8DV190	F8DV191	F8DV192	F8DV193
10	Sad, low	F8DV200	F8DV201	F8DV202	F8DV203
11	Fearful, low	F8DV210	F8DV211	F8DV212	F8DV213
12	Happy, low	F8DV220	F8DV221	F8DV222	F8DV223
13	Sad, high	F8DV230	F8DV231	F8DV232	F8DV233
14	Angry, low	F8DV240	F8DV241	F8DV242	F8DV243
15	Fearful, low	F8DV250	F8DV251	F8DV252	F8DV253
16	Happy, high	F8DV260	F8DV261	F8DV262	F8DV263
17	Sad, low	F8DV270	F8DV271	F8DV272	F8DV273
18	Fearful, high	F8DV280	F8DV281	F8DV282	F8DV283
19	Fearful, high	F8DV290	F8DV291	F8DV292	F8DV293
20	Angry, high	F8DV300	F8DV301	F8DV302	F8DV303
21	Sad, low	F8DV310	F8DV311	F8DV312	F8DV313
22	Fearful, high	F8DV320	F8DV321	F8DV322	F8DV323
23	Happy, low	F8DV330	F8DV331	F8DV332	F8DV333
24	Angry, high	F8DV340	F8DV341	F8DV342	F8DV343

Table 3.2.1b overleaf presents the number and proportion of children who got each face correct.

Table 3.2.1b: Number (proportion) of children who gave a response getting each face correct

Face number	Emotion/ Intensity	Correct
1	Angry, low	1860 (27.3%)
2	Happy, high	6575 (96.5%)
3	Happy, low	6224 (91.3%)
4	Fearful, low	5930 (87.0%)
5	Sad, high	6628 (97.2%)
6	Sad, high	5913 (86.7%)
7	Angry, high	3963 (58.1%)
8	Happy, high	6791 (99.6%)
9	Angry, low	5334 (78.2%)
10	Sad, low	5962 (87.4%)
11	Fearful, low	2207 (32.4%)
12	Happy, low	6405 (93.9%)
13	Sad, high	5667 (83.1%)
14	Angry, low	4377 (64.2%)
15	Fearful, low	4157 (61.0%)
16	Happy, high	6507 (95.5%)
17	Sad, low	6046 (88.7%)
18	Fearful, high	6153 (90.3%)
19	Fearful, high	5796 (85.0%)
20	Angry, high	4905 (71.9%)
21	Sad, low	5787 (84.9%)
22	Fearful, high	6210 (91.1%)
23	Happy, low	6357 (93.2%)
24	Angry, high	6476 (95.1%)

Various scores have been created to identify the number of errors made in each emotion category (for high intensity, low intensity and overall).

Happy faces

f8dv400 DANVA, All Happy Faces - # Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	5220	69.7	76.5	76.5
	1	1260	16.8	18.5	95.0
	2	267	3.6	3.9	98.9
	3	55	.7	.8	99.7
	4	9	.1	.1	99.9
	5	4	.1	.1	99.9
	6	5	.1	.1	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

f8dv401 DANVA, Low Intensity Happy Faces - # Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	5563	74.3	81.6	81.6
	1	1068	14.3	15.7	97.2
	2	168	2.2	2.5	99.7
	3	21	.3	.3	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

f8dv402 DANVA, High Intensity Happy Faces - # Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	6286	83.9	92.2	92.2
	1	496	6.6	7.3	99.4
	2	32	.4	.5	99.9
	3	6	.1	.1	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

Sad faces

f8dv410 DANVA, All Sad Faces - # Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	3580	47.8	52.5	52.5
	1	2070	27.6	30.4	82.8
	2	794	10.6	11.6	94.5
	3	277	3.7	4.1	98.5
	4	80	1.1	1.2	99.7
	5	18	.2	.3	100.0
	6	1	.0	.0	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

f8dv411 DANVA, Low Intensity Sad Faces - # Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4749	63.4	69.6	69.6
	1	1551	20.7	22.7	92.4
	2	453	6.0	6.6	99.0
	3	67	.9	1.0	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

f8dv412 DANVA, High Intensity Sad Faces - # Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4834	64.6	70.9	70.9
	1	1743	23.3	25.6	96.4
	2	225	3.0	3.3	99.7
	3	18	.2	.3	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

f8dv420 DANVA, All Angry Faces - # Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	674	9.0	9.9	9.9
	1	2070	27.6	30.4	40.2
	2	1846	24.7	27.1	67.3
	3	1153	15.4	16.9	84.2
	4	686	9.2	10.1	94.3
	5	332	4.4	4.9	99.1
	6	59	.8	.9	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

f8dv421 DANVA, Low Intensity Angry Faces - # Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1112	14.9	16.3	16.3
	1	3257	43.5	47.8	64.1
	2	1732	23.1	25.4	89.5
	3	719	9.6	10.5	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

f8dv422 DANVA, High Intensity Angry Faces - # Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2976	39.7	43.6	43.6
	1	2717	36.3	39.8	83.5
	2	997	13.3	14.6	98.1
	3	130	1.7	1.9	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

Fearful faces

f8dv430 DANVA, All Fearful Faces - # Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1519	20.3	22.3	22.3
	1	2521	33.7	37.0	59.2
	2	1579	21.1	23.2	82.4
	3	564	7.5	8.3	90.7
	4	274	3.7	4.0	94.7
	5	191	2.6	2.8	97.5
	6	172	2.3	2.5	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

f8dv431 DANVA, Low Intensity Fearful Faces - # Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1627	21.7	23.9	23.9
	1	2792	37.3	40.9	64.8
	2	1837	24.5	26.9	91.7
	3	564	7.5	8.3	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

f8dv432 DANVA, High Intensity Fearful Faces - # Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	5398	72.1	79.1	79.1
	1	838	11.2	12.3	91.4
	2	294	3.9	4.3	95.7
	3	290	3.9	4.3	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

Summary scores have also been created to identify those children making the ‘most’ errors as detailed in the variables below.

f8dv400a DANVA, All Happy Faces - At Least 1 Error: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	1600	21.4	23.5	23.5
	2 No	5220	69.7	76.5	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

f8dv410a DANVA, All Sad Faces - At Least 2 Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	1170	15.6	17.2	17.2
	2 No	5650	75.5	82.8	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

f8dv420a DANVA, All Angry Faces - At Least 4 Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	1077	14.4	15.8	15.8
	2 No	5743	76.7	84.2	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

f8dv430a DANVA, All Fearful Faces - At Least 3 Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	1201	16.0	17.6	17.6
	2 No	5619	75.0	82.4	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

f8dv440a DANVA, All Faces - At Least 7 Errors: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	1526	20.4	22.4	22.4
	2 No	5294	70.7	77.6	100.0
	Total	6820	91.1	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-2 Did not start task	167	2.2		
	Total	668	8.9		
Total		7488	100.0		

In addition, a set of variables has been created to identify the number of missing values for each emotion (data not shown – the variable names are the same as those detailed above but with the suffix –b, e.g. F8DV401b, F8DV402b,….F8DV442b).

The final set of derived variables examine misattribution, that is, identifying what the child's response was when in fact the response was incorrect. The variables F8DV443 to F8DV446 give the number of responses that were misattributed as happy, sad, angry or fearful respectively.

f8dv443 DANVA, All Faces - # Misattributed as Happy: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	515	6.9	7.7	7.7
	1	1819	24.3	27.2	34.9
	2	2168	29.0	32.4	67.3
	3	1307	17.5	19.5	86.8
	4	506	6.8	7.6	94.3
	5	196	2.6	2.9	97.3
	6	102	1.4	1.5	98.8
	7	46	.6	.7	99.5
	8	19	.3	.3	99.8
	9	10	.1	.1	99.9
	10	3	.0	.0	100.0
	11	1	.0	.0	100.0
	13	2	.0	.0	100.0
	Total	6694	89.4	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-4 Made no errors	126	1.7		
	-2 Did not start task	167	2.2		
	Total	794	10.6		
Total		7488	100.0		

f8dv444 DANVA, All Faces - # Misattributed as Sad: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2332	31.1	34.8	34.8
	1	2102	28.1	31.4	66.2
	2	1214	16.2	18.1	84.4
	3	612	8.2	9.1	93.5
	4	286	3.8	4.3	97.8
	5	94	1.3	1.4	99.2
	6	30	.4	.4	99.6
	7	14	.2	.2	99.9
	8	5	.1	.1	99.9
	9	3	.0	.0	100.0
	10	1	.0	.0	100.0
	11	1	.0	.0	100.0
	Total	6694	89.4	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-4 Made no errors	126	1.7		
	-2 Did not start task	167	2.2		
	Total	794	10.6		
Total		7488	100.0		

f8dv445 DANVA, All Faces - # Misattributed as Angry: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4608	61.5	68.8	68.8
	1	1320	17.6	19.7	88.6
	2	464	6.2	6.9	95.5
	3	182	2.4	2.7	98.2
	4	75	1.0	1.1	99.3
	5	25	.3	.4	99.7
	6	18	.2	.3	100.0
	7	2	.0	.0	100.0
	Total	6694	89.4	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-4 Made no errors	126	1.7		
	-2 Did not start task	167	2.2		
	Total	794	10.6		
Total		7488	100.0		

f8dv446 DANVA, All Faces - # Misattributed as Fearful: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	3520	47.0	52.6	52.6
	1	1808	24.1	27.0	79.6
	2	822	11.0	12.3	91.9
	3	344	4.6	5.1	97.0
	4	139	1.9	2.1	99.1
	5	39	.5	.6	99.7
	6	17	.2	.3	99.9
	7	4	.1	.1	100.0
	8	1	.0	.0	100.0
	Total	6694	89.4	100.0	
Missing	-9 Did not do activities	18	.2		
	-6 < 23 responses	483	6.5		
	-4 Made no errors	126	1.7		
	-2 Did not start task	167	2.2		
	Total	794	10.6		
Total		7488	100.0		

At the end of the task, the tester noted whether the child had appeared confused with the task (F8DV350), their attempt at the task (F8DV351) and whether the child appeared to be truthful (F8DV352) or bored (F8DV356).

f8dv350 DANVA Faces - Appeared confused with task: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	40	.5	.5	.5
	2 No	7190	96.0	98.5	99.0
	9 Unknown	73	1.0	1.0	100.0
	Total	7303	97.5	100.0	
Missing	-9 Did not do activities	18	.2		
	-2 Did not start task	167	2.2		
	Total	185	2.5		
Total		7488	100.0		

f8dv351 DANVA Faces - Attempt at task: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Good	7138	95.3	97.7	97.7
	2 Medium	82	1.1	1.1	98.9
	3 Poor	6	.1	.1	98.9
	9 Unknown	77	1.0	1.1	100.0
	Total	7303	97.5	100.0	
Missing	-9 Did not do activities	18	.2		
	-2 Did not start task	167	2.2		
	Total	185	2.5		
Total		7488	100.0		

f8dv352 DANVA Faces - Appeared truthful during task: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 yes	7026	93.8	96.2	96.2
	2 no	36	.5	.5	96.7
	3 query	165	2.2	2.3	99.0
	9 Unknown	76	1.0	1.0	100.0
	Total	7303	97.5	100.0	
Missing	-9 Did not do activities	18	.2		
	-2 Did not start task	167	2.2		
	Total	185	2.5		
Total		7488	100.0		

f8dv356 DANVA Faces - Appeared bored with task: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 yes	139	1.9	1.9	1.9
	2 no	6916	92.4	94.7	96.6
	3 query	160	2.1	2.2	98.8
	9 Unknown	88	1.2	1.2	100.0
	Total	7303	97.5	100.0	
Missing	-9 Did not do activities	18	.2		
	-2 Did not start task	167	2.2		
	Total	185	2.5		
Total		7488	100.0		

3.2.2 IQ (intelligence quotient) using the WISC.

The WISC-III ^{UK} (Wechsler, Golombok and Rust, 1992) was used to assess cognitive function. It is the most up to date version of the Weschler Intelligence Scale for Children, the most widely used individual ability test worldwide.

A short form of the measure was employed where alternate items (always starting with item number 1 in the standard form) were used for all subtests, with the exception of the coding subtest which was administered in its full form. Hence the length of the session was reduced and children were less likely to tire (such forms have been used successfully in several studies (Stricker *et al*, 1968; Finch and Childress, 1975). All tests were administered by members of the psychology team.

The ten WISC subtests comprise five verbal subtests:

- Information (assessing the child's knowledge);
- Similarities (where similarities between things, e.g., *in what way are* red *and* blue *alike?* must be explained);
- Arithmetic (comprising mental arithmetic questions);
- Vocabulary (ascertaining the child's understanding of the meaning of different words)
- Comprehension (where the child is asked questions about different situations, e.g. *why are names in the telephone book in alphabetical order?*),

and five performance subtests:

- Picture completion (where the child must point out what is missing from each of a series of pictures);
- Coding (where shapes corresponding to different numbers must be copied as quickly as possible within a specified time limit);
- Picture arrangement (where pictures must be ordered to make a meaningful sequence);
- Block design (where pictures of specific patterns of blocks are copied with real blocks)
- Object assembly (which involves putting together puzzles).

The children were also given the forwards and backwards digit span task (a measure of short term storage capacity), repeating lists of digits of differing lengths, firstly in the exact order they were presented in and secondly, in reverse order.

Please see the WISC manual for more detailed information on administering and scoring the subtests.

The task was made as reassuring and un-stressful for the child as possible, with the tester explaining that the child would be playing lots of games: looking at pictures, doing puzzles, making patterns and answering some questions. It was explained that

some of the things might get quite difficult but not to worry as they were the same things we would ask older children to play. All children were encouraged to have a go at things, even if they thought they were just guessing. See datasheet and instructions to testers in Appendix 2.

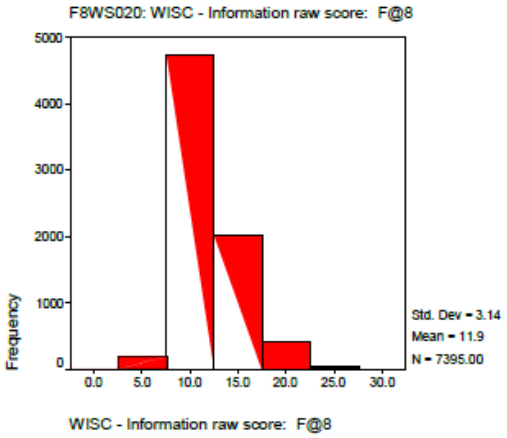
Every effort was made to ensure inter-rater reliability. The testers were overseen by Dr Clare Bell who had long experience of psychometric testing with the study. She observed each tester, advised them, met with the group regularly to discuss the precise administration of each subtest and supervised and checked their scoring.

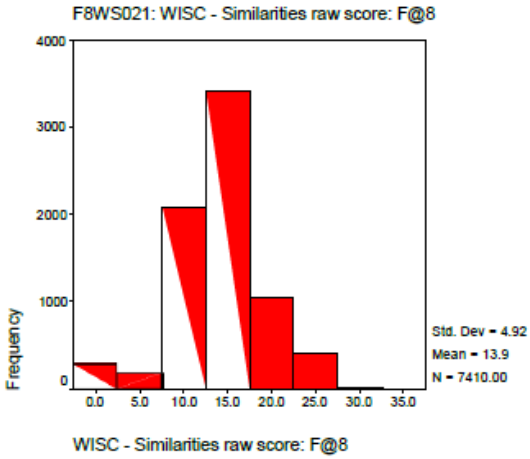
Raw scores

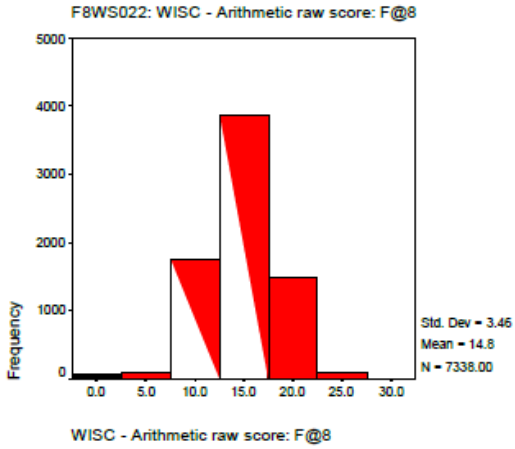
Raw scores were calculated according to the items used in the alternate item form of the WISC. This was achieved by summing the individual items within each subtest and multiplying by 2 for picture completion, information, arithmetic, vocabulary, comprehension and picture arrangement; multiplying by 5/3 for similarities, multiplying by 3/2 for object assembly and block design, thus, making the raw scores comparable to those that would have been obtained had the full test been administered (the raw score for the coding subtest was calculated in the standard way as the full subtest was administered). It is because of this multiplication that some of the scores do not follow a smooth distribution.

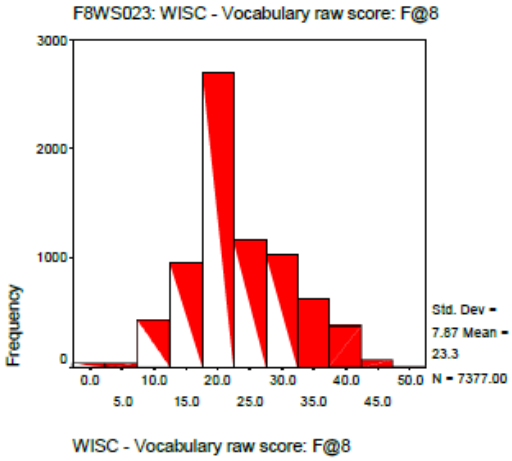
For a small number of cases, scores could be imputed where a tester or computer error had been made and such a score would otherwise have been missing. Clare Bell made such decisions on a case by case basis. For example, on the information subtest, the tester may have accidentally forgotten to ask the child one of the earlier, simple questions but the child went on to get a relatively harder question right, it was assumed that the child would have got the earlier questions correct. Without such intervention a child would have had a missing score (or a score of 0) for this subtest.

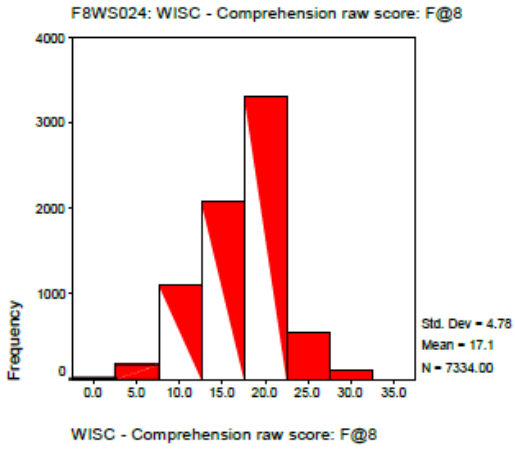
The ten individual raw scores are available on the release file: Picture completion (F8WS026), Information (F8WS020), Coding (F8WS027), Similarities (F8WS021), Picture arrangement (F8WS028), Arithmetic (F8WS022), Block design (F8WS029), Vocabulary (F8WS023), Object Assembly (F8WS020) and Comprehension (F8WS024), plus the additional digit span subtest scores (F8WS025 [F8WS025a for forwards and F8WS025b for backwards]).

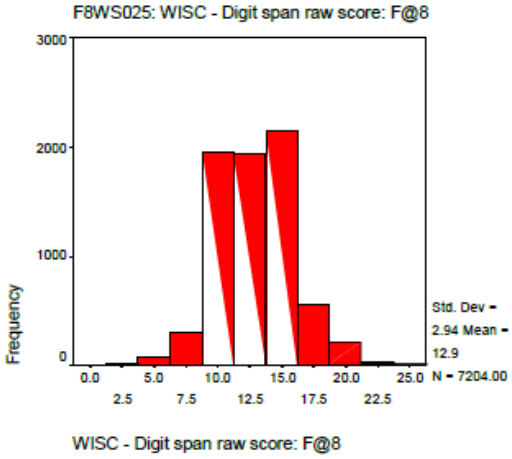

F8WS020: WISC - Information raw score: F@8
Frequency
Std. Dev = 3.14
Mean = 11.9
N = 7395.00
WISC - Information raw score: F@8


F8WS021: WISC - Similarities raw score: F@8
Frequency
Std. Dev = 4.92
Mean = 13.9
N = 7410.00
WISC - Similarities raw score: F@8

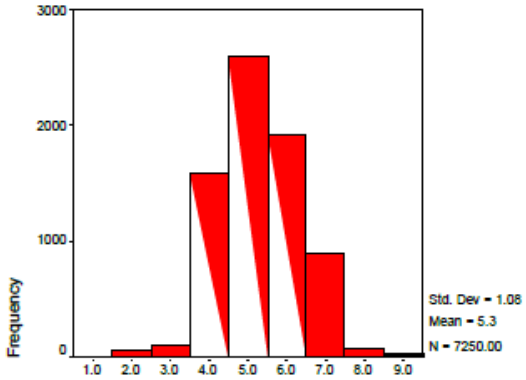

F8WS022: WISC - Arithmetic raw score: F@8
Frequency
Std. Dev = 3.46
Mean = 14.8
N = 7338.00
WISC - Arithmetic raw score: F@8


F8WS023: WISC - Vocabulary raw score: F@8
Frequency
Std. Dev = 7.87 Mean = 23.3
N = 7377.00
WISC - Vocabulary raw score: F@8


F8WS024: WISC - Comprehension raw score: F@8
Frequency
Std. Dev = 4.78
Mean = 17.1
N = 7334.00
WISC - Comprehension raw score: F@8

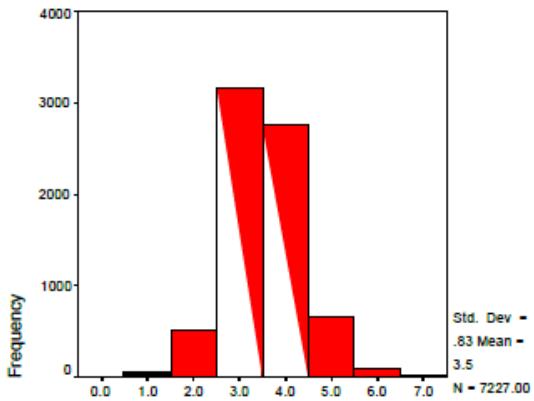

F8WS025: WISC - Digit span raw score: F@8
Frequency
Std. Dev = 2.94 Mean = 12.9
N = 7204.00
WISC - Digit span raw score: F@8

F8WS025a: WISC - Forwards Digit span raw score: F@8



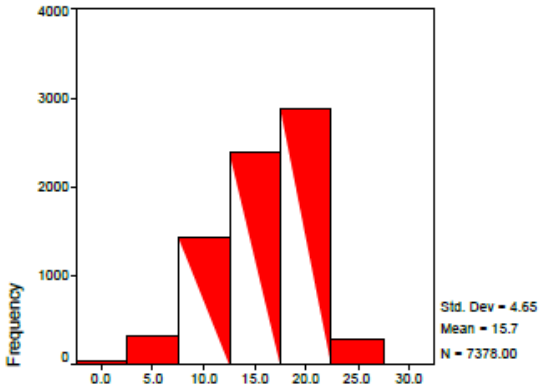
WISC - Forwards Digit span raw score: F@8

F8WS025b: WISC - Backwards Digit span raw score: F@8



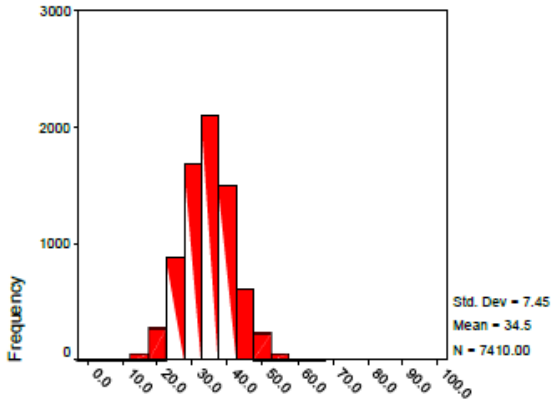
WISC - Backwards Digit span raw score: F@8

F8WS026: WISC - Picture completion raw score: F@8



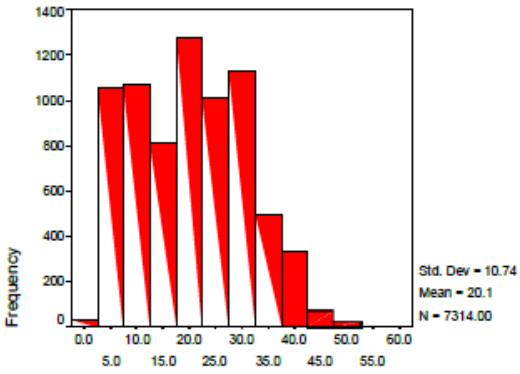
WISC - Picture completion raw score: F@8

F8WS027: WISC - Coding raw score: F@8



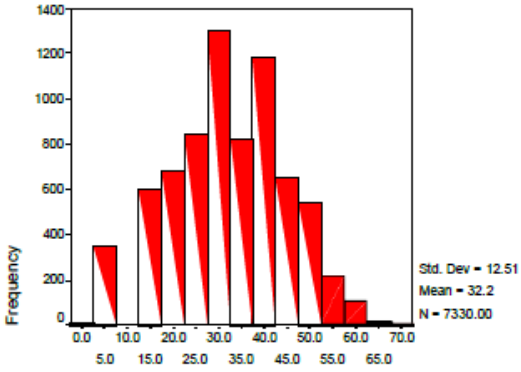
WISC - Coding raw score: F@8

F8WS028: WISC - Picture arrangement raw score: F@8



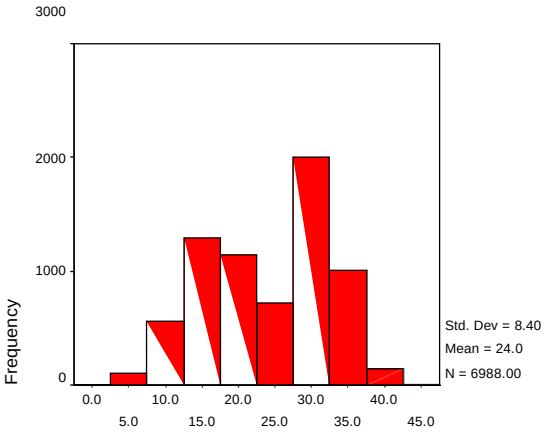
WISC - Picture arrangement raw score: F@8

F8WS029: WISC - Block design raw score: F@8



WISC - Block design raw score: F@8

F8WS030: WISC - Object assembly raw score: F8



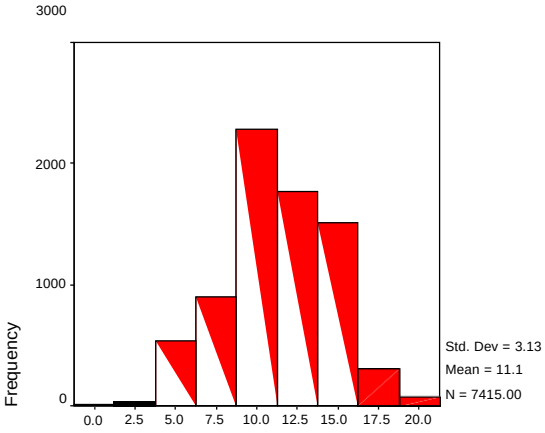
WISC - Object assembly raw score: F8

Age-scaled scores

Using the Look-up tables provided in the WISC manual age scaled scores were obtained from the raw scores and total scores were calculated for the Performance and Verbal scales. At this point prorating was performed: If a child obtained a score for only four out of the five subtests on each of the performance or verbal scales, the total scores for each scale could still be calculated, by substituting the mean of the four available scaled scores in for the fifth score and summing in the usual way in. This was done in accordance with WISC instructions. Although acceptable in WISC calculations, substituting the digit span score in place of an unobtained fifth verbal subtest was not done.

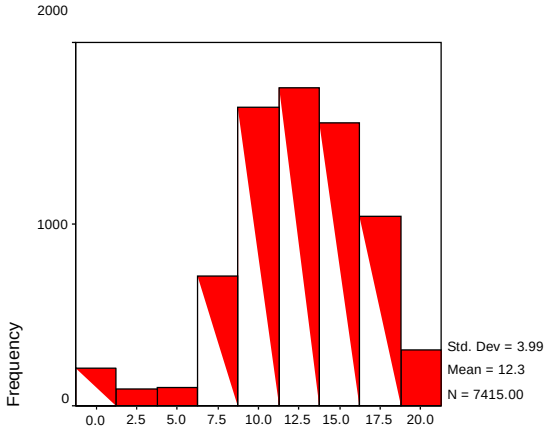
The ten individual age-scaled scores are available on the release file: Picture completion (F8WS056), Information (F8WS050), Coding (F8WS057), Similarities (F8WS051), Picture arrangement (F8WS058), Arithmetic (F8WS052), Block design (F8WS059), Vocabulary (F8WS053), Object Assembly (F8WS060) and Comprehension (F8WS054), plus the additional digit span subtest scores (F8WS055).

F8WS050: WISC - Information scaled score: F8



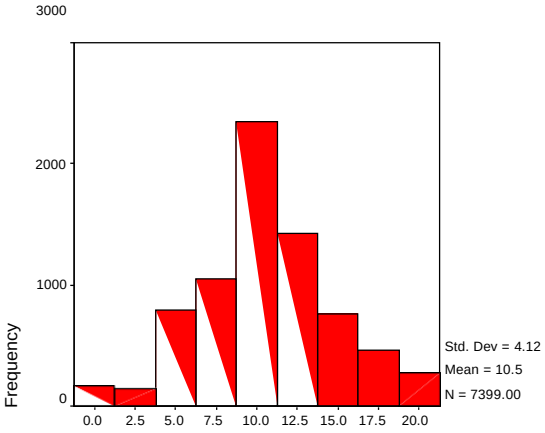
WISC - Information scaled score: F8

F8WS051: WISC - Similarities scaled score: F8



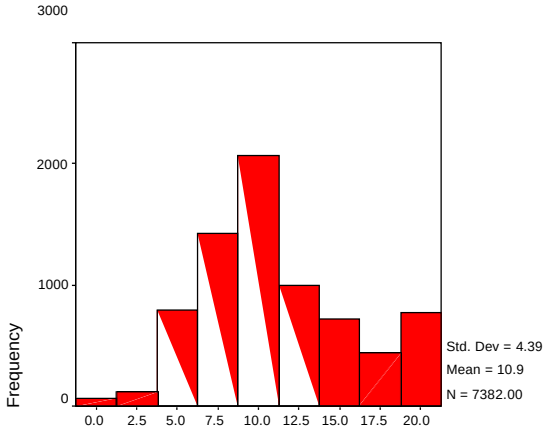
WISC - Similarities scaled score: F8

F8WS052: WISC - Arithmetic scaled score: F8



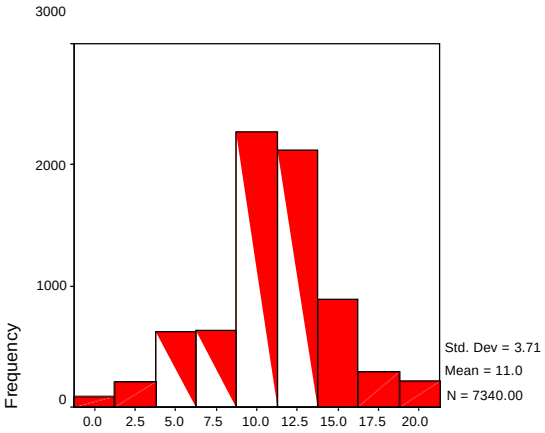
WISC - Arithmetic scaled score: F8

F8WS053: WISC - Vocabulary scaled score: F8



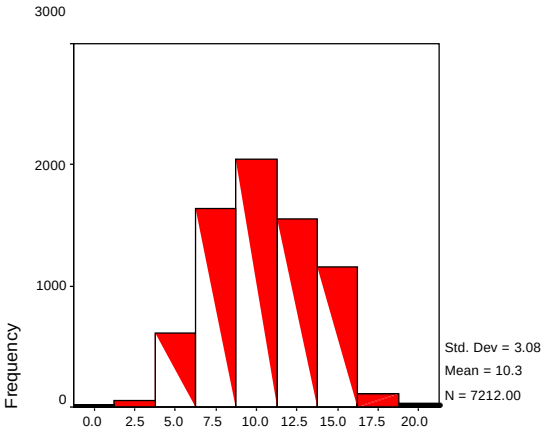
WISC - Vocabulary scaled score: F8

F8WS054: WISC - Comprehension scaled score: F8



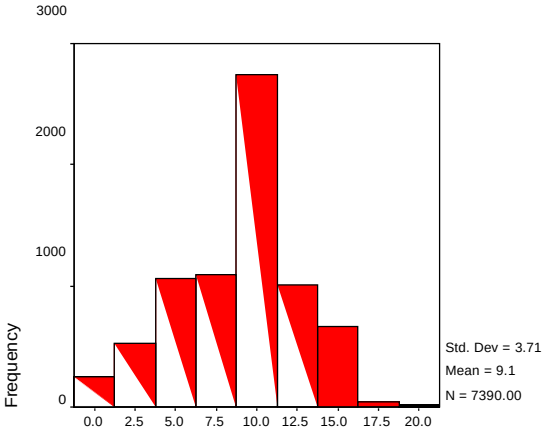
WISC - Comprehension scaled score: F8

F8WS055: WISC - Digit span scaled score: F8



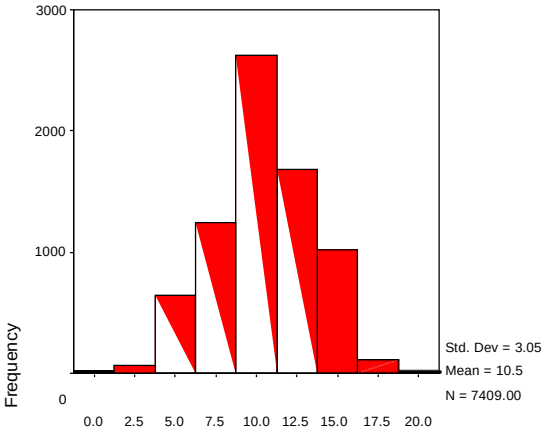
WISC - Digit span scaled score: F8

F8WS056: WISC - Picture completion scaled score: F8



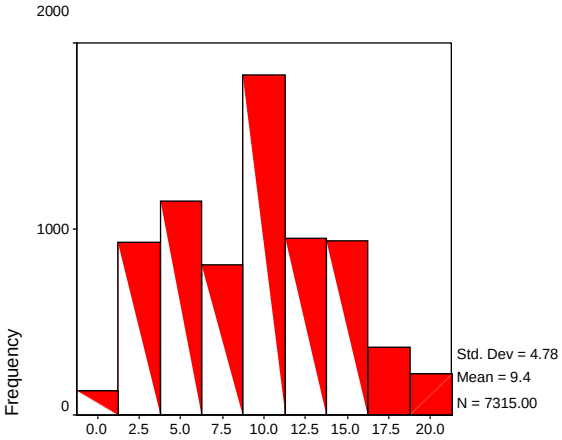
WISC - Picture completion scaled score: F8

F8WS057: WISC - Coding scaled score: F8



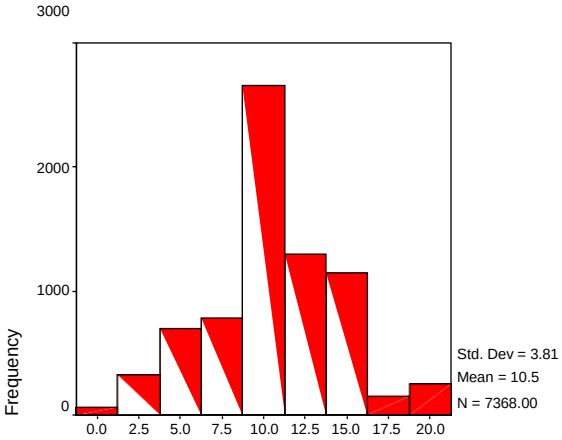
WISC - Coding scaled score: F8

F8WS058: WISC - Picture arrangement scaled score: F8



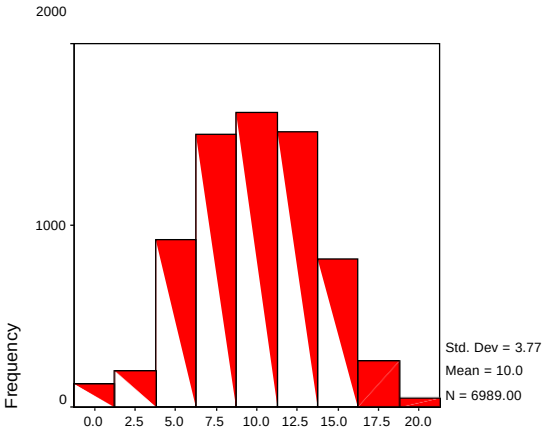
WISC - Picture arrangement scaled score: F8

F8WS059: WISC - Block design scaled score: F8



WISC - Block design scaled score: F8

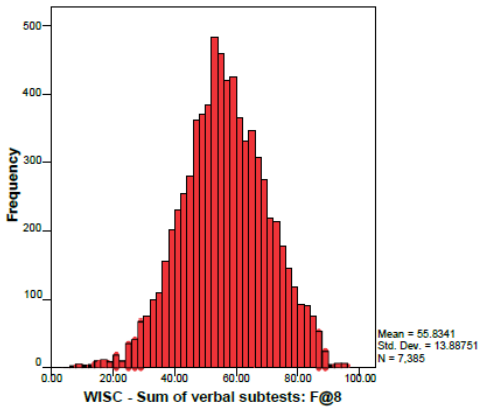
F8WS060: WISC - Object assembly scaled score: F8



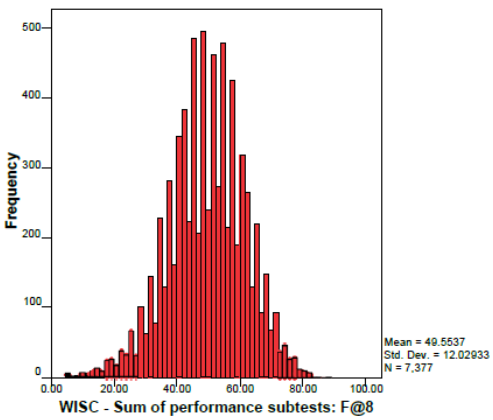
WISC - Object assembly scaled score: F8

The three measures from which the IQ scores are finally derived: sum of the verbal subtests, F8WS100; sum of the performance subtests, F8WS101, and sum of the total, F8WS102, are also available on the release file.

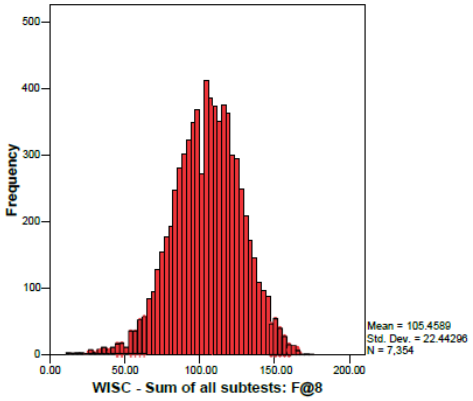
F8WS100: WISC - Sum of verbal subtests: F@8



F8WS101: WISC - Sum of performance subtests: F@8

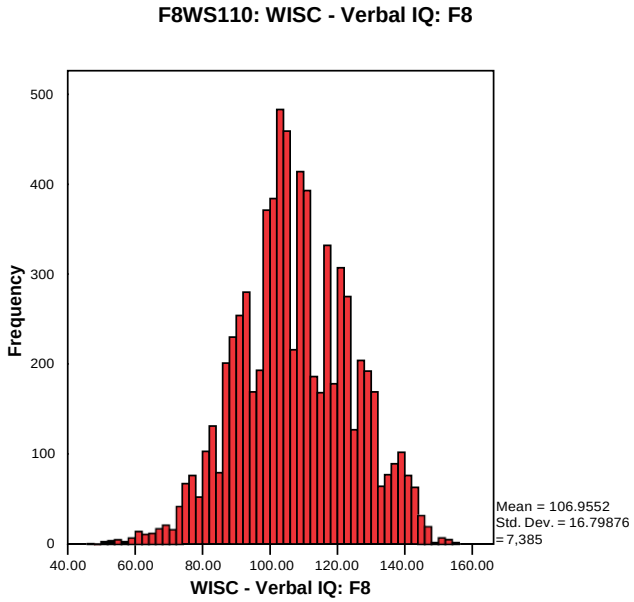


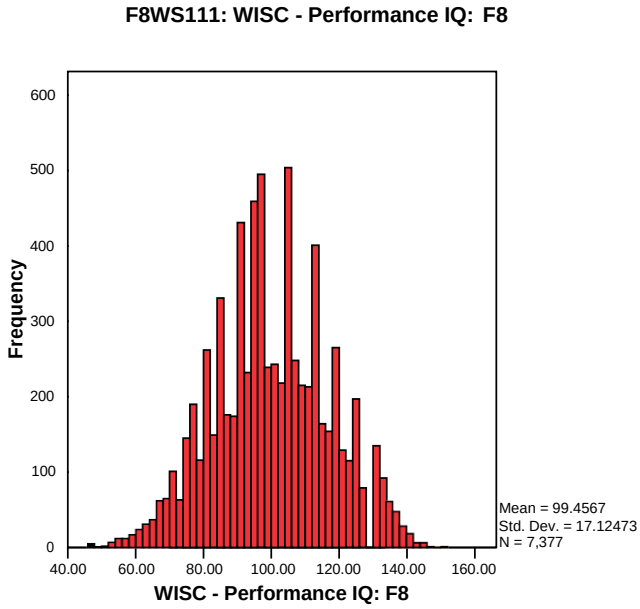
F8WS102: WISC - Sum of all subtests: F@8

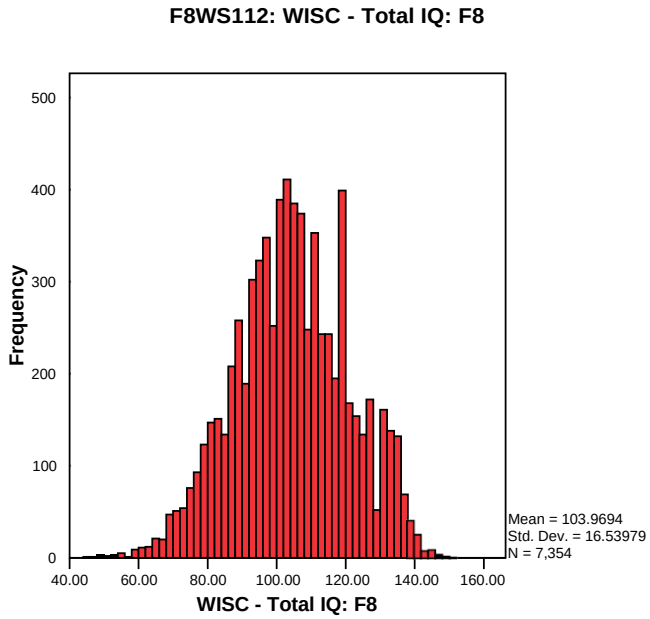


IQ scores

The final WISC IQ scores (verbal, performance and total IQ) were calculated from the total scaled scores as described above using the look-up tables provided in the WISC manual.
These are the outcomes traditionally used by researchers to assess IQ.







An IQ categorisation variable (F8WS115) has also been calculated which uses the official qualitative descriptions of WISC-III^{UK} IQ scores, with children categorised into

those with IQ scores that are exceptionally high (130 and above), high (120-129), high average (110-119), average (90-109), low average (80-89), low (70-79) and exceptionally low (69 and below).

f8ws115 WISC - Categorical Total IQ: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 exceptionally low	136	1.8	1.8	1.8
	2.00 low	397	5.3	5.4	7.2
	3.00 low average	899	12.0	12.2	19.5
	4.00 average	3220	43.0	43.8	63.3
	5.00 high average	1433	19.1	19.5	82.7
	6.00 high	680	9.1	9.2	92.0
	7.00 exceptionally high	589	7.9	8.0	100.0
	Total	7354	98.2	100.0	
Missing	-3.00 Not enough subtests done	85	1.1		
	-2.00 Did not start Activities/WISC	49	.7		
	Total	134	1.8		
Total		7488	100.0		

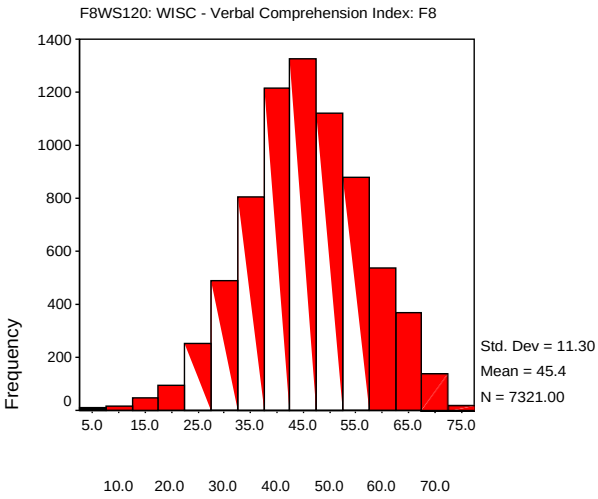
Factor based index scores

In addition to the final IQ scores, which are the standard measures derived from an IQ test, a number of factor-based index scores are also available and may be useful to researchers. There are four factor-based index scores for the WISC-III ^{UK}, however, the fourth requires an additional optional subtest (symbol search) which was not administered to the study children.

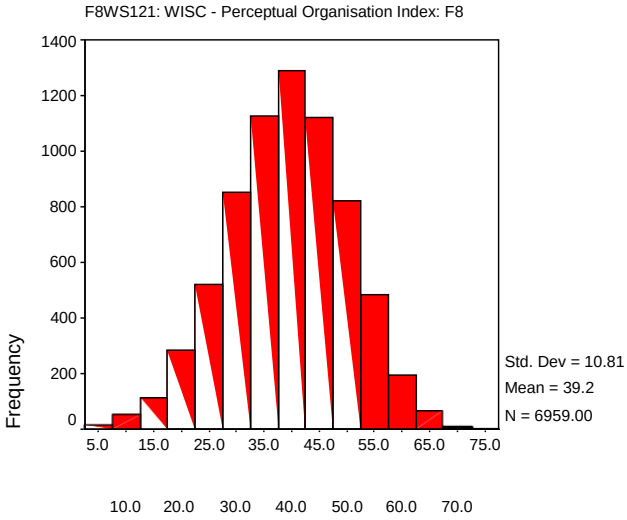
Hence, three Index scores available:

- Factor I: Verbal Comprehension Index (F8WS120), calculated using the Information, Similarities, Vocabulary and Comprehension subtests;
- Factor II, Perceptual Organisation Index (F8WS121), using the Picture Completion, Picture Arrangement, Block Design and Object Assembly subtests,
- Factor III, Freedom from Distractibility Index (F8WS122), using the Arithmetic and Digit Span subtests.

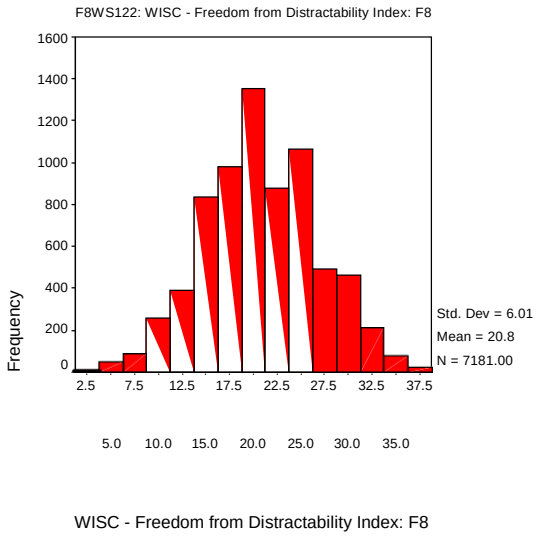
(Processing Speed, PSI, is the fourth factor, which is made up of the Coding subtest, which was administered, and the Symbol Search optional subtest, which was not.)



WISC - Verbal Comprehension Index: F8



WISC - Perceptual Organisation Index: F8



Note: The IQ scores were standardised by the authors on a normal British population in the early 1990s to have a mean of 100 and standard deviation of 15. The ALSPAC sample is large, with a relatively narrow age range. The WISC IQ norms were derived approximately ten years ago, and these sum scores are better approximate a normal distribution than the actual IQ measures. With this in mind, some researchers may wish to use these sum scores in analyses in preference to the IQ scores. Final results could be translated back to IQ scores. However, the results calculated each way are likely to be extremely similar.

Other measures collected include tester (F8WS003), and, for each subtest separately, the child's attempt at the task (good, medium or poor), according to the tester (F8WS070 to F8WS080). Written comments by the tester about the child's session have also been coded and a list of these variables is below:

f8ws150: Child had special needs
f8ws151: Child's shyness may have inhibited verbal response
f8ws152: Child's attention was not good
f8ws153: Child appeared anxious
f8ws154: Child was upset
f8ws155: Child gave up easily

3.2.3 Self esteem

The extent to which people value themselves has been shown to affect many different aspects of life, including school achievement, expectations for success and social relationships (e.g. see Damon & Hart, 1982). ALSPAC has included this measure so that the antecedents and consequences of self esteem can be studied.

Self-esteem was measured using a 12-item shortened form of Harter's Self Perception Profile for Children (Harter, 1985) comprising the global self-worth and scholastic competence subscales (see Table 3.2.3; items 2, 4, 6, 8, 10 and 12 form the global self worth subscale, and items 1, 3, 5, 7, 9 and 11, the scholastic competence subscale). The task was conducted using post-boxes and envelopes. Each envelope corresponded to a single item, comprising two statements, one in blue writing, one in red, for example "Some children are often unhappy with themselves" (in blue) and "Other children are pretty pleased with themselves" (in red). All the statements are shown in Table 3.2.3a, with the corresponding variable names. There were two postboxes (one blue, one red), and on each postbox, there were two slots: "Sort of true for me" and "Really true for me". The child was read out each statement and had to decide whether he or she was more like the child in the blue writing or the red (and consequently, whether to post the envelope into the blue or red post box), and then whether the relevant statement was "sort of true for him/her" or "really true for him/her" (and consequently, whether to post the envelope into the "sort of true for me" or "really true for me" slot). This made the task more interesting for the child and allowed him or her to answer sensitive questions without the member of staff being able to see what the answers were. The child was also guaranteed confidentiality.

See more specific instructions to testers for this task (Appendix two).

F8SE100 Self Esteem started: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7010	93.6	93.8	93.8
	2 No	461	6.2	6.2	100.0
	Total	7471	99.8	100.0	
Missing	-2 Did not start Session	17	.2		
Total		7488	100.0		

Table 3.2.3a: Statements shown on each envelope

No.	Statement 1 (Blue)	Statement 2 (Red)	Variable name
1	Some children feel that they are very *good* at their school work	Other children *worry* about whether they can do the school work that they have been given	F8SE110
2	Some children are often *unhappy* with themselves	Other children are *pretty pleased* with themselves	F8SE111
3	Some children feel like they are *just as clever* as other children their age	Other children aren't so sure and *wonder* if they are as clever	F8SE112
4	Some children *don't* like the way they are living their life	Other children *do* like the way they are living their life	F8SE113
5	Some children are pretty *slow* in finishing their school work	Other children can do their school work *quickly*	F8SE114
6	Some children are *happy* with themselves as a person	Other children are often *not* happy with themselves as a person	F8SE115
7	Some children often *forget* what they learn	Other children can remember things *easily*	F8SE116
8	Some children *like* the kind of *person* they are	Other children often wish they were someone else	F8SE117
9	Some children do *very well* at their classwork	Other children *don't* do very well at their classwork	F8SE118
10	Some children are very *happy* being the way they are	Other children wish they were *different*	F8SE119
11	Some children have *trouble* working out the answers in school	Other children can almost *always* work out the answer	F8SE120
12	Some children are not very happy with the way they do a lot of things	Other children think the way they do things is fine	F8SE121

Table 3.2.3b: Frequency of responses to self esteem questions from the 7012 children who started the task

Variable name	Blue, really	Blue, sort of	Red, sort of	Red, really
F8SE110	2120 (30.3%)	2603 (37.2%)	1663 (23.8%)	613 (8.8%)
F8SE111	517 (7.4%)	1118 (16.0%)	2907 (41.6%)	2451 (35.0%)
F8SE112	1981 (28.3%)	2176 (31.1%)	2003 (28.6%)	836 (11.9%)
F8SE113	786 (11.2%)	688 (9.8%)	1277 (18.3%)	4243 (60.7%)
F8SE114	1109 (15.9%)	1708 (24.4%)	2144 (30.6%)	2036 (29.1%)
F8SE115	3942 (56.4%)	2100 (30.1%)	589 (8.4%)	353 (5.1%)
F8SE116	925 (13.2%)	1878 (26.8%)	2369 (33.8%)	1825 (26.1%)
F8SE117	3492 (50.0%)	1748 (25.0%)	1063 (15.2%)	685 (9.8%)
F8SE118	2853 (40.8%)	2811 (40.2%)	912 (13.0%)	413 (5.9%)
F8SE119	3820 (54.7%)	1771 (25.3%)	879 (12.6%)	514 (7.4%)
F8SE120	1021 (14.6%)	1870 (26.7%)	2219 (31.7%)	1882 (26.9%)
F8SE121	564 (8.1%)	1072 (15.3%)	2518 (36.0%)	2837 (40.6%)

To ease the use of the data we have re-labelled the data:

Blue, Really true for me = Yes, really like me
Blue, Sort of true for me = Yes, a bit like me
Red, Sort of true for me = No, not really like me
Red, Really true for me = No, not at all like me
Blue, Unknown = Like me
Red, Unknown = Not like me

Items were scored as follows:

Blue, Really true for me=1;Blue, Sort of true for me=2
Red, Sort of true for me=3; Red, Really true for me=4

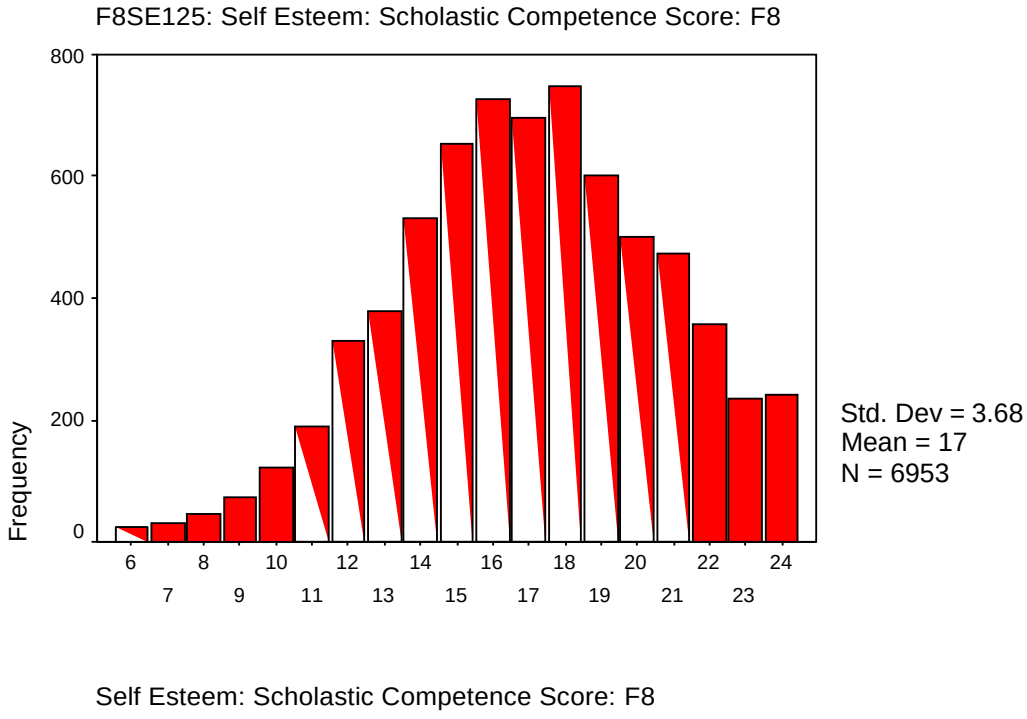
Summary variables were created for each item (with a suffix –a) determining whether the envelopes were posted into the blue post-box or the red one, irrespective of which slot. In a very small minority of cases it was not clear whether the child had posted the envelope into the 'really' or 'sort of' slot in the blue and red boxes (for example, the tester found the envelopes wedged in between when they went to remove them). For the purposes of the summary variables these have been recoded to blue or red as appropriate.

For the calculation of the subscales, items 1, 3, 6, 8, 9 and 10 were recoded so that 1=4, 2=3, 3=2, 4=1.

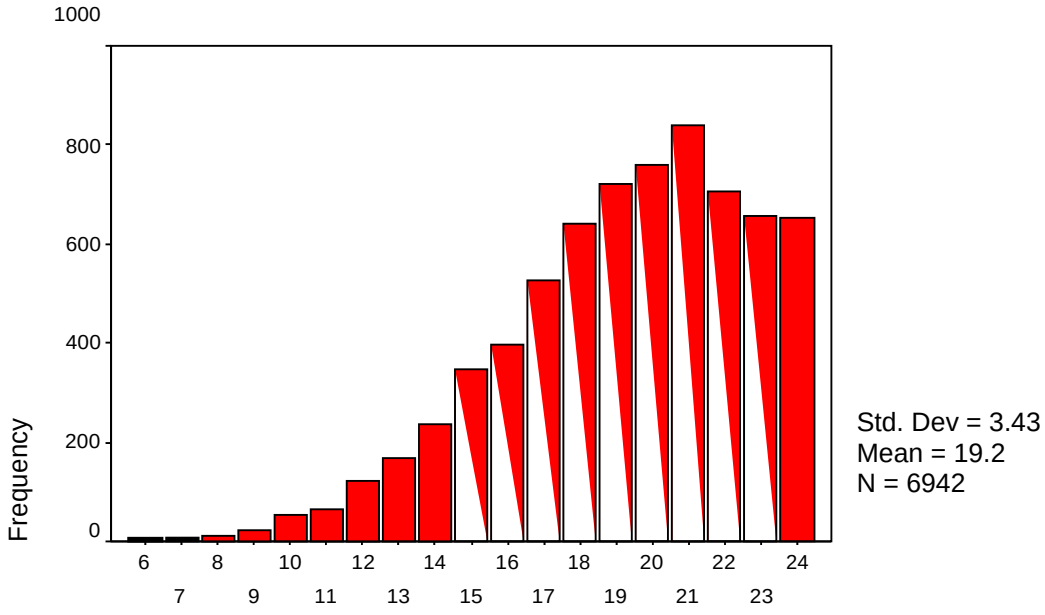
Scholastic competence (F8SE325) was calculated by summing scores for items 1, 3, 5, 7, 9 and 11, and global self worth (F8SE326) was calculated by summing scores for items 2, 4, 6, 8, 10 and 12.

For those cases where the envelope did not clearly fall into any one slot those items have had to be treated as missing. For the subscales score, children who had at least one missing item do not have a score.

A higher score indicates higher self esteem.



F8SE126: Self Esteem: Global Self Worth Score: F8



Self Esteem: Global Self Worth Score: F8

Most children appear to have posted their answers appropriately. A very small minority of children, however, posted all their answers into the blue box (no children posted them all in to the red box), regardless of whether the statements were positive or negative (F8SE127). It is highly unlikely that these children's answers are reliable.

F8SE127 Self Esteem - How Child answered items: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Posted Blue for all	19	.3	.3	.3
	3 Combination	6991	93.4	99.7	100.0
	Total	7010	93.6	100.0	
Missing	-2 Did not start/No qs answered approp	478	6.4		
Total		7488	100.0		

The tester noted whether the child appeared confused with the task (F8SE130) and the child's attempt at the task (F8SE131) whether the responses were posted appropriately (F8SE133), whether the child seemed uncomfortable, upset or bored during the task (F8SE134, F8SE135, F8SE136) and whether the task was stopped prematurely (F8SE137).

Coded self esteem comments

Both F8SE150 and F8SE151 are a combination of different comments made by the tester about the session and give information about any distractions and the child's behaviour.

3.3 Behaviour in Posting and Activities sessions

At the end of the Activities and the Posting sessions, the two members of staff who carried out the assessments each completed a separate behaviour checklist devised by Bill Henry and Avshalom Caspi, updated from previous studies looking at the development of antisocial behaviour (see Newman, DL *et al*; 1997). So, for the vast majority of children, who attended both sessions, two behaviour ratings exist. In addition, the staff rated whether the child was fidgety and whether they had good rapport

Table 3.3.1: Items comprising the five sections of the behaviour checklist

	Variable name	
	Posting	**Activities**
Irritability/Negative Emotionality	***F8BP026***	***F8BA026***
Lability	F8BP020	F8BA020
Frustration tolerance	F8BP021	F8BA021
Hostility	F8BP022	F8BA022
Roughness	F8BP023	F8BA023
Resistance	F8BP024	F8BA024
Impulsivity/Distractibility	***F8BP036***	***F8BA036***
Restlessness	F8BP030	F8BA030
Impulsivity	F8BP031	F8BA031
Fleeting attention	F8BP032	F8BA032
Lacking persistence	F8BP033	F8BA033
Approach	***F8BP046***	***F8BA046***
Quick adjustment	F8BP040	F8BA040
Friendliness	F8BP041	F8BA041
Self confidence	F8BP042	F8BA042
Talkativeness	F8BP043	F8BA043
Easy separation	F8BP044	F8BA044
Smiling/laughing	F8BP045	F8BA045
Sluggishness	***F8BP056***	***F8BA056***
Self criticism	F8BP050	F8BA050
Flat affect	F8BP051	F8BA051
Passivity	F8BP052	F8BA052
Malleability	F8BP053	F8BA053
Wariness	***F8BP066***	***F8BA066***
Fearfulness	F8BP060	F8BA060
Upset by strangers	F8BP061	F8BA061
Shyness	F8BP062	F8BA062
Avoidance	F8BP063	F8BA063
Withdrawal	F8BP064	F8BA064
Inhibition	F8BP065	F8BA065

Fidgitiness	F8BP070	F8BA070
Rapport	F8BP080	F8BA080

Testers rated the child on each item after the child had left the room. For each item, the tester could give a score of 0 (behaviour not characteristic of the child); 1 (behaviour somewhat characteristic of the child), or 2 (behaviour characteristic of the child).

For each section, with the exception of Approach, typical behaviour is expected to be scored as 0, i.e. not characteristic of the child. Section scores are created as the sum of the individual items within that section, a higher score indicating a higher level of that type of behaviour. It is recommended that the separate section scores are used (as opposed to the individual items), in line with the measures and the frequencies of the scores are presented below (Tables 3.3.2 and 3.3.3 for the posting and activities sessions respectively):

Table 3.3.2: Behaviour scores for the Posting session

Score	Irritability F8BP026	Impulsivity F8BP036	Approach F8BP046	Sluggishness F8BP056	Wariness F8BP066
0	7210	6398	33	5877	5045
1	118	502	60	847	1411
2	43	254	124	321	497
3	26	116	171	142	228
4	9	51	270	97	105
5	7	30	334	54	48
6	2	22	506	69	39
7	5	12	646	7	23
8	2	19	762	1	13
9	-	-	945	-	2
10	-	-	1207	-	2
11	-	-	1060	-	3
12	-	-	1286	-	-
Missing	29	47	47	36	36

Table 3.3.3: Behaviour scores for the Activities session

Score	Irritability F8BA026	Impulsivity F8BA036	Approach F8BA046	Sluggishness F8BA056	Wariness F8BA066
0	7145	5645	45	4730	5086
1	115	958	63	1543	1295
2	50	410	140	572	507
3	28	163	182	225	212
4	13	76	273	137	122
5	7	46	350	81	64
6	10	30	527	41	30
7	4	11	659	22	24
8	2	18	767	13	10
9	2	-	1019	-	9
10	-	-	1114	-	3
11	-	-	1045	-	2
12	-	-	1168	-	1

Missing	95	114	119	107	123

The frequencies for fidgetiness and rapport are as follows:

F8BA070 Activities Behaviour - Fidgitiness: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Not fidgety	5317	71.0	72.3	72.3
	1 Somewhat fidgety	1375	18.4	18.7	91.1
	2 Fidgety	657	8.8	8.9	100.0
	Total	7349	98.1	100.0	
Missing	-2 Did not start Activities Session	18	.2		
	-1 Missing	121	1.6		
	Total	139	1.9		
Total		7488	100.0		

F8BA080 Activities Behaviour - Rapport: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Good rapport	66	.9	.9	.9
	1 Good with extra effort	898	12.0	12.2	13.1
	2 Poor rapport	6386	85.3	86.9	100.0
	Total	7350	98.2	100.0	
Missing	-2 Did not start Activities Session	18	.2		
	-1 Missing	120	1.6		
	Total	138	1.8		
Total		7488	100.0		

F8BP070 Posting Behaviour - Fidgitiness: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Not fidgety	5640	75.3	76.9	76.9
	1 Somewhat fidgety	1181	15.8	16.1	93.0
	2 Fidgety	512	6.8	7.0	100.0
	Total	7333	97.9	100.0	
Missing	-2 Did not start Posting Session	34	.5		
	-1 Missing	121	1.6		
	Total	155	2.1		
Total		7488	100.0		

F8BP080 Posting Behaviour - Rapport: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Responsive	61	.8	.8	.8
	1 Good after effort	802	10.7	10.9	11.8
	2 Unresponsive	6472	86.4	88.2	100.0
	Total	7335	98.0	100.0	
Missing	-2 Did not start Posting Session	34	.5		
	-1 Missing	119	1.6		
	Total	153	2.0		
Total		7488	100.0		

3.4 Speech and Language

There are three purposes to the collection of speech and language data within the ALSPAC cohort:

- children's progress in speech and language is a key developmental indicator in its own right and this large cohort provides a prime opportunity to collect normative data in the context of other data about the children's medical, social, psychological and environmental backgrounds. Thus factors predicting speech and language outcomes can be investigated;

- data on the children's speech and language can act as outcome measures for other aspects of child and family life. For example, the investigation of the effects of otitis media or other developmental learning difficulties or the outcome of different methods of feeding during infancy;

- Finally, the range of measures used will make it possible to investigate the prevalence and outcome of speech and language difficulties using definitions which go further than single criterion markers or single cut-off points on standardised measures.

Deciding how to sample complex behaviours such as speech and language has been a challenge throughout the study. The aim has been to sample a range of cognitive-linguistic processes, to collect samples of children's output for more detailed analysis, to produce assessment tasks that are feasible within a short timescale and be as non-threatening as possible for the children.

F8SL001 Child entered Speech & Lang session: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7391	98.7	98.7	98.7
	2 No	97	1.3	1.3	100.0
	Total	7488	100.0	100.0	

F8SL001A Reason Child did not do Speech & Lang session: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 Ch left early	6	.1	.1	.1
	3 Ch arrived late	6	.1	.1	.2
	4 Ch/family refused	1	.0	.0	.2
	6 No time/prev session overran	2	.0	.0	.2
	7 Ch did session	7391	98.7	99.8	100.0
	Total	7406	98.9	100.0	
Missing	-1 Missing	82	1.1		
Total		7488	100.0		

F8SL004 S&L session tester F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	401	5.4	5.4	5.4
	2	36	.5	.5	5.9
	3	238	3.2	3.2	9.1
	4	163	2.2	2.2	11.3
	5	376	5.0	5.1	16.4
	6	233	3.1	3.2	19.6
	7	24	.3	.3	19.9
	8	184	2.5	2.5	22.4
	9	819	10.9	11.1	33.5
	10	1	.0	.0	33.5
	11	629	8.4	8.5	42.0
	12	519	6.9	7.0	49.0
	13	1782	23.8	24.1	73.1
	14	148	2.0	2.0	75.1
	15	1838	24.5	24.9	100.0
	Total	7391	98.7	100.0	
Missing	-2 Did not start S&L Session	97	1.3		
Total		7488	100.0		

***note tester 10 is not a keying error, this was a psychologist who stood in for one session**

F8SL006 S&L - Adult accompanied child: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	75	1.0	1.0	1.0
	2 No	7316	97.7	99.0	100.0
	Total	7391	98.7	100.0	
Missing	-2 Did not start S&L Session	97	1.3		
Total		7488	100.0		

F8SL007 S&L - Child wore glasses: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	472	6.3	6.4	6.4
	2 No	6871	91.8	93.0	99.4
	9 Dont know	48	.6	.6	100.0
	Total	7391	98.7	100.0	
Missing	-2 Did not start S&L Session	97	1.3		
Total		7488	100.0		

3.4.1 Listening Comprehension

Two subtests of the Wechsler Objective Language Dimensions (WOLD, Rust 1996) were used to measure listening comprehension and oral expression.

The listening comprehension subtest of the WOLD is divided into two parts. The first is a single word receptive vocabulary test, similar to the vocabulary subtest of the WISC. This was not therefore used. In the second part of the assessment, the child listens to the tester read aloud a paragraph about a picture, which the child is shown. The child then answers questions on what they have heard. For example:

> Listen carefully.
>
> The kitten climbed up into the very highest branches of the tree. Amy called to the kitten to come down, but the kitten did not move. Amy started to climb the tree to get the kitten. “No, Amy,” her grandfather said. “You don’t need to climb up there. Your kitten will come down when its ready.”
>
> Why did Amy want to climb the tree?
>
> What reason did Amy’s grandfather give her for not climbing the tree?

The child has to make inferences about what was read to them and answer the questions verbally. The task was discontinued if the child got three consecutive questions incorrect.

F8SL020 S&L - WOLD comprehension started: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7384	98.6	99.9	99.9
	2 No	7	.1	.1	100.0
	Total	7391	98.7	100.0	
Missing	-2 Did not start S&L Session	97	1.3		
Total		7488	100.0		

Alternate items from the standard test were sampled except where the item had American cultural loading. In those cases, the next item was selected.

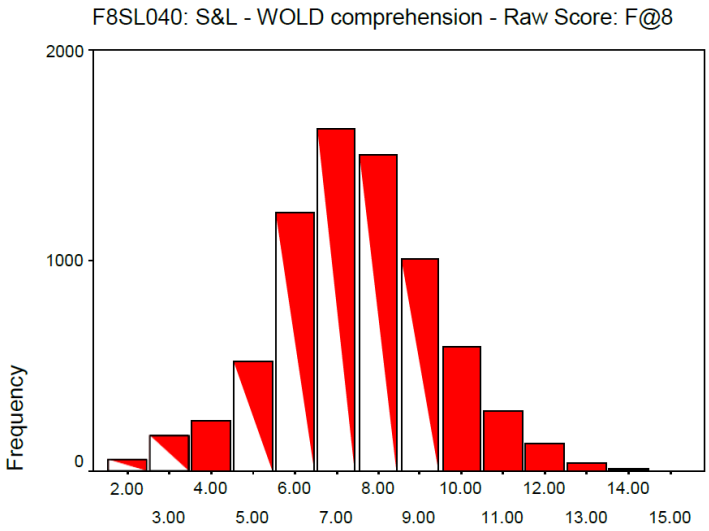
(Pictures used as numbered in the manual:
11,14,15,17,19,20,24,25,26,29,30,32,33,34)

Table 3.4.1 shows the frequencies (and variable names) for the questions asked in this task.

Table 3.4.1: Frequencies for the individual items of the WOLD comprehension task

Variable name	Question	Correct	Incorrect
F8SL021	What day is Sally visiting Grandma?	6043 (81.8%)	1341 (18.2%)
F8SL022	What does Jackie have to do before she goes to the dog's home?	6272 (84.9%)	1112 (15.1%)
F8SL023	Why did Amy want to climb trees?	6853 (92.8%)	531 (7.2%)
F8SL024	What reason did Amy's grandfather give her for not climbing trees?	4595 (62.2%)	2789 (37.8%)
F8SL025	Name two of the reasons why fish make good pets.	5467 (74.0%)	1917 (26.0%)
F8SL026	Which sport does Julie most like to watch on television?	6165 (83.5%)	1219 (16.5%)
F8SL027	What is Michael's favourite event at the annual town carnival?	5210 (70.6%)	2174 (29.4%)
F8SL028	What is the first event Michaels' family goes to at the annual town carnival?	1732 (23.5%)	5652 (76.5%)
F8SL029	Name two advantages for the proposed building.	1044 (14.1%)	6340 (85.9%)
F8SL030	What position is Gerald standing for?	1950 (26.4%)	5434 (73.6%)
F8SL031	To Gerald, what is the most important reason for standing for class captain?	757 (10.3%)	6627 (89.7%)
F8SL032	What advantage does walking have over running?	316 (7.3%)	7068 (95.7%)
F8SL033	What is one of the reasons, in addition to health, given in support of walking?	172 (2.3%)	7212 (97.7%)
F8SL034	By how much did employment change last month and in what direction?	24 (0.3%)	7360 (99.7%)
F8SL035	What effect did students have on unemployment last month?	8 (0.1%)	7376 (99.9%)
F8SL036	In what industries did jobs increase last month?	1 (0.01%)	7376 (99.99%)

A raw score (F8SL040) was calculated as the sum of the items that the child got correct.



3.4.2 Oral Expression

The WOLD has two expressive language subtests, both of which were used at 8 years.

F8SL050 S&L - WOLD expression started: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7351	98.2	99.5	99.5
	2 No	40	.5	.5	100.0
	Total	7391	98.7	100.0	
Missing	-2 Did not start S&L Session	97	1.3		
Total		7488	100.0		

In the first subtest, a series of pictures were shown to the child which allowed assessment of their expressive vocabulary. Responses were coded as correct or incorrect.

In the second subtest three tasks were performed. Firstly, a pictures was shown to the child who was asked to describe the scene, as if to someone who was not present and so could not see the picture. Secondly, the child was shown a map and asked to give directions from one location to another, using the shortest route possible and finally they were asked to explain the steps involved in a sequential task of putting batteries into a torch using pictures to help.

These tasks assess the child's descriptive, narrative and sequencing skills. All responses in this task were recorded on audio tape for coding on five features, relating to the relevance, accuracy and logicality of the child's responses.

Table 3.4.2 overleaf summarises the responses of the first subtest of the WOLD oral expression component.

Here, each task has two examples. Only one of each was used in the 8 year old tests.

Table 3.4.2: Frequencies for the individual items of the WOLD comprehension task

Variable name	Picture	Correct	Incorrect
F8SL051	Down	7159 (97.4%)	192 (2.6%)
F8SL052	Bridge	6350 (86.4%)	1001 (13.6%)
F8SL053	Paint	5867 (79.8%)	1484 (20.2%)
F8SL054	Calculator	6772 (92.1%)	579 (7.9%)
F8SL055	Clock	6977 (94.9%)	374 (5.1%)
F8SL056	Crawl	4576 (62.3%)	2775 (37.7%)
F8SL057	Straight	5044 (68.6%)	2307 (31.4%)
F8SL058	Keys	5084 (69.2%)	2267 (30.8%)
F8SL059	Wardrobe	3646 (49.6%)	3705 (50.4%)
F8SL060	Measure	3212 (43.7%)	4139 (56.3%)

In selecting the items from the subtests, the aim was to operate within the overall time constraints for the focus clinic, to make the tasks feasible for the children in the context of a day of testing and yet still achieve a range of tasks which tapped into different aspects of speech and language.

Testers also recorded the following information:

F8SL070: Child understood the sample

F8SL071: Description of scene recorded

F8SL072: Directions recorded

F8SL073: Sequential task recorded

3.4.3 Nonword Repetition (Short term memory)

Evidence from studies of normal children has established a close developmental relationship between nonword repetition skills and abilities to learn the sound patterns of new words (Gathercole & Baddeley, 1993; 1989; Gathercole *et al*, 1994). Moreover, severe deficits of noword repetition have also been found in specific language impairment (Bishop *et al* 1996; Gathercole & Baddeley, 1990) and developmental dyslexia (Gathercole *et al*, 1994). It has been suggested that the nonword repetition paradigm provides a sensitive measure of the adequacy of the temporary phonological representation of perceived speech in short-term memory (Gathercole *et* al, 1994). It appears that this phonological short-term memory system may play a crucial role in supporting the long term learning of phonological forms of new words (Baddekey *et al*, 1996).

An adaptation of the Nonword Repetition Test (Gathercole et al, 1996) was used to assess the children's short term memory. This comprised twelve nonsense words, four each of 3, 4 and 5 syllables and conforming to English rules for sound combinations. The child was asked to listen to each word via an audio cassette recorder and then repeat each item.

F8SL080 S&L - Nonword Rep started: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7374	98.5	99.8	99.8
	2 No	17	.2	.2	100.0
	Total	7391	98.7	100.0	
Missing	-2 Did not start S&L Session	97	1.3		
Total		7488	100.0		

The repetition attempt was scored as correct if there was no phonological deviation from the target form (variables F8SL082 to F8SL093). The number of items correctly repeated at each syllable length (maximum score of 4 in each case) was scored for each child.

Table 3.4.3 shows the nonwords that the child was asked to repeat with the frequencies of correct or incorrect.

Table 3.4.3: Frequencies for the nonword repetition items

Variable name	nonword	Correct	Incorrect
F8SL082	pennerriful	6021 (81.7%)	1348 (18.3%)
F8SL083	shimitet	5930 (80.5%)	1437 (19.5%)
F8SL084	empliforvent	3166 (43.0%)	4189 (57.0%)
F8SL085	zubinken	5309 (72.1%)	2058 (27.9%)
F8SL086	doduloppity	5384 (73.4%)	1949 (26.6%)
F8SL087	perplisteronk	3072 (42.0%)	4241 (58.0%)
F8SL088	instadrontally	3401 (46.4%)	3932 (53.6%)
F8SL089	frescovent	4548 (61.9%)	28.4 (38.1%)
F8SL090	pranstutiary	2474 (33.8%)	4847 (66.2%)
F8SL091	tridercory	4569 (62.2%)	2778 (37.8%)
F8SL092	donderificam	3694 (50.3%)	3652 (49.7%)
F8SL093	brasterer	5742 (78.1%)	164 (21.9%)

Variables were created to indicate the number of three, four and five syllable nonwords the child got correct (F8SL100-F8SL102) and a final score (F8SL105) score created indicating the total number of nonwords correct.

F8SL100 S&L - Nonword Rep - No. 3 syllables correct: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	116	1.5	1.6	1.6
	1	556	7.4	7.5	9.1
	2	1544	20.6	20.9	30.1
	3	2735	36.5	37.1	67.2
	4	2419	32.3	32.8	100.0
	Total	7370	98.4	100.0	
Missing	-3 Did not start task	17	.2		
	-2 Did not start S&L Session	97	1.3		
	-1 <4 responses	4	.1		
	Total	118	1.6		
Total		7488	100.0		

F8SL101 S&L - Nonword Rep - No. 4 syllables correct: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	415	5.5	5.6	5.6
	1	1555	20.8	21.1	26.7
	2	2109	28.2	28.6	55.4
	3	2104	28.1	28.6	83.9
	4	1185	15.8	16.1	100.0
	Total	7368	98.4	100.0	
Missing	-3 Did not start task	17	.2		
	-2 Did not start S&L Session	97	1.3		
	-1 <4 responses	6	.1		
	Total	120	1.6		
Total		7488	100.0		

F8SL102 S&L - Nonword Rep - No. 5 syllables correct: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	734	9.8	10.0	10.0
	1	1776	23.7	24.1	34.1
	2	2195	29.3	29.8	64.0
	3	1835	24.5	24.9	88.9
	4	816	10.9	11.1	100.0
	Total	7356	98.2	100.0	
Missing	-3 Did not start task	17	.2		
	-2 Did not start S&L Session	97	1.3		
	-1 <4 responses	18	.2		
	Total	132	1.8		
Total		7488	100.0		

F8SL105 S&L - Nonword Rep - Total No. correct: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	30	.4	.4	.4
	1	74	1.0	1.0	1.4
	2	173	2.3	2.3	3.8
	3	323	4.3	4.4	8.1
	4	540	7.2	7.3	15.5
	5	684	9.1	9.3	24.8
	6	910	12.2	12.4	37.1
	7	1060	14.2	14.4	51.5
	8	1029	13.7	14.0	65.5
	9	1071	14.3	14.5	80.0
	10	812	10.8	11.0	91.0
	11	477	6.4	6.5	97.5
	12	184	2.5	2.5	100.0
	Total	7367	98.4	100.0	
Missing	-3 Did not start task	17	.2		
	-2 Did not start S&L Session	98	1.3		
	-1 <12 responses	6	.1		
	Total	121	1.6		
Total		7488	100.0		

3.4.4 Articulatory Skills

As most 8 year olds have established a speech sound system (phonological system) which is close to that of an adults, an assessment of their speech in words was considered too insensitive to differentiate between children. Therefore, diadochokinetic (DDK) rates were assessed as a measure of articulatory skill. This involves the rapid repetition of syllables within a defined timespan.

The tester demonstrated the rapid repetition of a sound, syllable or series of syllables (see Table 3.4.4a). The child was asked to repeat the sound(s) rapidly over a period of at least ten seconds. The tester recorded whether the child repeated the sounds correctly (see Table 3.4.4b) and if not, whether any errors were random or regular (i.e. part of the child's phonological system) (variables F8SL121 to F8SL164). The child's repetitions were digitally recorded so that the rate of repetition can be calculated (currently in progress).

F8SL120 S&L - DDK Rates started: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7348	98.1	99.4	99.4
	2 No	43	.6	.6	100.0
	Total	7391	98.7	100.0	
Missing	-2 Did not start S&L Session	97	1.3		
Total		7488	100.0		

Table 3.4.4a variables for the DDk rates

Sound	Correct	Regular error	Random error	AVQ (Appropriate Voice Quality)
pe	F8SL121	F8SL122	F8SL123	F8SL124
ge	F8SL131	F8SL132	F8SL133	F8SL134
kepe	F8SL141	F8SL142	F8SL143	F8SL144
peteke	F8SL151	F8SL152	F8SL153	F8SL154
bedege	F8SL161	F8SL162	F8SL163	F8SL164

Table 3.4.4b Frequencies of DDk rates-correct or incorrect

Variable name	Picture	Correct	Incorrect
F8SL121	pe	4745 (63.4%)	2599 (35.4%)
F8SL131	ge	6192 (84.3%)	1152 (15.7%)
F8SL141	kepe	1711 (23.3%)	5631 (76.5%)
F8SL151	peteke	1724 (23.5%)	5615 (76.5%)
F8SL161	bedege	1045 (14.2%)	6299 (85.8%)

The child was also asked to say a single vowel sound continuously for ten seconds, F8SL170 records whether the child managed this.

F8SL170 S&L - DDK Rates maintains 'a': F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	5533	73.9	75.3	75.3
	2 No	1814	24.2	24.7	100.0
	Total	7347	98.1	100.0	
Missing	-3 Did not start task	43	.6		
	-2 Did not start S&L Session	98	1.3		
	Total	141	1.9		
Total		7488	100.0		

The recordings of the children will also be coded according to the child's fluency. Transcriptions of their speech will note hesitations, repetitions or silent blocking

3.4.5 Tester observations

The tester noted any difficulties the child had with fluency (F8SL180), including a high rate of normal nonfluency or anything which made them suspicious about the child's fluency throughout the session such as syllable and/or word repetitions, prolongations, hesitation blocks or tense silences. They also recorded any concomitant behaviours such as tics, grimacing or physical movements (F8SL181). Finally, atypical voice characteristics of the child's voice were noted, such as excessive huskiness or breathing or pitch breaks (F8SL182).

F8SL180 S&L - Fluency difficulties: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Problem noted	281	3.8	3.8	3.8
	2 No problem	7108	94.9	96.2	100.0
	Total	7389	98.7	100.0	
Missing	-2 Did not start S&L Session	97	1.3		
	-1 Missing	2	.0		
	Total	99	1.3		
Total		7488	100.0		

F8SL181 S&L - Physical Concomitant: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Problem noted	61	.8	.8	.8
	2 No problem	7328	97.9	99.2	100.0
	Total	7389	98.7	100.0	
Missing	-2 Did not start S&L Session	97	1.3		
	-1 Missing	2	.0		
	Total	99	1.3		
Total		7488	100.0		

F8SL182 S&L - Difficulty with Voice: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Problem noted	445	5.9	6.0	6.0
	2 No problem	6944	92.7	94.0	100.0
	Total	7389	98.7	100.0	
Missing	-2 Did not start S&L Session	97	1.3		
	-1 Missing	2	.0		
	Total	99	1.3		
Total		7488	100.0		

3.4.6 Parental Questionnaire

While the child was in the speech session the accompanying parent or carer was asked to fill in a short questionnaire about their child's speech. Parents were asked to identify the main language used by the child at home (F8SL200) and any other language(s) used on a regular basis (F8SL201). Parents were also asked if their child ever stuttered whilst speaking or had problems with their voice and if so, whether they or the child were worried about this (F8SL202 to F8SL205). Finally, the tester recorded whether the child had any hearing difficulties (F8SL206).

F8SL200 S&L - Main language Child uses at home: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 English	7343	98.1	99.6	99.6
	2 Punjabi	10	.1	.1	99.7
	3 Bengali	1	.0	.0	99.7
	4 Urdu	2	.0	.0	99.7
	5 Cantonese	3	.0	.0	99.8
	6 Other European	7	.1	.1	99.9
	8 Other Asian	3	.0	.0	99.9
	9 Other	7	.1	.1	100.0
	Total	7376	98.5	100.0	
Missing	-2 Did not start S&L Session	97	1.3		
	-1 Missing	15	.2		
	Total	112	1.5		
Total		7488	100.0		

F8SL201 S&L - Child uses other language regularly: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	182	2.4	2.5	2.5
	2 No	7158	95.6	97.5	100.0
	Total	7340	98.0	100.0	
Missing	-2 Did not start S&L Session	97	1.3		
	-1 Missing	51	.7		
	Total	148	2.0		
Total		7488	100.0		

F8SL202 S&L - Child stutters/stumbles when speaks: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	608	8.1	8.2	8.2
	2 No	6782	90.6	91.8	100.0
	Total	7390	98.7	100.0	
Missing	-2 Did not start task	98	1.3		
Total		7488	100.0		

F8SL203 S&L - Carer worried about stutter: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Never	356	4.8	60.2	60.2
	2 Sometimes	219	2.9	37.1	97.3
	3 Often	16	.2	2.7	100.0
	Total	591	7.9	100.0	
Missing	-3 No stutter	6782	90.6		
	-2 Did not start task	98	1.3		
	-1 Missing	17	.2		
	Total	6897	92.1		
Total		7488	100.0		

F8SL204 S&L - Child worried about stutter: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Never	371	5.0	66.7	66.7
	2 Sometimes	106	1.4	19.1	85.8
	3 Often	6	.1	1.1	86.9
	9 Dont know	73	1.0	13.1	100.0
	Total	556	7.4	100.0	
Missing	-3 No stutter	6782	90.6		
	-2 Did not start task	98	1.3		
	-1 Missing	52	.7		
	Total	6932	92.6		
Total		7488	100.0		

F8SL205 S&L - Child has problems with voice: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Never	6396	85.4	88.4	88.4
	2 Sometimes	799	10.7	11.0	99.5
	3 Often	39	.5	.5	100.0
	Total	7234	96.6	100.0	
Missing	-2 Did not start S&L Session	97	1.3		
	-1 Missing	157	2.1		
	Total	254	3.4		
Total		7488	100.0		

F8SL206 S&L - Child has hearing problems at moment: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	359	4.8	5.0	5.0
	2 No	6482	86.6	90.1	95.1
	9 Dont know	352	4.7	4.9	100.0
	Total	7193	96.1	100.0	
Missing	-2 Did not start S&L Session	97	1.3		
	-1 Missing	198	2.6		
	Total	295	3.9		
Total		7488	100.0		

3.4.7 Coding of WOLD expressive language recordings

Through a collaborative research project analysing the language data from ALSPAC, Roulstone *et. al.* (2011) coded the WOLD oral expression data, described on page 109, for this clinic.

Students from the BMedSci and MMedSci degree programmes at the University of Sheffield were informed about a paid data coding opportunity and invited to enroll as coders. Those interested attended a training session delivered by Mary Pears and Kate Francis from the ALSPAC team who had collected the WOLD data. Students were shown how to complete the coding with examples and given coding packs containing written instructions. 50 students coded the recordings, of which 49 also completed a reliability data set of the same, randomly selected, 21 children's WOLD data.

For each of the 3 recordings there are 5 binary variables scoring the coded items and a summary ordinal variable totaling the score for each recording from these. *f8sl322* is the total derived score for all WOLD expression tasks that the study child participated in.

Roulstone, S., Law, J., Rush, R., Clegg, J. & Peters, T. (2011). *Investigating the roles of early language in children's early educational outcomes.* Funded by the Department for Education: [http://www.education.gov.uk/publications/eOrderingDownload/DFE-RR134.pdf]

f8sl301 Description of town map recorded: WE recordings: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	6601	88.2	99.2	99.2
	2 No	52	.7	.8	100.0
	Total	6653	88.8	100.0	
Missing	-3 Did not start task	4	.1		
	-2 Did not start S&L session	96	1.3		
	-1 Missing	735	9.8		
	Total	835	11.2		
Total		7488	100.0		

f8sl302 DV: Response contains >=4 features: WE descriptions: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	147	2.0	3.0	3.0
	1 Yes	4797	64.1	97.0	100.0
	Total	4944	66.0	100.0	
Missing	-3 Did not start task	22	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2425	32.4		
	Total	2544	34.0		
Total		7488	100.0		

f8sl303 DV: All features given are in the picture: WE descriptions: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	845	11.3	17.1	17.1
	1 Yes	4099	54.7	82.9	100.0
	Total	4944	66.0	100.0	
Missing	-3 Did not start task	22	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2425	32.4		
	Total	2544	34.0		
Total		7488	100.0		

f8sl304 DV: Each feature mentioned accurately & specifically identified: WE descri: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	2901	38.7	58.7	58.7
	1 Yes	2044	27.3	41.3	100.0
	Total	4945	66.0	100.0	
Missing	-3 Did not start task	22	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2424	32.4		
	Total	2543	34.0		
Total		7488	100.0		

f8sl305 DV: Response includes town, city, map or village: WE descriptions: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	3928	52.5	79.4	79.4
	1 Yes	1017	13.6	20.6	100.0
	Total	4945	66.0	100.0	
Missing	-3 Did not start task	22	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2424	32.4		
	Total	2543	34.0		
Total		7488	100.0		

f8sl306 DV: Response contains >=2 details that describe features: WE descri: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	2935	39.2	59.4	59.4
	1 Yes	2008	26.8	40.6	100.0
	Total	4943	66.0	100.0	
Missing	-3 Did not start task	22	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2426	32.4		
	Total	2545	34.0		
Total		7488	100.0		

f8sl307 DV: Total score for description of town map: WE recordings: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	35	.5	.7	.7
	1	407	5.4	8.2	8.9
	2	1285	17.2	26.0	34.9
	3	2029	27.1	41.0	75.9
	4	1054	14.1	21.3	97.2
	5	138	1.8	2.8	100.0
	Total	4948	66.1	100.0	
Missing	-3 Did not start task	22	.3		
	-1 Missing	2518	33.6		
	Total	2540	33.9		
Total		7488	100.0		

f8sl308 Directions from ice cream shop to video shop recorded: WE recordings: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	6603	88.2	99.2	99.2
	2 No	50	.7	.8	100.0
	Total	6653	88.8	100.0	
Missing	-3 Did not start task	4	.1		
	-2 Did not start S&L session	96	1.3		
	-1 Missing	735	9.8		
	Total	835	11.2		
Total		7488	100.0		

f8sl309 DV: Response contains >=2 logically ordered steps: WE directions: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	3189	42.6	64.5	64.5
	1 Yes	1754	23.4	35.5	100.0
	Total	4943	66.0	100.0	
Missing	-3 Did not start task	21	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2427	32.4		
	Total	2545	34.0		
Total		7488	100.0		

f8sl310 DV: Response consistent with instructions: WE directions: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	4590	61.3	92.8	92.8
	1 Yes	354	4.7	7.2	100.0
	Total	4944	66.0	100.0	
Missing	-3 Did not start task	21	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2426	32.4		
	Total	2544	34.0		
Total		7488	100.0		

f8sl311 DV: Response contains >=3 details from picture: WE directions: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	3182	42.5	64.4	64.4
	1 Yes	1760	23.5	35.6	100.0
	Total	4942	66.0	100.0	
Missing	-3 Did not start task	21	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2428	32.4		
	Total	2546	34.0		
Total		7488	100.0		

f8sl312 DV: Response includes town, city, map or associated word: WE directions: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	1228	16.4	24.8	24.8
	1 Yes	3714	49.6	75.2	100.0
	Total	4942	66.0	100.0	
Missing	-3 Did not start task	21	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2428	32.4		
	Total	2546	34.0		
Total		7488	100.0		

f8sl313 DV: Using entire response listener can arrive at video shop: WE directions: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	4811	64.2	97.3	97.3
	1 Yes	132	1.8	2.7	100.0
	Total	4943	66.0	100.0	
Missing	-3 Did not start task	21	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2427	32.4		
	Total	2545	34.0		
Total		7488	100.0		

f8sl314 Total score for directions from ice cream shop to video shop: WE recordings: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1124	15.0	22.7	22.7
	1	1480	19.8	29.9	52.7
	2	1159	15.5	23.4	76.1
	3	917	12.2	18.5	94.7
	4	156	2.1	3.2	97.8
	5	108	1.4	2.2	100.0
	Total	4944	66.0	100.0	
Missing	-3 Did not start task	20	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2427	32.4		
	Total	2544	34.0		
Total		7488	100.0		

f8sl315 Sequencing: explaining steps (torch batteries) recorded: WE recordings: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	6590	88.0	99.1	99.1
	2 No	62	.8	.9	100.0
	Total	6652	88.8	100.0	
Missing	-3 Did not start task	4	.1		
	-2 Did not start S&L session	96	1.3		
	-1 Missing	736	9.8		
	Total	836	11.2		
Total		7488	100.0		

f8sl316 DV: Response contains five steps: WE sequencing: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	727	9.7	14.7	14.7
	1 Yes	4208	56.2	85.3	100.0
	Total	4935	65.9	100.0	
Missing	-3 Did not start task	25	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2431	32.5		
	Total	2553	34.1		
Total		7488	100.0		

f8sl317 DV: Steps are logically ordered: WE sequencing: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	387	5.2	7.8	7.8
	1 Yes	4547	60.7	92.2	100.0
	Total	4934	65.9	100.0	
Missing	-3 Did not start task	24	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2433	32.5		
	Total	2554	34.1		
Total		7488	100.0		

f8sl318 DV: Each step is accurately described in enough detail: WE sequencing: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	2951	39.4	59.8	59.8
	1 Yes	1982	26.5	40.2	100.0
	Total	4933	65.9	100.0	
Missing	-3 Did not start task	25	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2433	32.5		
	Total	2555	34.1		
Total		7488	100.0		

f8sl319 DV: Response includes the word torch: WE sequencing: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	1218	16.3	24.7	24.7
	1 Yes	3716	49.6	75.3	100.0
	Total	4934	65.9	100.0	
Missing	-3 Did not start task	24	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2433	32.5		
	Total	2554	34.1		
Total		7488	100.0		

f8sl320 DV: Using entire response listener can complete pictured task: WE seq: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 No	3866	51.6	78.4	78.4
	1 Yes	1068	14.3	21.6	100.0
	Total	4934	65.9	100.0	
Missing	-3 Did not start task	24	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2433	32.5		
	Total	2554	34.1		
Total		7488	100.0		

f8sl321 DV: Total score for explaining steps: replacing torch batteries recorded: WE seq: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	77	1.0	1.6	1.6
	1	381	5.1	7.7	9.3
	2	1238	16.5	25.1	34.4
	3	1280	17.1	25.9	60.3
	4	974	13.0	19.7	80.1
	5	984	13.1	19.9	100.0
	Total	4934	65.9	100.0	
Missing	-3 Did not start task	25	.3		
	-2 Did not start S&L session	97	1.3		
	-1 Missing	2432	32.5		
	Total	2554	34.1		
Total		7488	100.0		

Descriptive Statistics

	N	Min	Max	M	SD
f8sl322 DV: Total score for description, direction and sequencing recordings: WE rec: F8	4921	0	15	7.53	2.323

3.4.8 Dysfluency and stuttering

Of all speech recordings, described on page 109, only those where atypical dysfluencies had been noted were assessed in detail. The recordings were transcribed and experienced speech and language therapists rated the experience of stuttering using the following rating scale:

1. **No definite stuttering**. Any word or phrase repetitions were infrequent, relaxed and there were only 1 or 2 repetitions per instance e.g. 'the, the car is .....' Revisions or interjections might also be present e.g. '*um, I'd go ri left*'.
2. **Higher non-fluency**. As above but with more frequent repetitions and/or occasional multiple repetitions (e.g. '*I, I,I,I, I'd go left'*), or occasional stutter-like dysfluencies within an otherwise stutter-free sample. In a clinical context a longer conversation would be required to exclude or confirm stuttering.
3. **Stuttering**. Evidence of part-word repetitions, single-syllable word repetitions with multiple repeats at each instance; prolongation of sounds, dysrhythmic phonation or other indication of effort.
4. **Severe stuttering**. As 3., with higher frequency or greater severity at moments of stuttering.

In addition, the number of syllables spoken and that were stuttered were recorded. The percentage of syllables stuttered was calculated. Children were considered to stutter when they had three of more stutter-like dysfluencies before 100 syllables spoken (see *f8sl406*).

The stuttering ratings are available in variable [*f8sl407*].

More detailed information is available on request (note that a paper is currently being prepared for publication [March 2018]).

Descriptive statistics n=382

	Min	Max	M	SD
f8sl400 DV: Number of syllables spoken	44	578	201.49	85.791
f8sl401 DV: Number of stuttering like dysfluencies: F8	0	50	8.31	7.423
f8sl402 DV: Number of other dysfluencies	0	64	11.53	8.904
f8sl403 Percentage of syllables: stuttering like dysfluency: F8	.00	18.30	4.2088	3.38879
f8sl404 DV: Percentage of syllables/other dysfluencies: F8	.00	18.67	5.5112	2.98863
f8sl405 DV: Other dysfluencies as a percentage of non-SLD syllables: F8	.00	19.35	5.7575	3.10443

f8sl406 DV: Percentage of Syllables Stuttered dichotomised: F8

		Frequency	Percent	Valid Percent	Cum %
Valid	0 < 3%	166	2.2	43.5	43.5
	1 >=3%	216	2.9	56.5	100.0
	Total	382	5.1	100.0	
Missing	-1 Missing	7106	94.9		
Total		7488	100.0		

f8sl407 DV: Potential stutters identified by clinic assessors: F8

		Frequency	Percent	Valid Percent	Cum %
Valid	1 normal non-fluencies only	67	.9	17.5	17.5
	2 mainly (nnf) but frequency or other features makes sample un	142	1.9	37.2	54.7
	3 sufficient frequency or severity of stuttering like dysfluen	132	1.8	34.6	89.3
	4 child clearly stuttering and more severe than 3	41	.5	10.7	100.0
	Total	382	5.1	100.0	
Missing	-1 Missing	7106	94.9		
Total		7488	100.0		

f8sl408 DV: Classification of stutterers identified by secondary analysis: F8

		Frequency	Percent	Valid Percent	Cum %
Valid	1 Normal non-fluencies only	68	.9	17.7	17.7
	2 Freq/other features makes sample unusual but not stuttering	143	1.9	37.2	54.9
	3 Sufficient freq/severity of SLD to classify as stuttering	132	1.8	34.4	89.3
	4 Child clearly stuttering and more severe than 3	41	.5	10.7	100.0
	Total	384	5.1	100.0	
Missing	-1 Missing	7104	94.9		
Total		7488	100.0		

3.4.9 Persistent Speech Disorder

Persistent speech disorder is defined as "*speech disorder which continues beyond the age of typical speech acquisition*". This ordinal variable [*f8sl500*] has been derived from the digital recordings of the 3 connected speech samples, and described in detail in Wren *et. al*., 2012.

Wren Y. E., Roulstone S. E., Miller L. L. (2012) 'Distinguishing groups of children with persistent speech disorder: Findings from a prospective population study'. *Logopedics*, *Phoniatrics*, *Vocology*. 37 (1): 1-10. [https://doi.org/10.3109/14015439.2011.625973].

f8sl500 DV: Phonological definition: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Cases	263	3.5	3.6	3.6
	2 Common distortions	582	7.8	7.9	11.4
	3 Non-cases	141	1.9	1.9	13.4
	4 Rest of cohort	6399	85.5	86.6	100.0
	Total	7385	98.6	100.0	
Missing	-1 Missing	103	1.4		
Total		7488	100.0		

In clinic, the tester recorded information on the child's behaviour during the session as a whole (data not shown: variables *f8sl901 – f8sl920*). These are listed below.

f8sl901 S&L - Staff rating cooperative: F8
f8sl902 S&L - Staff rating shy: F8
f8sl903 S&L - Staff rating fidgety: F8
f8sl904 S&L - Staff rating active: F8
f8sl905 S&L - Staff rating attention: F8
f8sl906 S&L - Staff rating rapport: F8
f8sl907 S&L - Staff rating anxious: F8
f8sl909 S&L - Unusual child behaviour: F8
f8sl910 S&L - Avoidance of eye contact: F8
f8sl911 S&L - Tics: F8
f8sl912 S&L - Rocking: F8
f8sl913 S&L - Odd questions: F8
f8sl914 S&L - Personal comments: F8
f8sl915 S&L - Making faces: F8
f8sl916 S&L - Odd noises: F8
f8sl917 S&L - Talking to self: F8
f8sl918 S&L - Swearing: F8
f8sl919 S&L - Other unusual behaviour: F8
f8sl920 S&L - Unusual emotional reaction: F8

3.5 Lung Function and Bronchial challenge

Bronchial challenge testing involves applying a physical or chemical stimulus to the airways and systematically increasing the magnitude of the challenge (dose, concentration, time of the applied stimulus) and measuring the point at which a predetermined narrowing of the bronchi occurs, as evidenced by a fall in airway function from baseline (pre-challenge). Generally, this is at a lower magnitude of stimulus (e.g. lower concentration of chemical challenge) in children with asthma or lung disease than for healthy children. However, some healthy (asymptomatic) children may demonstrate a response, even if they have never experienced chest symptoms. As such, it must be noted that this not a test for asthma but for increased responsiveness which is only one component of the asthma phenotype.

Methacholine is a chemical agent which has a similar action to acetylcholine, a chemical which is naturally produced by the body. Acetylcholine is involved in maintaining the tone of the bronchial wall muscle and increased stimulus causes tightening of the bronchial muscle and narrowing of the bronchi. The action of methacholine gradually wears of after about 90 minutes when the bronchi will return to their previous state. The effects can be countered by drugs that work like adrenaline (a naturally occurring chemical in the body which balances the actions of acetylcholine), such as salbutamol (Ventolin) which will relax the bronchial muscle.

The parent was sent an information sheet prior to their clinic visit, which fully explained what would happen in this session, together with a consent form which was brought to the session with the child. If a child had a history of asthma the parents were encouraged to inform the clinic staff as soon as possible so that their visit could be on a day when a doctor was present. Parents were also sent information about medications. If the child was currently taking medications for asthma, parents were asked to stop the child taking them for a set period prior to their clinic visit (six hours for short acting bronchodilators, 24 hours for long acting bronchodilators and theophyllines). It was emphasized, however, that any child experiencing asthma symptoms on the day of their visit should continue with their medications but inform the staff. If the child had received oral steroids within three weeks prior to the visit, they were encouraged to rearrange the visit, as these would cause the most disruption to the results of the test. They were also asked to discourage the consumption of Xanthine-containing beverages (coffee, chocolate, tea, cola drinks) for 24 hours prior to the visit.

All testers were physiologists

f8lf001 Child entered Lung Function session: F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	7394	98.7	98.7	98.7
	2 No	95	1.3	1.3	100.0
	Total	7489	100.0	100.0	

f8lf004 LF session tester F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1234	16.5	16.7	16.7
	2	314	4.2	4.3	21.0
	3	1598	21.3	21.7	42.7
	4	943	12.6	12.8	55.5
	5	983	13.1	13.3	68.8
	6	172	2.3	2.3	71.2
	7	1226	16.4	16.6	87.8
	8	852	11.4	11.6	99.4
	9	11	.1	.1	99.5
	10	24	.3	.3	99.9
	11	11	.1	.1	100.0
	Total	7368	98.4	100.0	
Missing	-3 Datasheet missing	26	.3		
	-2 Did not start session	95	1.3		
	Total	121	1.6		
Total		7489	100.0		

3.5.1 Lung Function

At the start of the session the complete procedure was explained to the parent and child and details of the child's experience of asthma breathing difficulties, recent fever, upper respiratory tract infections (URTI) and medications taken were obtained. Informed written consent from the parent was also collected.

f8lf030 SA bronchodilator used in past 6 hours: LF, F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	38	.5	.5	.5
	2 No	7323	97.8	99.5	100.0
	Total	7361	98.3	100.0	
Missing	-3 Datasheet missing	26	.3		
	-2 Did not start session	95	1.3		
	-1 Missing	7	.1		
	Total	128	1.7		
Total		7489	100.0		

f8lf031 LA bronchodilator used in past 24 hours: LF, F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	40	.5	.5	.5
	2 No	7323	97.8	99.5	100.0
	Total	7363	98.3	100.0	
Missing	-3 Datasheet missing	26	.3		
	-2 Did not start session	95	1.3		
	-1 Missing	5	.1		
	Total	126	1.7		
Total		7489	100.0		

f8lf032 Oral steroids used in past 3 weeks: LF, F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	16	.2	.2	.2
	2 No	7344	98.1	99.8	100.0
	Total	7360	98.3	100.0	
Missing	-3 Datasheet missing	26	.3		
	-2 Did not start session	95	1.3		
	-1 Missing	8	.1		
	Total	129	1.7		
Total		7489	100.0		

f8lf040 Previous breathing diffs/severe0 allergic reaction: LF, F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	1910	25.5	27.6	27.6
	2 No	5014	67.0	72.4	100.0
	Total	6924	92.5	100.0	
Missing	-3 Datasheet missing	26	.3		
	-2 Did not start session	95	1.3		
	-1 Missing	443	5.9		
	Total	564	7.5		
Total		7488	100.0		

f8lf045 Chest infection/URTI/Cold with fever in past 3 weeks: LF, F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	1287	17.2	17.5	17.5
	2 No	6077	81.1	82.5	100.0
	Total	7364	98.3	100.0	
Missing	-3 Datasheet missing	26	.3		
	-2 Did not start session	95	1.3		
	-1 Missing	4	.1		
	Total	125	1.7		
Total		7489	100.0		

From the comments recorded by the testers, variables have been created indicating what medications were taken recently (F8LF033) and when/how often they are used (F8LF034).There are also variables indicating previous illnesses that may have hampered breathing (F8LF041), known allergies (F8LF042) and recent/current illnesses (F8LF046).

It is unlikely these variables will be useful for studying lung function but may be of interest to some researchers.

f8lf033 Comment: Medications taken: LF, F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Not commented	6609	88.2	89.4	89.4
	1 Inhalor	720	9.6	9.7	99.1
	2 Antibiotics	37	.5	.5	99.6
	3 Inhalor & Antibiotics	3	.0	.0	99.7
	4 Antihistamines	5	.1	.1	99.7
	5 Cough/cold medicines	14	.2	.2	99.9
	6 Other	6	.1	.1	100.0
	Total	7394	98.7	100.0	
Missing	-2 Did not start session	95	1.3		
Total		7489	100.0		

f8lf034 Comment: When was medication last taken: LF, F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Not commented	7024	93.8	95.0	95.0
	1 Today	36	.5	.5	95.5
	2 Yesterday (within 24 hours)	23	.3	.3	95.8
	3 > 24 hours	10	.1	.1	95.9
	4 Not recently	51	.7	.7	96.6
	5 Within the past month	30	.4	.4	97.0
	10 Daily	111	1.5	1.5	98.5
	11 As required	74	1.0	1.0	99.5
	12 With a cold/cough	25	.3	.3	99.9
	13 Weather/ season	7	.1	.1	100.0
	14 Before/after sport	3	.0	.0	100.0
	Total	7394	98.7	100.0	
Missing	-2 Did not start session	95	1.3		
Total		7489	100.0		

f8lf041 Comment: Previous illnesses/problems: LF, F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Not commented	5892	78.7	79.7	79.7
	1 Current asthma	410	5.5	5.5	85.2
	2 Outgrown asthma	457	6.1	6.2	91.4
	3 Mild/occassional asthma	73	1.0	1.0	92.4
	4 Wheezed when younger	16	.2	.2	92.6
	5 Non-Dr diagnosed asthma	29	.4	.4	93.0
	6 Recent asthma attack/wheezing	82	1.1	1.1	94.1
	7 Had bronchiolitis	25	.3	.3	94.5
	8 Ventilated as baby/child	68	.9	.9	95.4
	9 Hospital admission for asthma or to be nebulised	64	.9	.9	96.2
	10 Pneumonia	30	.4	.4	96.6
	11 Bronchitis	21	.3	.3	96.9
	12 Croup/Whooping cough	50	.7	.7	97.6
	13 Chest infection	20	.3	.3	97.9
	14 Persistent cough	30	.4	.4	98.3
	15 Wheezes with cold/hayfever	18	.2	.2	98.5
	16 Wheeze, cause unknown	13	.2	.2	98.7
	17 Breathing difficulties (ns)	6	.1	.1	98.8
	18 Febrile convulsions	6	.1	.1	98.9
	19 Sleep apnoea/breath holding	7	.1	.1	99.0
	20 O2 when born/collapsed lung/heart prob	10	.1	.1	99.1
	30 Current asthma & Ventilated	7	.1	.1	99.2
	31 Current asthma and Hospitalised	36	.5	.5	99.7
	32 Outgrown asthma & Bronchiolitis	4	.1	.1	99.7
	33 Outgrown asthma & ventilated	7	.1	.1	99.8
	34 Outgrown asthma & Hospitalised	13	.2	.2	100.0
	Total	7394	98.7	100.0	
Missing	-2 Did not start session	95	1.3		
Total		7489	100.0		

f8lf042 Comment: Reported allergies: LF, F8

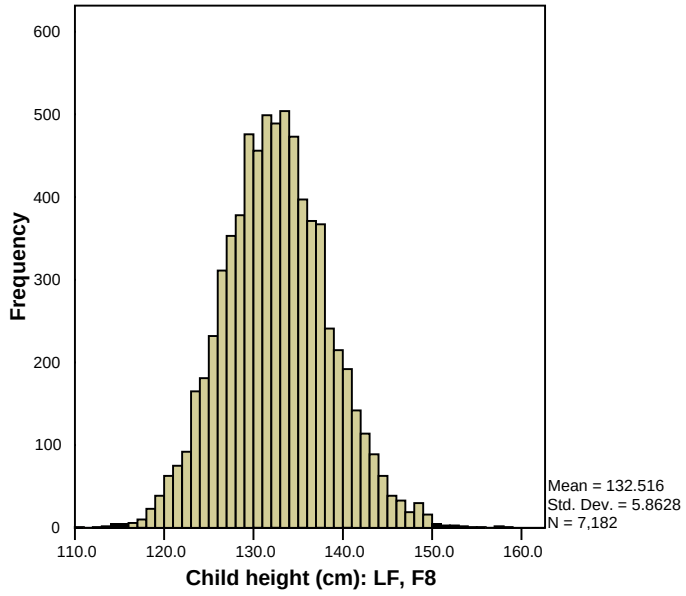
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Not commented	7036	94.0	95.2	95.2
	1 Penicillin	36	.5	.5	95.6
	2 Pets/animals	42	.6	.6	96.2
	3 Nuts	52	.7	.7	96.9
	4 Egg	2	.0	.0	96.9
	5 Fish	5	.1	.1	97.0
	6 Hayfever/grass/pollen	99	1.3	1.3	98.4
	7 Dust	11	.1	.1	98.5
	8 Fruit	7	.1	.1	98.6
	9 Food additives/colourings	4	.1	.1	98.6
	10 Medicines	8	.1	.1	98.8
	11 Dairy products/Gluten	5	.1	.1	98.8
	12 Bee/wasp sting	7	.1	.1	98.9
	13 Food (other or NS)	11	.1	.1	99.1
	14 Unknown allergic reaction	40	.5	.5	99.6
	20 Pets & Hayfever	10	.1	.1	99.7
	21 Pets & Dust	5	.1	.1	99.8
	22 Pets & Nuts	2	.0	.0	99.8
	23 Hayfever & Dust	4	.1	.1	99.9
	24 Food combination	4	.1	.1	99.9
	25 Hayfever & food combination	4	.1	.1	100.0
	Total	7394	98.7	100.0	
Missing	-2 Did not start session	95	1.3		
Total		7489	100.0		

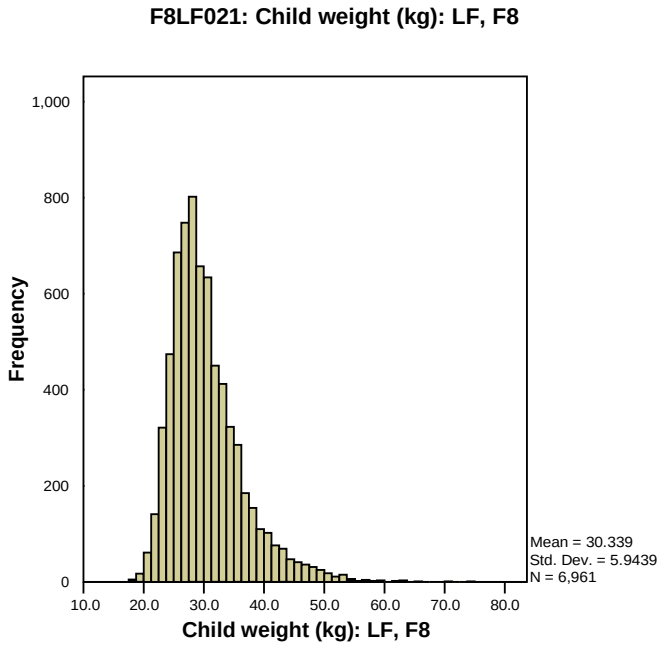
f8lf046 Comment: Recent/current illness: LF, F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Not commented	5642	75.3	76.3	76.3
	1 Mild Cold/runny nose	556	7.4	7.5	83.8
	2 Bad cold/flu	155	2.1	2.1	85.9
	3 Cough	470	6.3	6.4	92.3
	4 Cough and cold	412	5.5	5.6	97.8
	5 Sore throat/tonsillitis	42	.6	.6	98.4
	6 Cold & sore throat	11	.1	.1	98.6
	7 Cough & Sore throat	12	.2	.2	98.7
	8 Chest infection/wheeze	46	.6	.6	99.4
	9 Tummy upset	8	.1	.1	99.5
	10 Viral infection (ns)	15	.2	.2	99.7
	11 Temp/fever	10	.1	.1	99.8
	12 Ear infection	9	.1	.1	99.9
	13 Other	6	.1	.1	100.0
	Total	7394	98.7	100.0	
Missing	-2 Did not start session	95	1.3		
Total		7489	100.0		

The child's height and weight were measured (without shoes).

F8LF020: Child height (cm): LF, F8





Lung function (the maximum rate of flow that can be generated during a forced exhalation and the total volume of air expired in one full blow from total lung capacity) was measured using a Vitalograph 2120 hand-held spirometer connected to a computer-based pulmonary function package (Spirotrac IV, Vitalograph, UK). Only children whose FEV_1 (see below for definition) as a percentage for height was $\geq$70% participated in the methacholine challenge. For those children unable to enter the challenge due to FEV_1<70%, bronchodilator reversibility was tested by giving salbutamol (Ventolin) puffs by metered aerosol and spacer (Volumatic) and repeating the measurement of lung function 10 minutes after salbutamol had been given.

The following conditions meant that the child was unsuitable for testing:

- Chest infection in the last 3 weeks, treated by GP with antibiotics.
- Children with FEV1 < 70% predicted.
- Acute asthma in past three weeks treated with prednisolone
- URTI or cold in last 3 weeks

Children with a recent cold or asthma episode were invited back to a future clinic.

f8lf050 Consent obtained for bronchial challenge: LF, F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	5312	70.9	72.2	72.2
	2 No	139	1.9	1.9	74.1
	3 Child refused	274	3.7	3.7	77.8
	4 Not started	1634	21.8	22.2	100.0
	Total	7359	98.3	100.0	
Missing	-3 Datasheet missing	26	.3		
	-2 Did not start session	95	1.3		
	-1 Missing	9	.1		
	Total	130	1.7		
Total		7489	100.0		

f8lf051 FEV1 done if no consent for challenge: LF, F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	2087	27.9	98.0	98.0
	2 No	42	.6	2.0	100.0
	Total	2129	28.4	100.0	
Missing	-3 Datasheet missing	26	.3		
	-2 Did not start session	95	1.3		
	-1 Missing	5239	70.0		
	Total	5360	71.6		
Total		7489	100.0		

f8lf052 FEV1 > 70%: LF, F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	6837	91.3	93.6	93.6
	2 No	470	6.3	6.4	100.0
	Total	7307	97.6	100.0	
Missing	-3 Datasheet missing	26	.3		
	-2 Did not start session	95	1.3		
	-1 Missing	61	.8		
	Total	182	2.4		
Total		7489	100.0		

Quality control of LF data:

American Thoracic Society (1995) criteria were used as the basis to select lung function measurements that were acceptable for analysis. Spirometers were calibrated at the beginning of each half-day session according to the manufacturer's instructions using a 1L calibration syringe. Pneumotachograph screens were dried with warm air between subjects and cleaned at the end of each day's testing, being allowed to dry overnight. Measurements were made in the sitting position without nose-clips. Children were instructed to fill their lungs completely and blow as hard and fast as possible until there was 'no air' left in their lungs. An on-screen incentive was used to encourage maximal expiratory effort (this comprised a visual of a fairground bell-and-hammer' game – the object being to ring the bell). 'Start of test' criteria were automated within the Spirotrac programme and manoeuvres failing to meet these were rejected. Each subject was instructed to blow at least three times to produce a maximal expiratory manoeuvre. Repeatability criteria were set to three manoeuvres within 200ml FVC. Most children could not sustain forced expiration for the recommended 6s period. Curves were accepted if they reached a clear plateau of flow and the expiration had continued for >1 second and was judged by the tester to be a maximal effort. The best of three curves was selected for analysis (on the basis of an acceptable curve with the highest FVC measurement).

All flow-volume curves were inspected post-hoc by a respiratory paediatrician (John Henderson) to ensure that satisfactory reproducibility criteria had been met and the optimal curve was selected for analysis. 1221 tests were selected for correction, of which 338 were rejected (data not suitable). Of the remaining 883 subjects, the vast majority had small adjustments made to FVC by selecting a different curve for final analysis & the great majority of these were downward adjustments. Specific details are held in house.

Outcome variables:

The raw data for the following lung function outcome variables are available, in addition to the ratio of FEV_1:FVC.

<u>Definitions</u>

FVC - Forced expiratory Vital Capacity - The volume change of the lung between a full inspiration to total lung capacity and a maximal expiration to residual volume.

FEV_1 - forced expiratory volume in one second - the volume exhaled during the first second of a forced expiratory maneuver started from the level of total lung capacity**.**

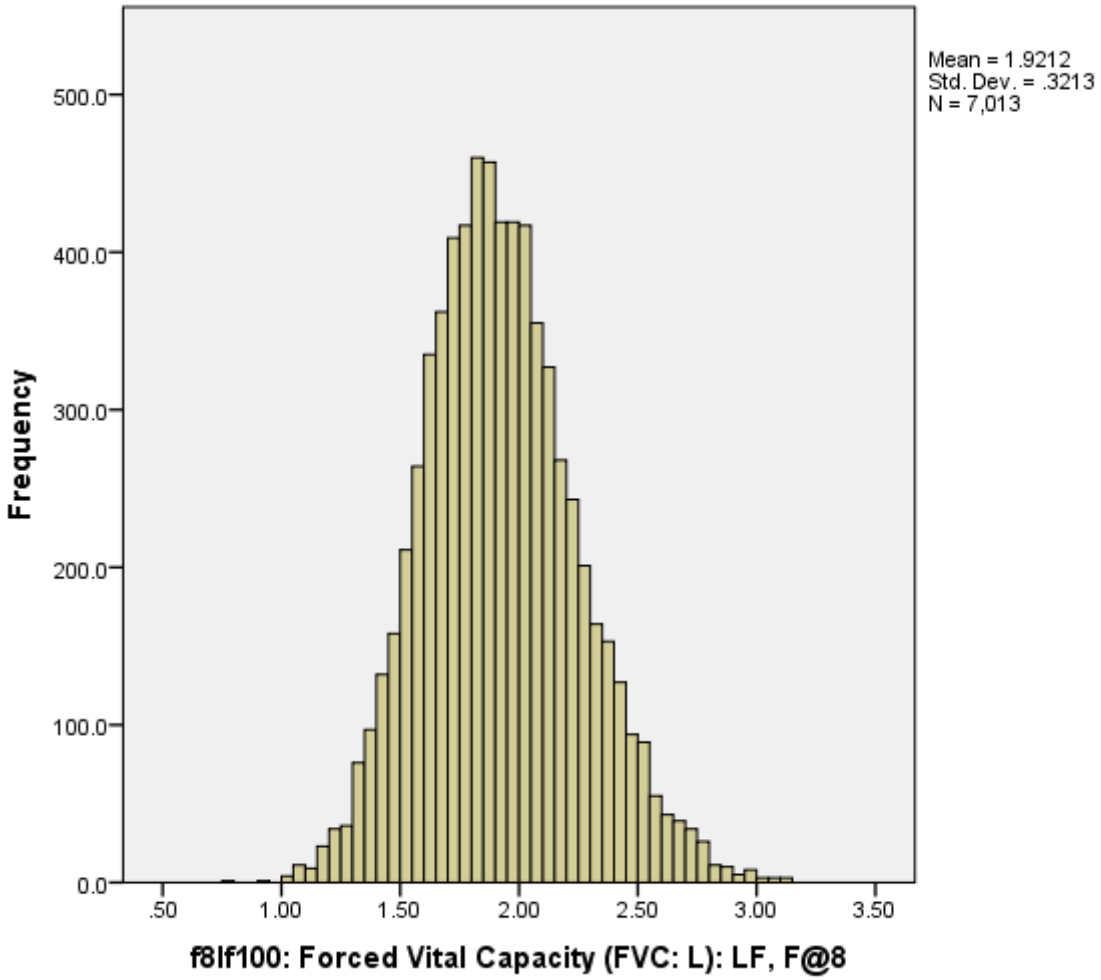
$FEV_{0.5}$ - as above, but first half second.

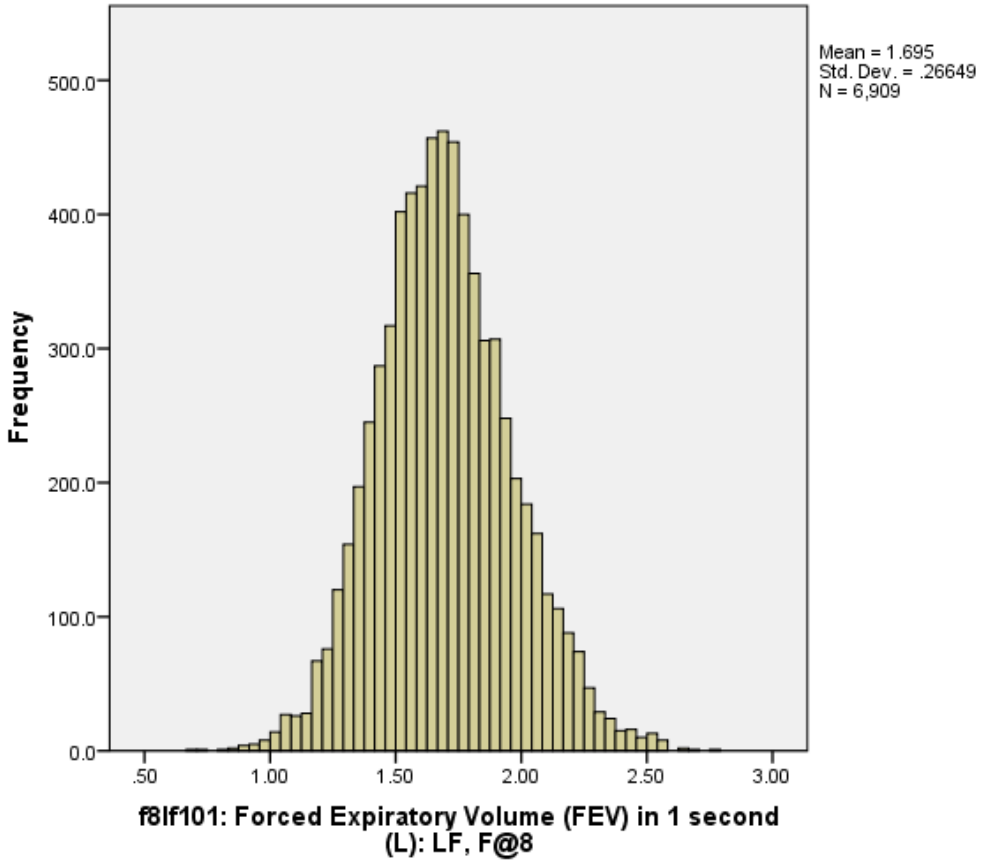
FEF_{25-75} - Forced Expiratory Flow between 25% and 75% of FVC

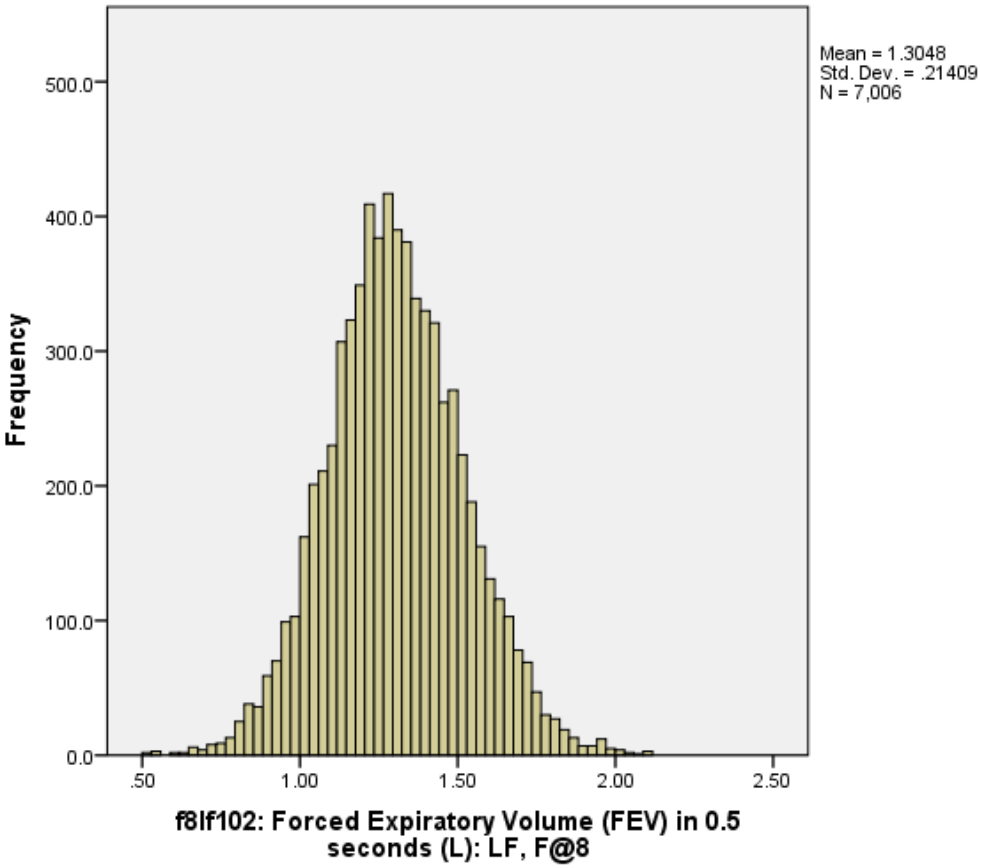
FEF_{25} - Forced Expiratory Flow at 25% of FVC (75% expired)

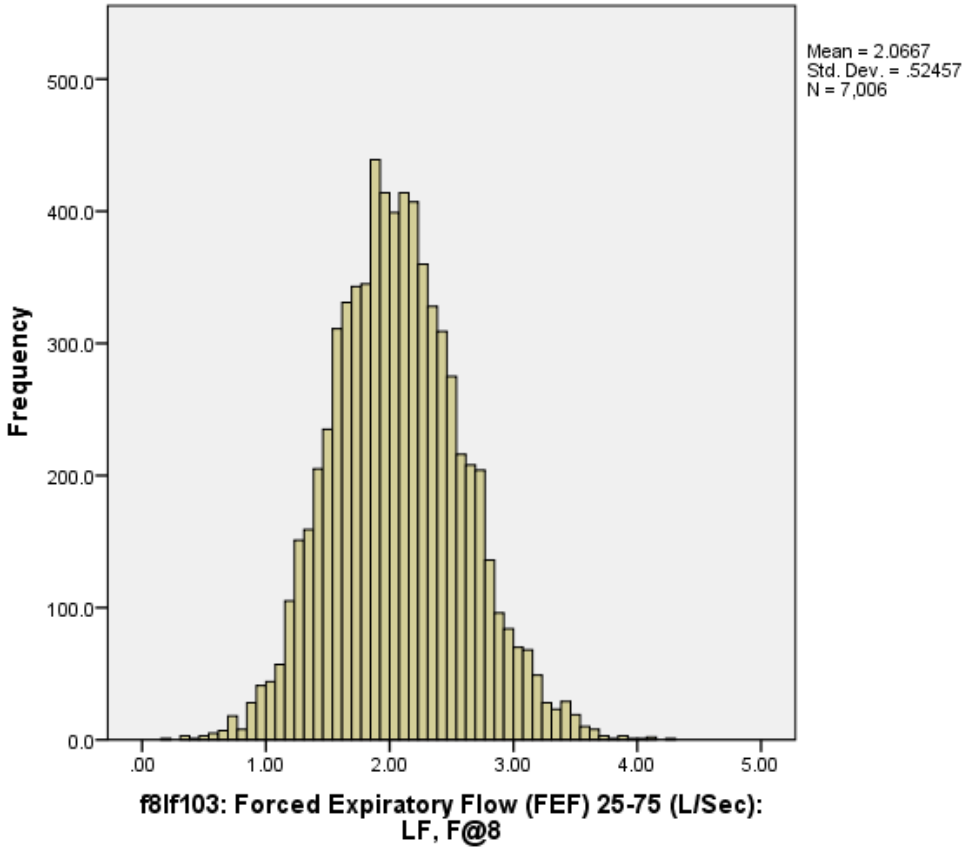
FEF_{50} - Forced Expiratory Flow at 50% of FVC (50% expired)

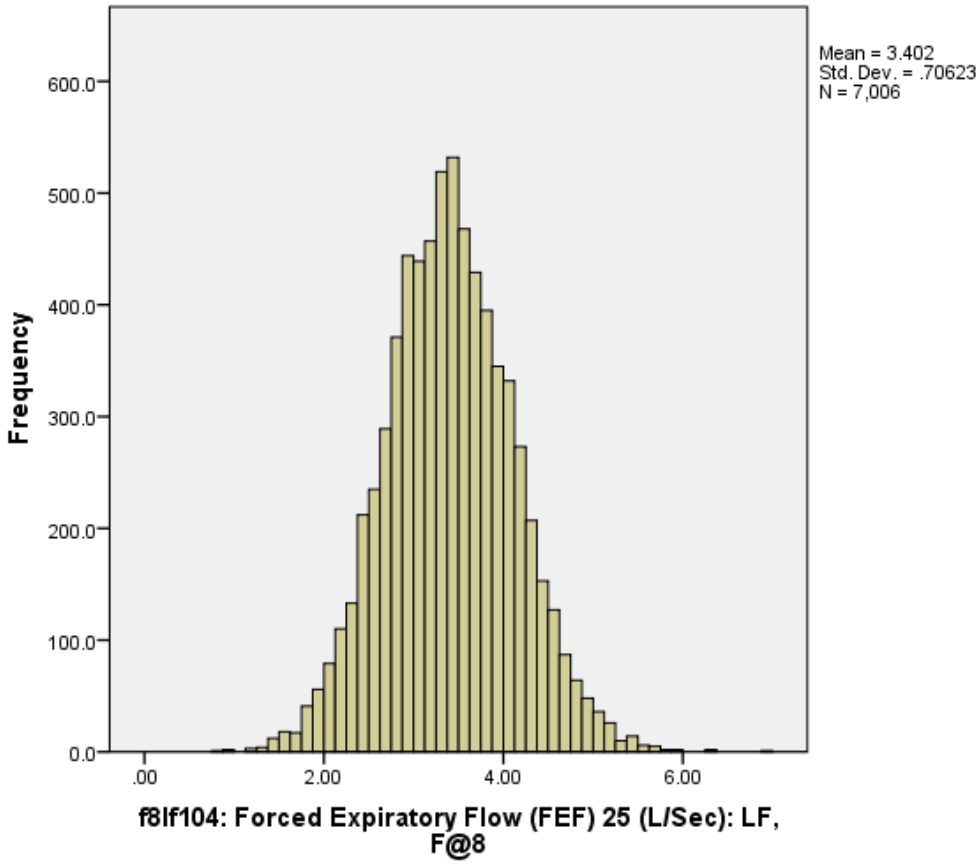
FEF_{75} - Forced Expiratory Flow at 75% of FVC (25% expired)

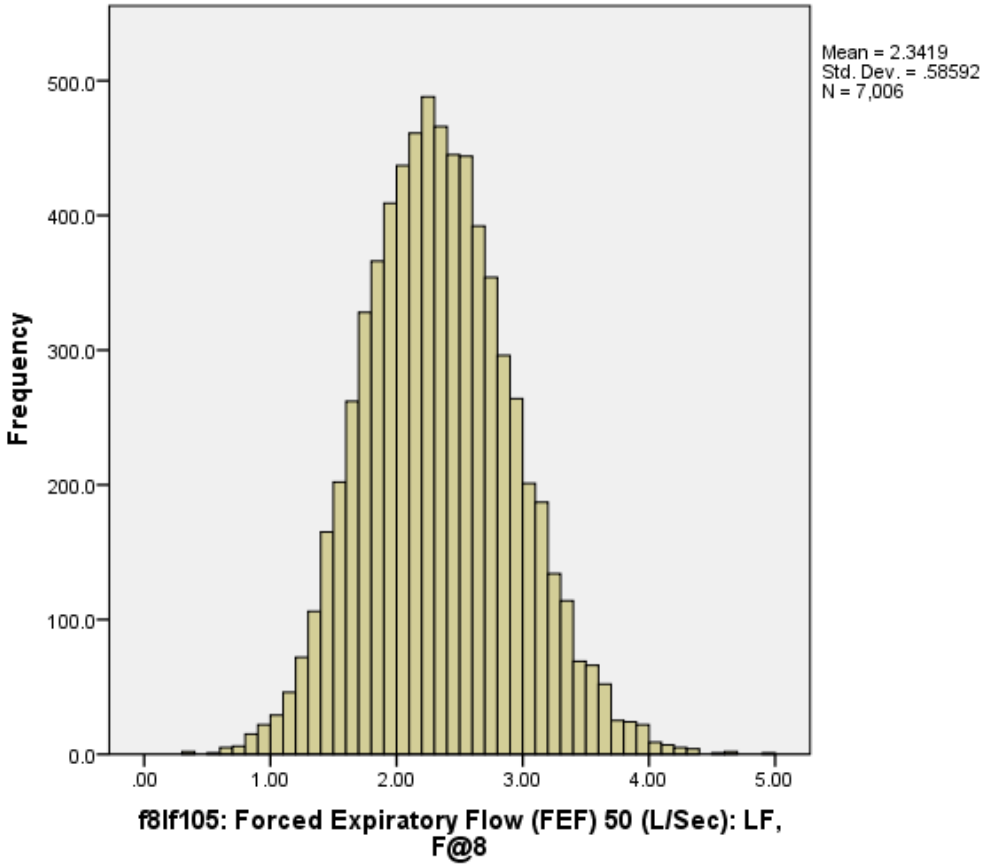

Mean = 1.9212
Std. Dev. = .3213
N = 7,013
Frequency
500.0
400.0
300.0
200.0
100.0
0.0
.50
1.00
1.50
2.00
2.50
3.00
3.50
f8lf100: Forced Vital Capacity (FVC: L): LF, F@8

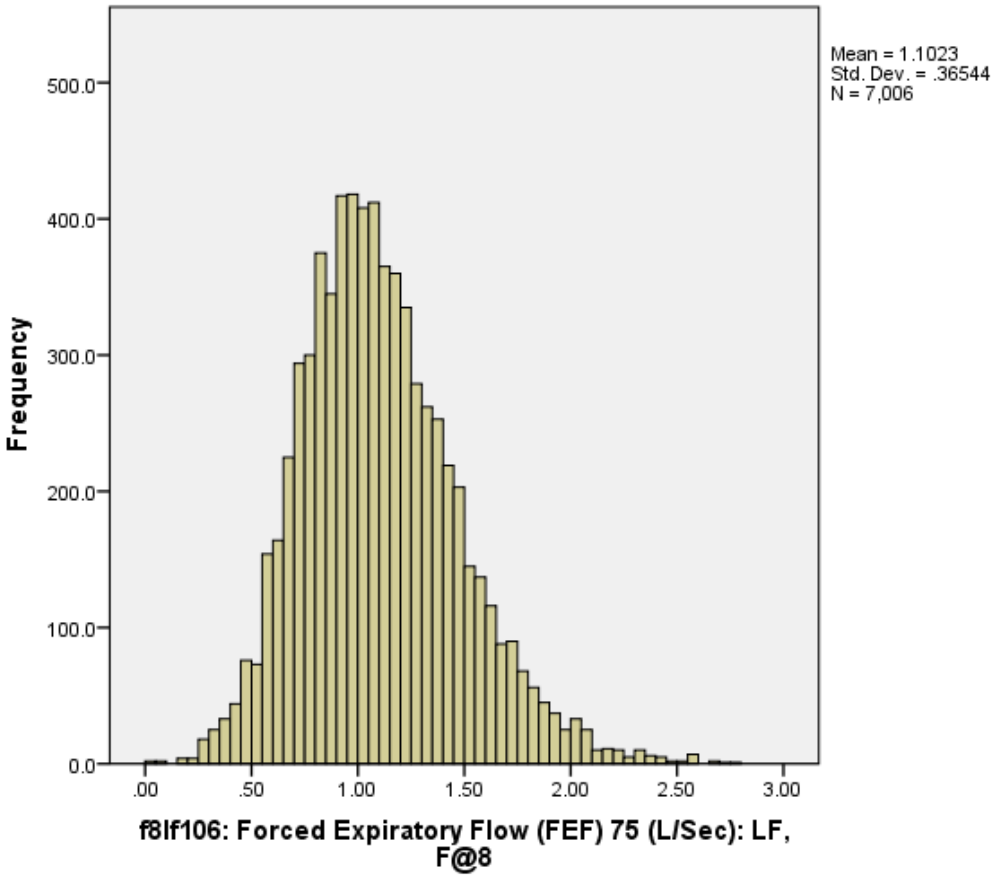

Mean = 1.695
Std. Dev. = .26649
N = 6,909
Frequency
500.0
400.0
300.0
200.0
100.0
0.0
.50
1.00
1.50
2.00
2.50
3.00
f8lf101: Forced Expiratory Volume (FEV) in 1 second (L): LF, F@8

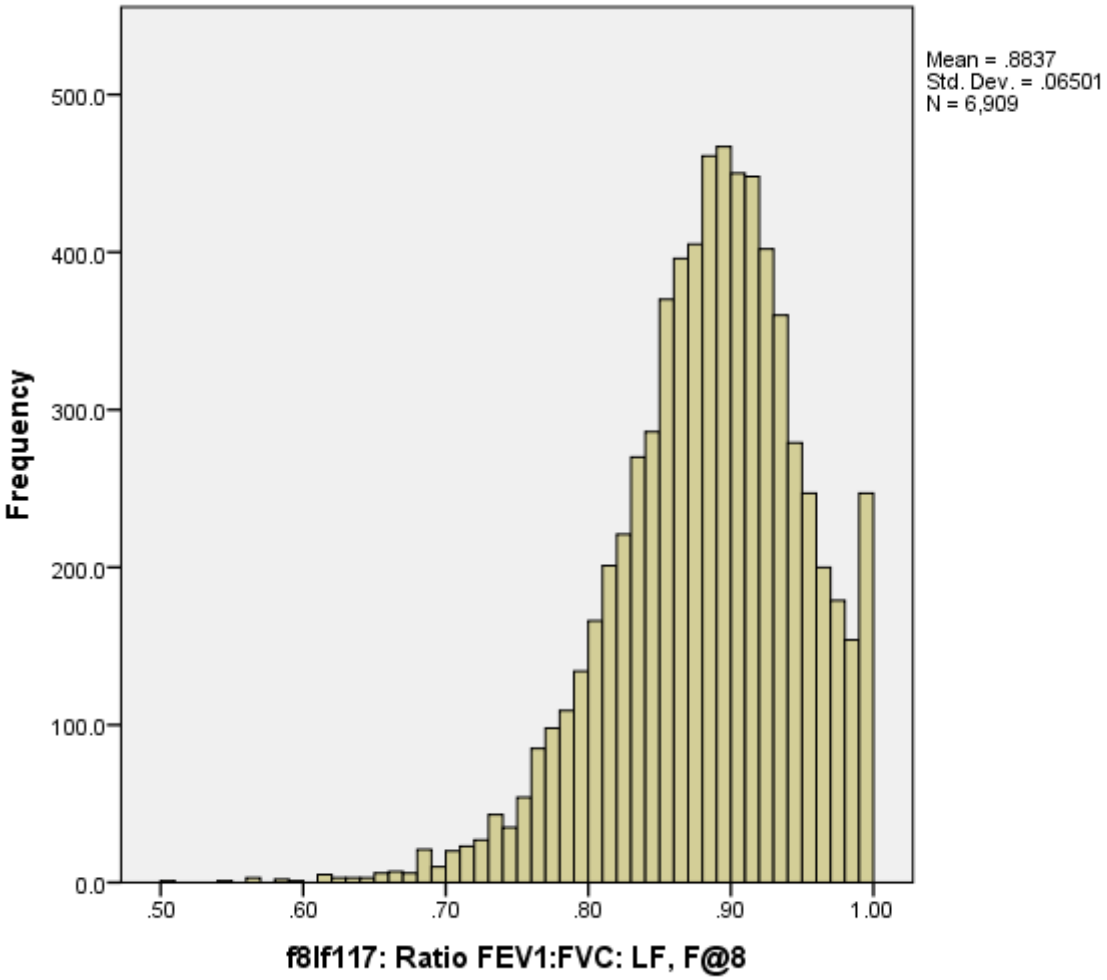

Mean = 1.3048
Std. Dev. = .21409
N = 7,006
Frequency
500.0
400.0
300.0
200.0
100.0
0.0
.50
1.00
1.50
2.00
2.50
f8lf102: Forced Expiratory Volume (FEV) in 0.5 seconds (L): LF, F@8


Mean = 2.0667
Std. Dev. = .52457
N = 7,006
Frequency
500.0
400.0
300.0
200.0
100.0
0.0
.00
1.00
2.00
3.00
4.00
5.00
f8lf103: Forced Expiratory Flow (FEF) 25-75 (L/Sec): LF, F@8


Mean = 3.402
Std. Dev. = .70623
N = 7,006
Frequency
600.0
500.0
400.0
300.0
200.0
100.0
0.0
.00
2.00
4.00
6.00
f8lf104: Forced Expiratory Flow (FEF) 25 (L/Sec): LF, F@8


Mean = 2.3419
Std. Dev. = .58592
N = 7,006
Frequency
500.0
400.0
300.0
200.0
100.0
0.0
.00
1.00
2.00
3.00
4.00
5.00
f8lf105: Forced Expiratory Flow (FEF) 50 (L/Sec): LF, F@8


Mean = 1.1023
Std. Dev. = .36544
N = 7,006
Frequency
500.0
400.0
300.0
200.0
100.0
0.0
.00
.50
1.00
1.50
2.00
2.50
3.00
f8lf106: Forced Expiratory Flow (FEF) 75 (L/Sec): LF, F@8


Mean = .8837
Std. Dev. = .06501
N = 6,909
Frequency
500.0
400.0
300.0
200.0
100.0
0.0
.50
.60
.70
.80
.90
1.00
f8lf117: Ratio FEV1:FVC: LF, F@8

3.5.2 Bronchial responsiveness

Preparation of methacholine solutions

Five grams of methacholine were dissolved in 100 ml normal saline to make a 50 mg/ml solution. This 'stock' solution was prepared by the Pharmacy Department, Bristol Royal Infirmary under stringent pharmaceutical quality control and stored frozen until needed for use. Solutions of 25, 6.25 and 3.13 mg/mL concentration were then produced by serial dilution on each day of testing. Five De Vilbiss rapid response technique hand-operated nebulisers (De Vilbiss Co. Pennsylvania) were used to administer saline or metacholine. It is acknowledged that the output from individual nebulisers and individual testers will vary. Each tester therefore had their own set of nebulisers, and prior studies were used to identify the number of squeezes for each individual tester to produce a given output. The calculated output for each tester/nebuliser combination was used to calculate the final dose response curves.

Measurements

FEV_1 was measured using the electronic spirometer as described above. After baseline FEV_1 had been established, the child inhaled three breaths of normal saline from the first nebuliser. The child was asked to exhale to slightly below functional residual capacity (FRC). The mouthpiece of the nebuliser was placed between the teeth and then the child inhaled slowly over one to two seconds towards total lung capacity (TLC), where the breath was held for three seconds. At the beginning of inspiration the operator gave the bulb of the nebuliser one firm squeeze. The FEV_1 was measured after 60 seconds and the higher of the two values that were reproducible to within 100 ml were recorded.

The child then took one inhalation of 3.13 mg/ml methacholine, as listed in the dose schedule in Table 3.2.2a. This is considered to be equivalent to 0.05 µmol methacholine if the mean output of the nebuliser is 0.003 mL per squeeze. The FEV_1 was recorded 60 seconds after each dose and followed immediately by the next dose. When a dose required more than one inhalation, these were given in consecutive breaths. The challenge was stopped when the FEV_1 fell by 20% or more from the postsaline value (at this point the child was considered to have responded to methacholine challenge) or when the maximum dose of 6.1 µmol was reached (non-rsponder).. For subjects with no history of increased airway responsiveness who showed no response to the previous dose the test was shortened by combining dose 3 with dose 4 and dose 5 with dose 6. All children who had a response were given a dose of salbutamol as a precautionary measure to counteract the effects of the methacholine. This would relieve any symptoms of chest tightness or wheezing that the child may experience.

A fall of 20% in FEV_1 has been selected to ensure few false positive responders are identified in our population (Strachan, 1989).

Table 3.5.2a. Dose schedule for the rapid methacholine inhalation test (Yan et al, 1983).

	Table 3.5.2a. Dose schedule							
	1	2	3	4	5	6	7	8
Metacholine concentration (mg/mL)	3.13	3.13	6.25	6.25	25	25	25	50
No. of inhalations	1	1	1	2	1	2	4	4
Cumulative dose delivered:								
Mg	0.009	0.019	0.037	0.075	0.15	0.30	0.6	1.2
µmol	0.048	0.095	0.19	0.381	0.762	1.525	3.05	6.1

The detailed results of the test were not made known to the parents routinely since Methacholine responsiveness is a marker of asthma in population studies but has no predictive value for the individual.

If at any stage the child experienced or expressed distress due to the testing, they were given the opportunity to withdraw from further involvement in this element of the clinic. The needs of the child were the priority throughout.

f8lf120 Challenge started: LF, F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Yes	4719	63.0	64.1	64.1
	2 No	2644	35.3	35.9	100.0
	Total	7363	98.3	100.0	
Missing	-3 Datasheet missing	26	.3		
	-2 Did not start session	95	1.3		
	-1 Missing	5	.1		
	Total	126	1.7		
Total		7489	100.0		

Although most children started the challenge, many did not complete it for a variety of reasons. The variable F8LF121 takes information from the comments recorded by the testers to indicate reasons why the challenge was not completed.

f8lf121 Reason challlenge not completed: LF, F8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Not commented	6451	86.1	87.2	87.2
	1 Child refused whole/part of session	140	1.9	1.9	89.1
	2 Parent refused	20	.3	.3	89.4
	3 Parents did not attend	13	.2	.2	89.6
	4 Staff illness/difficulties	23	.3	.3	89.9
	5 Need doctor	66	.9	.9	90.8
	6 Child ill or taking meds	71	.9	1.0	91.8
	7 Time restraint	22	.3	.3	92.0
	8 Eqpt error/failure	152	2.0	2.1	94.1
	9 Staff error (general)	11	.1	.1	94.3
	10 Ch started coughing	19	.3	.3	94.5
	11 Ch probs/diffs with task	224	3.0	3.0	97.5
	13 Couldn't get reproducible FEV	182	2.4	2.5	100.0
	Total	7394	98.7	100.0	
Missing	-2 Did not start session	95	1.3		
Total		7489	100.0		

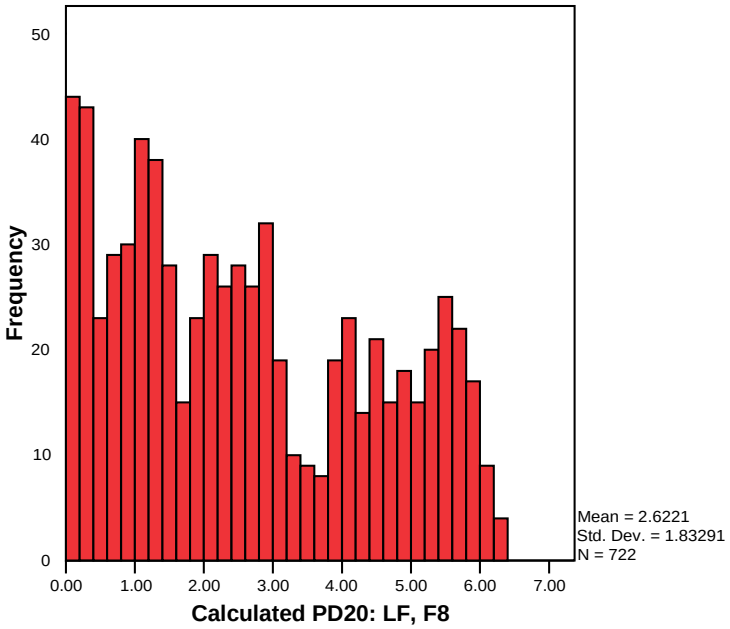
The primary outcomes of interest were calculated from the dose response curves of FEV_1 on methacholine dose. For subjects who exhibited a response ($\geq$20% fall from baseline FEV_1) the PD20 (provoking dose causing a 20% fall from baseline FEV_1) was calculated by linear interpolation between the dose causing a $\geq$20% fall in FEV_1 and the previous dose. This value (PD20, variable F8LF125) was available for 722 (17%) responders, with the non-responders' data being censored at the maximal dose used.

In order to make use of the data from all participants in the challenge, the dose response slope was calculated by fitting a linear function to the plot of percent decline from baseline (post-diluent) FEV_1 against cumulative dose of methacholine (micromoles) by least squares method – variable F8LF126.

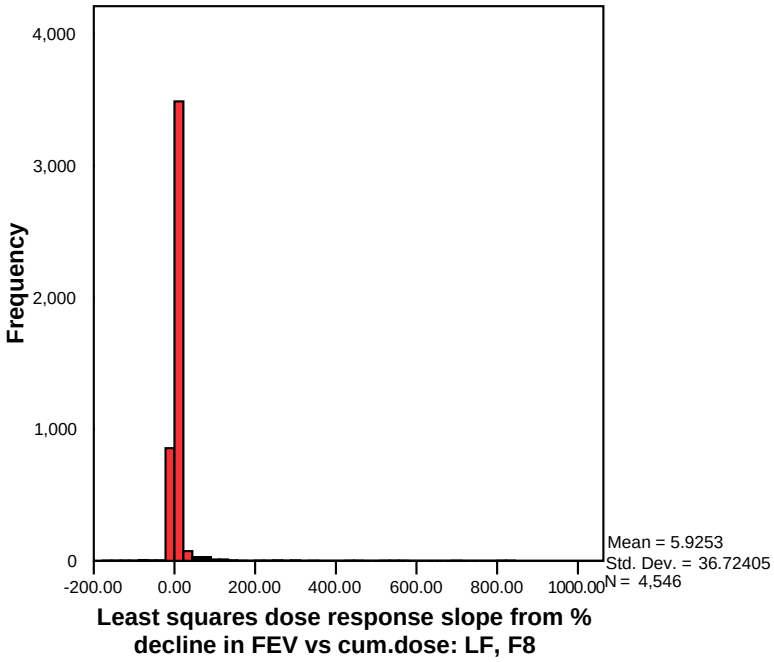
To satisfy assumptions of normality and equal variances, truncation and transformation were applied to the resulting least squares dose response slopes. This work was performed by Roger Newson (Imperial College) and Andrea Sherriff. All negative slopes were rounded up to 0%/micromole and all slopes above 50%/micromole were rounded down to 50%/micromole to derive a truncated slope. Out of 4546 subjects with a measurable LSDRS, 876 subjects had a truncated slope of 0%/micromole (and therefore a transformed slope of 0.1%/micromole), and 100 subjects had a truncated slope of 50%/micromole (and therefore a transformed slope of 50.1%/micromole). The following transformation was then applied to obtain variable F8LF127:

$$y = log(truncated\_slope+0.1)$$

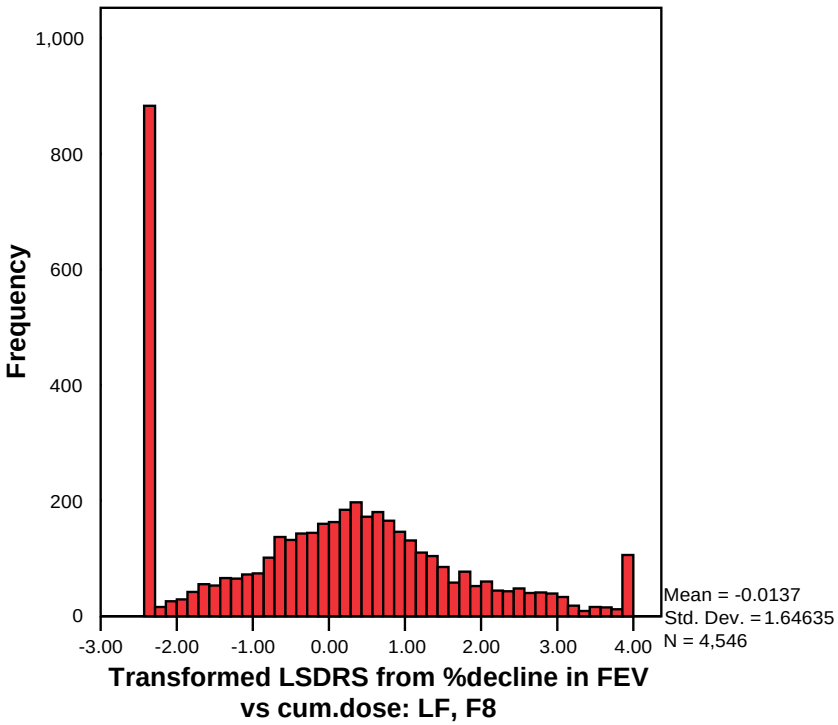
F8LF125: Calculated PD20: LF, F8



F8LF126: Least squares dose response slope from %decline in FEV vs cum.dose: LF, F8



F8LF127: Transformed LSDRS from %decline in FEV vs cum. dose: LF, F8



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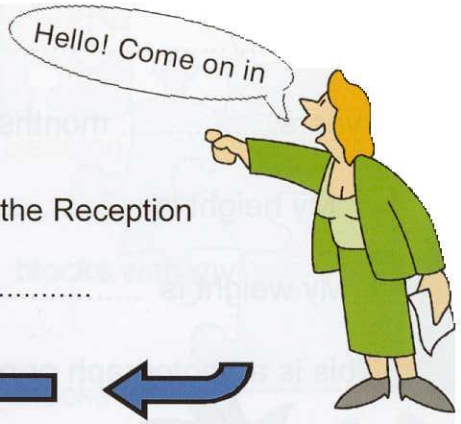
Appendix 1: Child's Booklet

My name is: .....

When I came to the Focus at 8 on ....., in the Reception



I met .....

I saw ..... (e.g.Mary) in

the ..... room. (e.g.Yellow)

Next I saw ..... in the ..... room.

Then I saw .....

in the ..... room.

Finally I saw

.....

in the ..... room.

I went home at .....

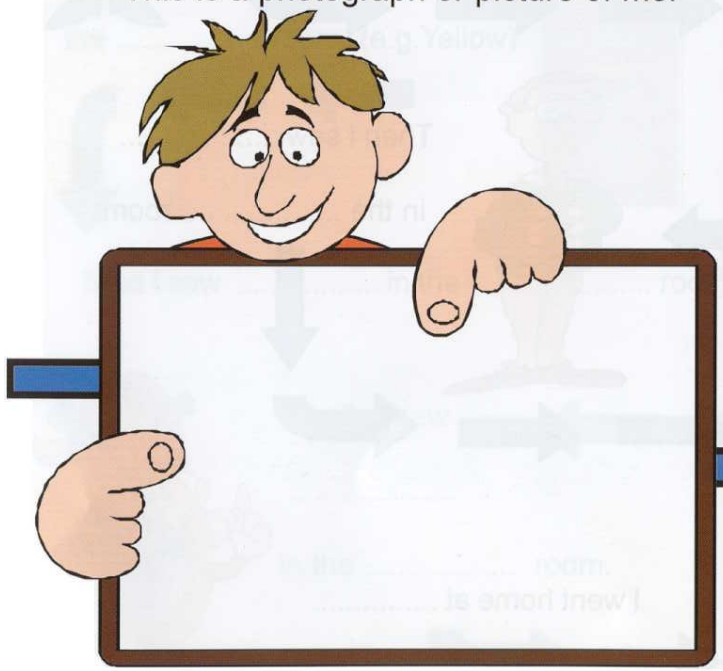
Today on ...../...../.....my exact age is

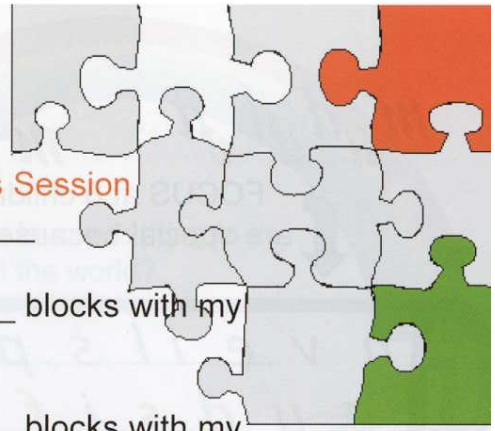
..... years, ... months and ..... days.

My height is ..... cm.

My weight is ..... kg.

This is a photograph or picture of me.

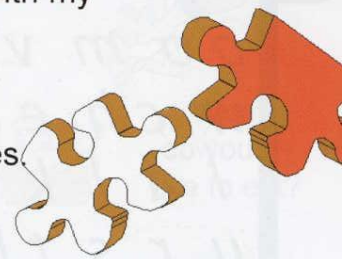




In the Activities Session with _____

I stacked _____ blocks with my right hand.

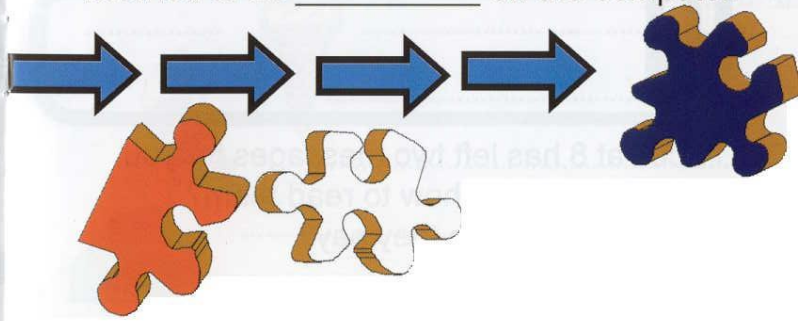
I stacked _____ blocks with my left hand.



I did _____ jigsaw puzzles.

I saw 24 pictures of _____ and

listened to 24 _____ on the computer.



FOCUS at 8 children

are special because they+

"S h v e i l s p i t ?
o u d s i f s r c
o o m v p e l r a
w c h e a s t a m
/ a l k o e v s e
u r s t h h e e a
w l o t r h l y d

Focus at 8 has left two messages for you
Can you see how to read them?
What do they say?

answers: 8 1• SIY.>0.::1OI IW<X> noA U94M

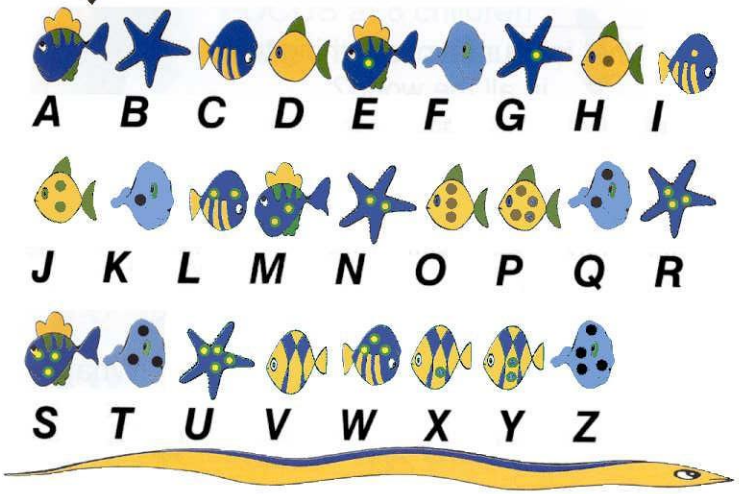
What is your favourite thing to do in all the world?

W rite about it here.

What do you

like to eat?

CRACK THIS UNDERWATER CODE

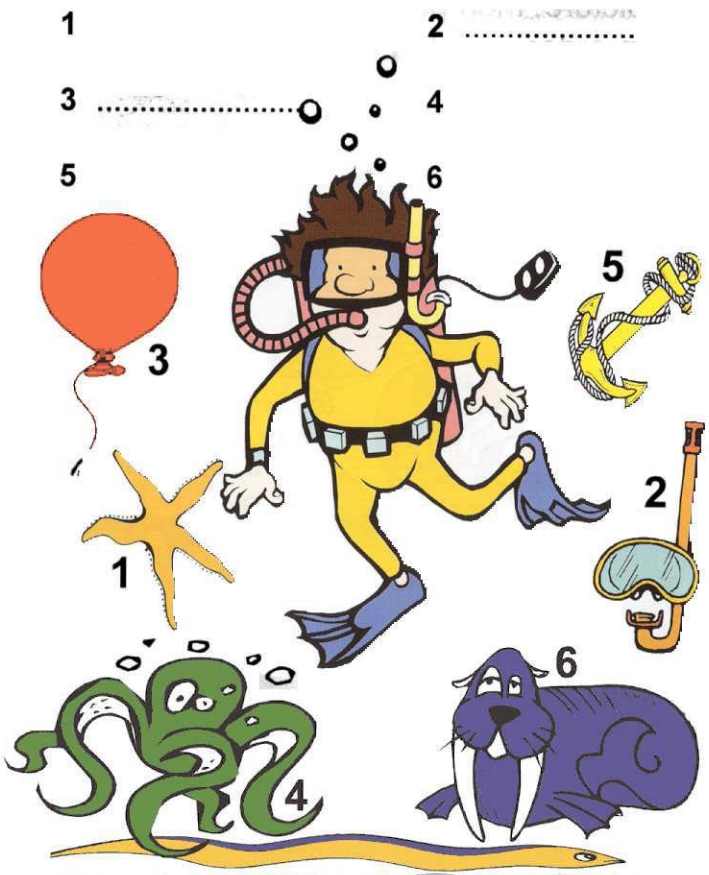


— — — —

— — —

answers when you come to Focus at 8

This diver is surrounded by six things
What are they?
Put a ring round the odd one out.

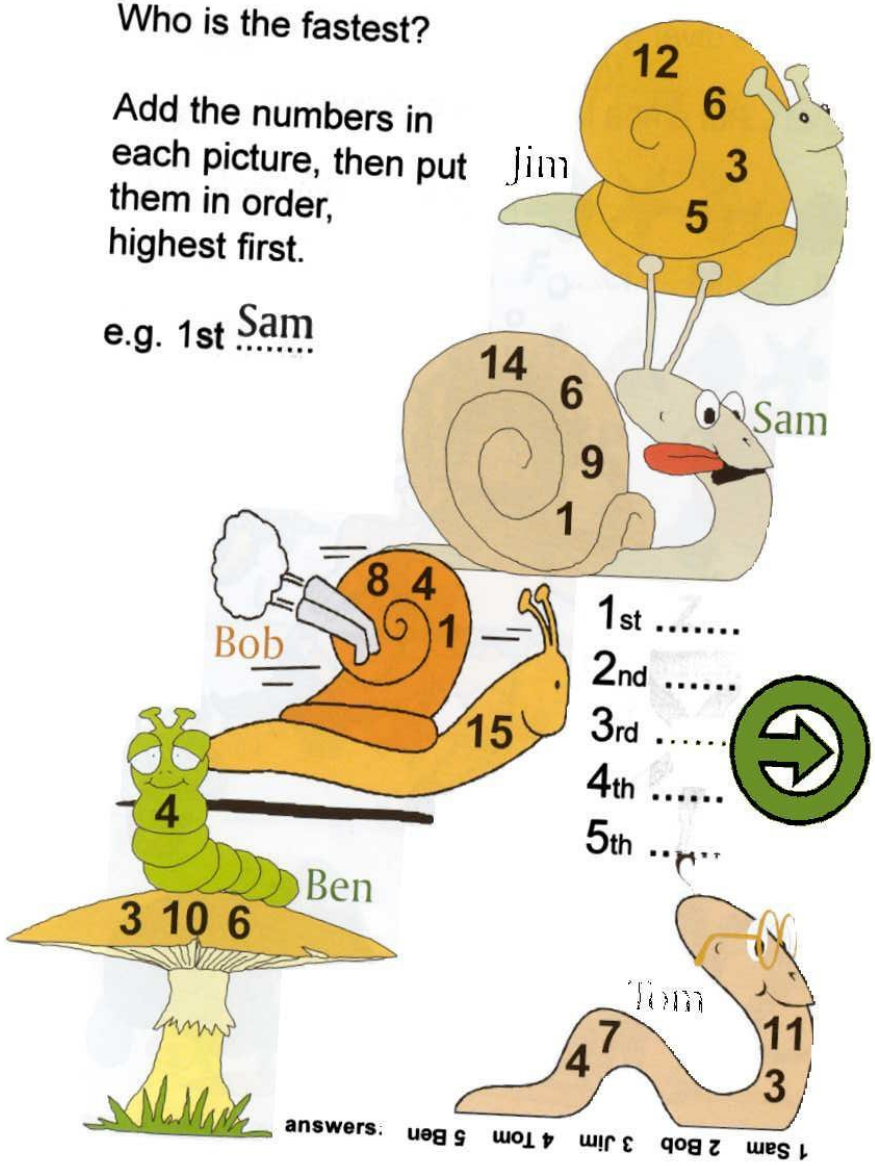


answers: 1 Starfish 2 Mask & Snorkel (3 Balloon) 4 Octopus 5 Anchor 6 Walrus

Who is the fastest?

Add the numbers in each picture, then put them in order, highest first.

e.g. 1st Sam .....



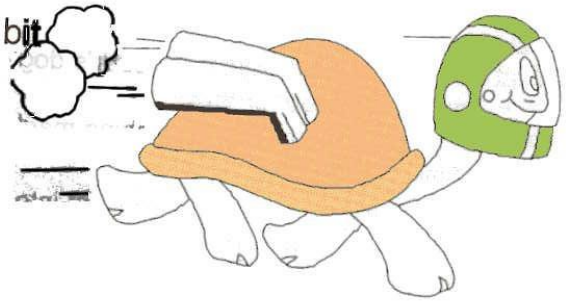
1st .....
2nd .....
3rd .....
4th .....
5th .....

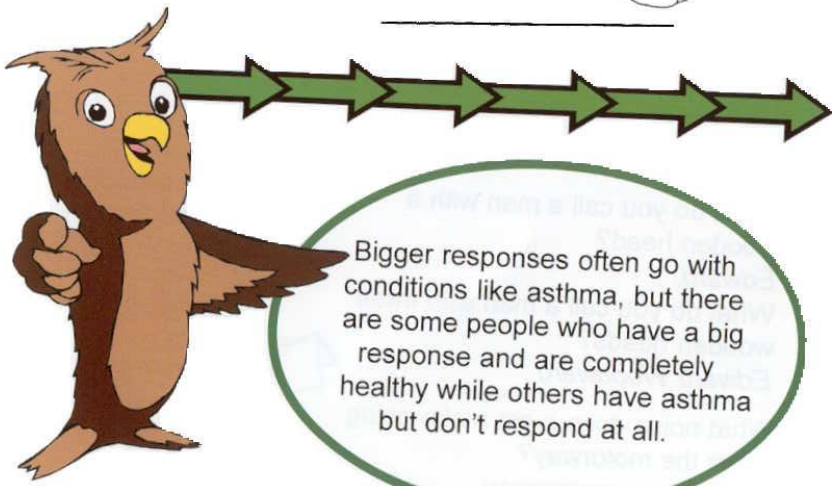
answers: 1 Sam 2 Bob 3 Jim 4 Tom 5 Ben

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

My lungs responded in the breathing session today:

- ☐ not at all
- ☐ a little bit
- ☐ a lot





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.

Appendix Two: Instructions for testers, Posting and Activities sessions.

Posting Session Observation Points

Attention

Introduction to session

- Check whether child needs the toilet before you start
- Spaceship games; questions (about school and friends and how you feel about different things); posting games; outer-space game

Sky search

Introduction

- Say that the spaceships always travel around in pairs (or *twos*) show on blue practice sheet
- Say that some pairs are the same (show in booklet); some are different (show in booklet)
- Say that you want child to circle all the pairs that are exactly the same and
- *Ignore* the ones that are different
- Show the gaps between the spaceship pairs
- Show the columns and say that the pairs are close together. Don't point out ones that aren't real pairs
- Don't pretend to circle ones that aren't identical pairs
- Circle first one quickly (and not too neatly)
- Remind child
    - Doesn't have to be too neat
    - As quickly as you can
    - Trying not to miss *any* out
    - Tick box when finished
- Ask child to explain what he or she has to do *just to make sure that you have explained it properly*
- Remind child of anything missed out (see above)
- Say "ok then… if you're ready? Go"

Main

- Correct any errors/ confusion before you start the main
- Make sure you're using the correct sheet
- Show big sheet and say you'd like the child to do exactly the same but with this bigger sheet
- Remind child
    - As quickly as you can
    - Trying not to miss *any* out
    - Tick box when finished
- Say "ok, then… if you're ready? Go"
- If child starts circling more after he or she has finished, and before you have taken the sheet away, let him or her, and add the approximate number of seconds on that it has taken

Sky search motor control

Introduction

- Easier this time: only *same* pairs
- As quickly as you can
- Without missing any out
- That includes these ones at the bottom [point them out]
- Tick in the box when finished
- Say "ok then… if you're ready? Go"
- If child starts circling more after he or she has finished, and before you have taken the sheet away, let him or her, and add the approximate number of seconds on that it has taken

Dual task

- Get child to count to 15 out loud before you say what the next game is. (Could give an excuse for odd request, for example, by saying "*While I'm getting myself sorted out*, could you just count to 15 out loud for me?" Or make it a game "…can you see if you can count to 15 before I finish rubbing this out?")

Introduction

- Same as before, circling the pairs of identical spaceships but something else at same time that's *just as important*
- count some alien noises for me
- this is what they sound like [play tape] how many did you hear?
- Say "…the alien noises are in groups and that at the beginning and the end of each group of noises you'll hear this noise…" [play tape]
- I don't want you to count those noises, just the alien noises in the middle [make the noise]
- Let's have a practice first, listen carefully and tell me how many alien noises you hear [play tape]
- After having practiced with the tape only, do practice go with the sheet
- Remind child
    - Count the alien noises
    - Circle the identical pairs as quickly as you can
    - Trying not to miss *any* out
    - Tick box when finished
    - Practice so might stop before you get to the end
- Ask child to explain what he or she has to do *just to make sure that you have explained it properly*
- Remind child of anything missed out (see above)
- Say "ok, then… if you're ready? Go"
- Point out any errors/ confusion

Main

- Put big sheet on table the right way up and explain "5,4,3,2,1 start"
- Remind child of rules
    - Count the alien noises
    - Circle the identical pairs as quickly as you can
    - Trying not to miss *any* out
    - Tick box when finished

- Start timing on “start”
- If child doesn’t know how many noises they heard, put a ‘0’ not DK
- If child starts circling more after he or she has finished, and before you have taken the sheet away, let him or her, and add the approximate number of seconds on that it has taken

Locus of Control

Locus of control

Introduction

- “No right or wrong answers”
- “Interested in how you think and feel about different things”
- “We won’t tell anyone what you say to us”

Main

- Speak clearly and not too fast
- *Always* emphasise phrase *no matter what you do* [LOC2]
- *Always* emphasise the word *usually* [LOC 3,6,9,11]
- *Always* emphasise the word *often* [LOC8]
- Maintain as much eye contact as possible
- Put a ‘Q’ after the child’s response if you feel that the child does not understand the question
- Try to avoid using *leading* examples when giving explanations

Friends and Peers

Friends and Peers school and friends questions, page 1

- Give a little introduction to say that you’re going to be asking some questions about school and friends
- *Always* make sure you use the correct categories. If child says “yes” to “do you like school?” say “would you say you like it very much, or most of the time?” If child is not sure if he or she likes school, ask “would you say you like it most of the time, or not much, or not at all?” If child says “no”, say “would you say you don’t like school much or you don’t like it at all?” Make sure you do this for all questions relating to categories

- *Always* emphasise how often the child sees friends *outside* of school [F2]. Make sure the child does not believe you mean in the playground etc. Use prompt to explain that you mean “…like in the evenings or at weekends…”

- In F2, the friends do *not* have to be school friends. [F1-5 do not relate specifically to school], explain this to child

- Always use the prompt for F3 so we are all consistent

Friends and peers interview

Introduction

- "Have a chat about things at school"
- "We're going to talk about things that sometimes happen in school or on the way to or from school"
- "We won't tell anyone what you say to us….
- … unless someone is getting badly hurt and then we may have to tell someone who can help that person"
- "Name's not even on this paper"
- Do not use "I" when talking about confidentiality as it's not true. You *will* tell other people
- Do not use "we won't tell anyone outside of Children of the Nineties". Children know that they and their families are *in* Children of the Nineties so this guarantee does not exclude telling parents
- Talk about things that have happened only in last six months [only time you specifically refer to six months]
- Get out wheel calendar. Explain that it shows all of the months of the year, point out your birthday and ask the child to show you their birthday before covering up the six months. Show six months ago [without saying "six months"] and go briefly through the months since. If six months ago relates to something at school (e.g., beginning of new school year, term etc.) use that as a prompt. Ask who new teacher is and use that etc.
- Keep the calendar on the table so you and the child can refer back to it regularly

Main

Overt Received and Given

- "Children are sometimes picked on, threatened, hit or beaten up by other children"
- "Could be children in your class or on the way to or from school"
- "We'll talk a bit about things that might have happened to you since [use calendar wheel] which haven't been very nice"
- Remind child that we won't tell anyone, including at home or school…
- Avoid using leading questions where possible
- "In this time…./since your birthday/ Christmas etc. … has anyone ever taken your personal belongings, *something that belonged to you*, without asking you first?"
- Prompt: "that could include your pencil case, dinner money, coat or anything that's yours…"
- Always say threatened or blackmailed you (not just threatened)
- Always give example ("So maybe they said they might hurt you if you didn't give them your sweets or something?") Check if the child knows what that means
- Say "…played any nasty tricks on you just to upset you"
- Always ask the child to tell you about it at that point (this often removes the need to ask specifically "who does this to you…" etc)
- If the child has not told you who does it, it may be more appropriate to ask this *before* the frequency question

Frequency questions

- How often does it happen?
- Does it happen a lot or a little bit?
- Do ask "when was the last time he/she ….?"
- Did it happen last week? [if child says it happens more than once a week]
- Has it happened since half term? [if that's about six weeks ago]
- You need to prompt until you have what seems like a realistic answer
- Ask "do you tell a teacher or dinner lady or anyone at school when it happens?" [make sure that the final answer does not include the child telling other children]
- How often do you tell her/him?
- Use categories properly: [for teacher/help and home questions]
    - if child say yes to telling someone, ask if it's every time it happens, or most of the time when it happens, or sometimes when it happens
    - if child seems unsure or says no, not really, ask if he or she only tells the teacher/other sometimes or if he or she never tells the teacher/other

- Do *not* ask if anyone does anything to help at home
- Do write down what the child says has happened

- Before Overt Given remind child that we won't tell anyone…, name not on paper etc.

- Use calendar wheel again –and refer to throughout
- Still say "anything that belonged to anyone else at school, without asking" and give examples
- Still say "threatened or blackmailed" and not just "threatened"

Received Relational and Relational Given

- Be aware that the child may not have any friends that they normally play with and so ask "Are there children you normally play with?"
- Remind that we won't tell anyone
- Ask for information about bad or nasty names
- Do check on who the child normally plays with. Do not ask the child to give you names of children they normally play with, just ask them to have a think about the children they normally play with
- Talk about the *people* that the child normally plays with and not the *friends*. Some children normally play with people who they wouldn't consider to be friends –and we're interested in anyone they normally play with, not just friends

At end of Friends and Peers session

Thank child and acknowledge that those kinds of questions can be difficult to talk about

Antisocial Activities

Introduction

- Go round to the child's side and crouch down
- Get child to read Ever, Never (assist if child cannot read them)
- Say that you're going to read out some questions on these envelopes about things that the child may or may not have *ever* done
- Say that the child will post the answers into the post-box so you won't be able to see where he or she has posted them
- Say that you want the child to decide if he or she has *ever* done what's on the envelope, *even once* –so he or she would put it in the *ever* slot, or *never* done it, *not even once* –so the child would put it in the *never* slot
- With practice go "Have you *ever* been late for school?"
    - Prompt: "say even if you've just been late for school *once*, a long time ago, you'd put it in the *ever* slot, and if you've *never* been late for school, *not even once*, then you'd put it in the *never* slot
    - Check on where the child is posting it and confirm if it's right (e.g. "so you're putting in the *never* slot because you've *never* been late for school, *not even once*")
- Say that you're moving round now so you can't see where the child is posting the answers
- Remind child that we don't tell anyone what the child has been talking about in this session

Main

- Ask child to tell you when he or she has posted as you cannot see
- Make sure you're obviously not looking at where the child is posting his or her answers
- *Always* stress *ever* with *every* question
- For first few, prompt specifically
    - E.g., "so if you've *ever* stolen or tried to steal…. *even once* then you'd put it in the *ever* slot and if you've *never* tried to steal…. *even once* then you'd put it in the *never* slot"

- For later ones, still occasionally say "so if you've *ever* done it, *even just once*, put it in the *ever* slot and if you've *never* done it, *not even once*, put it in the *never* slot"
- On question 2 [shop], always say "and that would include anything like sweets, or pens or anything else"
- On question 7 [alcohol], always say "like beer or wine or cider"
- On question 11 [weapon], always say "and that would include something like a stick –if you were carrying it in case you needed it in a fight"
- On question 14 [cruel], always say "and that doesn't include insects"

4 Opposite Worlds task

Introduction

- Get child to read 1 and 2
- Explain that there are two worlds: one the same as it is here, one opposite
- Same world, everything's the same: a 1 is a 1 and a 2 is a 2. Your name is … and my name is

- Opposite world, things are the other way round so a 1 is a …2 and a 2 is a…1 and your name is … and my name is …
- Same world first: 1=1, 2=2. So here I'd say: "Start, 1,1,2,2,1,Stop" [*You demonstrate Practice 1*]
- Now you try [*Child does Practice 1*] … and this one here? [*Child does Practice 2*] Sort out any confusion
- Opposite world. Remember 1=2, 2=1. Your name is … and my name is…. So here I'd say: "Start, 1,1,2,1,2, Stop" [*You demonstrate Practice 1*]. [Child might ask about "start" and "stop" being the other way round. If so, say he or she can do it either way, whichever is easier]
- Now you have a go [*Child does Practice 1*] … and this one here? [*Child does Practice 2*]

Main

- In a minute, we'll have a go with a big trail of numbers. First, in the same world. I'll start timing when you say "Start". [Turn page over.] As quickly as you can –and I'll keep my finger on the number till you tell me the right number
- Put finger on "Start" and wait to time until child says "Start"
- Stop timing when child says "Stop"
- Always be very careful not to move on until the child has said the correct response
- Describe next page (e.g., "Same world" 1=1… or "Opposite World" 1=2…) *before* you turn the page over
- Remind: as quickly as you can… when you're ready…
- Start timing when child says "Start" or "Stop"
- Stop timing when child says "Stop" or "Start"
- Always be very careful not to move on until the child has said the correct response

Gender

Introduction

- Talk about the sort of things that you like doing
- No right or wrong answers, just interested in what you like doing
- Go round to child's side and crouch down
- Avoid saying that the envelopes have *statements* on them. It's not a very child-friendly word
- Give general explanation: two post-boxes, blue and red, and you've got envelopes with writing on, which you'd like the child to post into the post-boxes
- Tell you how to decide where to post the envelopes
    - First step to decide which post-box to post into, second step to decide which slot to post into
    - I'll read out what's on each envelope, in the blue and red, and I want you to decide whether you're more like the children in the blue writing or the red writing.
    - Board games example: "Some children enjoy playing board games a lot" in the blue writing but "other children don't enjoy board games at all" in the red writing – who are you more like? The children who enjoy board games a lot (in the blue writing) or the children who don't enjoy board games at all (in the red writing)

- So you're more like the children who…. so you'd put it in the … box. But before you do, you need to decide where to post it (can you see this says "sort of true for me" and "really true for me")
- So I want to know if that's only *sort of true for you*, [point to writing on box] you sort of enjoy playing board games a lot or it's *really true for you*, [point to writing on box] you really enjoy playing board games a lot
- Sum up: so you're putting it in the … box because you're more like…. And you're putting it in the … slot because it's …true for you

- Say that you'll go round to the other side so you cannot see how child is posting
- Say that first we'll talk about toys..

Main

- Read over the top with blue writing against the blue box and red against the red
- Some children play with jewellery [pat the blue box up near the writing; can also say "in the blue writing"] but other children don't play with jewellery [pat the red box; can also say "in the red writing"]
- "So if you feel like you're more like the children who play with jewellery, you'd put it in the blue box and if you feel like you're more like the children who don't play with jewellery, put it in the red box"
- "And then is that *sort of true for you*, or *really true for you* [pointing to both sort of true and really true sentences on post-boxes]?"
- Do this for as many as necessary until you are sure the child has got the hang of it. For some children, it is important to do this for all questions. Even if the child appears to understand, there is no problem with carrying on with prompting.

Remind child we won't tell anyone what he/she has said but it's fine for child to tell anyone

Activities Session Observation Points

DANVA Faces

- Before starting, check whether child ever wears glasses

Introduction

- Read out the four words
- Ask child if he or she understands what each one means
- Say that there are 24 pictures of children's faces
- Mention that they only come up for about two seconds and that the child should look carefully at each picture
- Say that the word 'fearful' is on the screen instead of afraid, but that they can say either
- Enlarge the picture before the first face comes on to the screen

Positioning

- Make sure child is close enough to screen
- Make sure screen is facing child and not at an angle
- Put Happy Sad Angry Afraid paper just below screen with blue tack
- Make sure that the cursor is at the bottom of the screen before the first picture comes on to the screen, and in between all other pictures

Use of prompts

- If child says he or she hasn't seen the picture (but was looking), or doesn't know, ask him or her to have a guess (and write a "Y" in the guessing box)
- Try and avoid any "don't know"s (children will sometimes refuse to give you an answer but avoid where possible)

Filling in boxes

- If the child says he or she is guessing or it is clear that the answer is a guess, always write it down in the correct box. Query it (put Q) if you think the child might be guessing (the response might be correct or incorrect)
- If the child takes a long time to answer, put an "S" in the box for slow, regardless of whether the child's response is correct or not. If the child answers very quickly and it appears to be somewhat impulsive, put an "Q" for quick –regardless of whether the child's response is correct or not

Other

- If child changes his or her mind after you have clicked on the answer, or if you accidentally click on the wrong answer, always write down the correct answer on the datasheet, but don't comment on it (unless it is an indication of unusual behaviour by the child)

After completion

- Say that you'll come back to the computer later, if there's time
- Switch off the computer screen

Introduction

- lots of different things, none of them lasts too long
- same questions/puzzles… would give to older children
    - don't worry if you find some of them difficult
    - really like you to have a go
    - if really can't do something say pass and we'll go onto the next one
- toilet. if you'd like to go at any stage during the session, ask

Positioning

- Child close enough to table
- Child sitting face on with legs under table

Picture Completion

Introduction

- Say *important* part missing…
- Say "look carefully at each picture"

Positioning of materials

- Booklet close to child, central, flat on table

Use of prompts

- If child says "pass" quickly, ask if he or she would like to have a go at that one or ~"are you sure you'd like to pass on that one?"
- If child doesn't answer, ask after 15 seconds if he or she would like to have a go, or go onto the next one
- Say "can you show me where you mean?" if ambiguous
- You can use each of the following prompts once:
    - (if child says something inessential, like "bucket" in stepladder item, or "body" in man's head picture:) "but what is the most important part missing?"
    - (if child fails to respond:) "a part is missing in the picture. What is it that is missing?"

Information

- Speak clearly
- Don't rush from one question to the next (if you make it seem quick for the easier questions because the child is answering them quickly, he or she may be more likely to pass when they get harder)
- If child says "water" or "air" to "What causes iron to rust?", say "what is it in the air/water which causes it to rust?"
- If child says that Charles Darwin was a scientist, say "but what was he *most* famous for?"

Coding

Practice

- Interrupt immediately if errors and explain

Main

- "As many as you can, without skipping any, until I tell you to stop"
- "As quickly as you can" but don't say that it's for two minutes
- "Don't worry, you're not going to do the whole sheet!"
- Watch throughout (but unobtrusively, sitting back) so you can see errors immediately
- If child skips one, try and rectify immediately
- If child makes an error in copying, say to just put the right shape underneath the box (avoid rubbers)

Similarities

Introduction

- Say " …I'm going to *name two things* and ask you how they are alike…"
- Say "…how they're alike, how they are the *same*…"
- Let child help out with colours example: "you'd say they're both…… [and let the child say "colours". If child doesn't answer, say it yourself]"

Use of prompts

- For SIM1, can prompt with "they're both….."
- Give 2-point (fruit) answer for apple-banana if child doesn't give it
- If child says 9 and 25 are both odd, ask for another way in which they are alike

Other

- Unless you are 100% sure about the coding of an answer, *always* write the child's response down on the data sheet to consider later
- Unless you are 100% confident that a child's response is wrong and scores 0 points, assume that it could be right and continue asking questions until there are two consecutive answers you are completely sure are 0-point answers

Picture Arrangement

Introduction

- After explaining woman getting drink example, leave for 10 seconds before removing

Positioning of materials

- keep them central, slightly apart and just over a card's height away from the edge of the table so that the child can move them freely without them falling off the table.

Main

- Describe “girl playing” and “about a picnic” but *don’t* mention speed for either set of pictures
- If PA1a or PA2a incorrect, administer PA1b or PA2b respectively
- From PA3 (snack) onwards
    - do not describe
    - say “as quickly as you can”
    - say “and tell me when you’ve finished”
- If child changes his or her mind after having finished but before you remove cards, add the (approximate) number of seconds on and treat *final* answer as one to code
- If child puts pictures correct but from right to left, ask “where does your story begin?” If correct starting point is indicated, score as correct
- If child gets PA8 (snow-scene) 6-1 instead of 1-6, put H for “half” in the Y/N column as this gets some credit

Arithmetic

Introduction

- Remind that we’d ask same questions to older children so not to worry but please have a go

Main

- It’s fine to repeat a question if the child asks or if you think it’s appropriate
- Stretch does not have to take place yet if the child is still going well (it’s often better after block design)
- For ARI 3 *say* “…Take this card and cover up all of the trees except nine. Leave nine trees showing.”

Block Design

Demonstration

- Always say that the pattern is the same *on top*
- Leave demonstration for 10 seconds after you’ve finished
- Mention that blocks should be in line with the book

Main

Positioning of materials

- Place book as close as possible to child once you have left enough space for blocks (and movement of blocks). The book will be closer for four-block patterns than nine-block patterns
- Set blocks up correctly each time, making sure that the diagonals always point in the same direction (bottom left to top right)
- If child ever puts the blocks at an angle (including angles of less than 30 degrees), straighten them first (in a deliberate way) before rearranging them

First pattern (BD1a)

- If child gets BD1a wrong/out of time/at an angle of more than 30 degrees, always do BD1b *and* BD2a.
- If child gets BD2a wrong/ out of time/ at an angle of more than 30 degrees, always do BD2b

From BD3 onwards

- Say “as quickly as you can”
- Say “and tell me when you’ve finished”
- Do *not* mention speed for BD1 or BD2

- If child changes his or her mind after having finished but before you remove blocks, add the (approximate) number of seconds on and treat *final* answer as one to code
- If child finds last ones difficult, remind him or her that we’d get older children to do the same ones
- Probably better to stack the blocks for their booklet now (but can fill in at the end) as it often feels like the right time, and is good for children who have found the block design difficult

Vocabulary

- If child gives less than a two-point answer for VOC1, say “well a clock is something that tells the time”
- Unless you are 100% sure about the coding of an answer, *always* write the child’s response down on the data sheet to consider later
- Unless you are 100% confident that a child’s response is wrong and scores 0 points, assume that it could be right and continue asking questions until there are two consecutive answers you are completely sure are 0-point answers

Use of prompts

- If in *any* doubt whatsoever about a response, *always* prompt (write down what the child has said, put a [Q] immediately after it, then write down the child’s response to the prompt
- Prompt child with “can you tell me something more about it”
- Child can still gain full marks even if he/she has been prompted
- If child does not give any further answer after prompting, still always write down a [Q] so we can tell that a response has not been left un-queried when it should have been queried. Put a dash after the [Q]
- If you know that the child’s answer is definitely correct after querying, put a tick (if you’re not writing down the full response) after the [Q] so we can see that the question has been scored correctly. If you know it is definitely wrong, put a X after the [Q]
- You can only prompt once for each question

Object Assembly

Demonstration

- Always leave demonstration for ten seconds after you have completed it

OA1 girl

- If wrong, always demonstrate how to do it right (e.g., changing legs or arms round the right way. If errors are more substantial redo whole puzzle). Child does *not* repeat if incorrect
- Do *not* say "as quickly as you can" for the girl

Rest of Object Assembly

- Do say "as quickly as you can"
- Do say "and tell me when you've finished"
- *Do* say OA2 is a car; do *not* say OA3 is a football
- If the child is out of time, do make sure you note the number of correct junctures at the time limit

Comprehension

- Unless you are 100% sure about the coding of an answer, *always* write the child's response down on the data sheet to consider later
- Unless you are 100% confident that a child's response is wrong and scores 0 points, assume that it could be right and continue asking questions until there are two consecutive answers you are completely sure are 0-point answers.

Use of prompts

- If child does not give a two-point answer, say "well one thing you could do is put a plaster on it"
- If in *any* doubt whatsoever about a response, *always* prompt (write down what the child has said, put a [Q] immediately after it, then write down the child's response to the prompt
- If child does not give any further answer after prompting, still always write down a [Q] so we can tell that a response has not been left un-queried when it should have been queried. Put a dash after the [Q]
- If you know that the child's answer is definitely correct after querying, put a tick (if you're not writing down the full response) after the [Q] so we can see that the question has been scored correctly. If you know it is definitely wrong, put a X after the [Q]
- You can only prompt once for each question (with the exception of COM5 and COM6)
- Re: COM5. You are looking for two reasons why games have rules. If child gives you one reason, *always* ask for another (this does not count as your only allowed prompt). Safety doesn't count but if child gives you safety answer, ask for another reason and if it is correct, ask for another one
- Re: COM6. You are looking for two reasons why cars have number plates. If child gives you one reason, *always* ask for another (this does not count as your only allowed prompt)

Forward Digit Span

Introduction

- Always say “listen carefully”
- Use the script at top of page

Reading digits

- *Always* read *all* sets of digits at rate of one per second (this includes the easier ones). This is vital in order to get usable data. *Always* use the stopwatch, the clock in the room or your own watch to ensure that the rate is exact
- *Always* keep your voice at same pitch until the last digit, where you must always drop your voice. *Never* “chunk” numbers together as this will make the task much easier
- Always read the numbers out clearly and loud enough

Use of prompts

- Never repeat a set of digits for the child unless you have made an error (for example, not read enough out) or there is a loud distraction whilst you are reading the digits out or immediately after. Ask the child to have a go, “even if you think you’re just guessing”

Backwards Digit Span

Introduction

- Use the script at top of page

Reading digits

- *Always* read *all* sets of digits at rate of one per second, with the exception of the sample item which can be said more quickly. This is vital in order to get usable data. *Always* use the stopwatch, the clock in the room or your own watch to ensure that the rate is exact
- *Always* keep your voice at same pitch until the last digit, where you must always drop your voice. *Never* “chunk” numbers together as this will make the task much easier
- Always read the numbers out clearly and loud enough

Use of prompts

- Never repeat a set of digits for the child unless you have made an error (for example, not read enough out) or there is a loud distraction whilst you are reading the digits out or immediately after. Ask the child to have a go, “even if you think you’re just guessing”
- If child gives you digits forwards correctly instead of backwards, say “and could you say them to me backwards?”. Make a note of this in Comments

WISC ending

- Very positive. Could remind child that they’re the same ones we’d give to children who are older if you think this is appropriate

Introduction

- Say that there are no right or wrong answers
- Say that we're interested in how you think and feel about different things
- Go round to child's side and crouch down
- Avoid saying that the envelopes have *statements* on them. It's not a very child-friendly word
- Give general explanation: two post-boxes, blue and red, and you've got envelopes with writing on, which you'd like the child to post into the post-boxes
- Say that first, you will tell child how to decide where to post the envelopes
    - First step to decide which post-box to post into, second step to decide which slot to post into
    - I'll read out what's on each envelope, in the blue and red, and I want you to decide whether you're more like the children in the blue writing or the red writing.
    - Board games example: "Some children enjoy playing board games a lot" in the blue writing but "other children don't enjoy board games at all" in the red writing – who are you more like? The children who enjoy board games a lot (in the blue writing) or the children who don't enjoy board games at all (in the red writing)?
    - So you're more like the children who…. so you'd put it in the … box. But before you do, you need to decide where to post it (can you see this says "sort of true for me" and "really true for me")
    - So I want to know if that's only *sort of true for you*, [point to writing on box] you sort of enjoy playing board games a lot or it's *really true for you*, [point to writing on box] you really enjoy playing board games a lot
    - Sum up: so you're putting it in the … box because you're more like…. And you're putting it in the … slot because it's …true for you

- Say that you'll go round to the other side so you cannot see how child is posting
- Remind that there are no right or wrong answers

Main

- Read over the top with blue writing against the blue box and red against the red
- Some children feel that they are very good at their school work [pat the blue box up near the writing; can also say "in the blue writing"] but other children worry about whether they can do the school work they have been given [pat the red box; can also say "in the red writing"]
- "So if you feel like you're very good at your school work you'd put it in the blue box [pat blue box] and if you worry about whether you can do the work you've been given, put it in the red box [pat red box]"
- "And then is that *sort of true for you*, or *really true for you* [pointing to both sort of true and really true sentences on post-boxes]?"

Do this for as many as necessary until you are sure the child has got the hang of it. For some children, it is important to do this for all questions. Even if the child appears to understand, there is no problem with carrying on with prompting

Introduction

- Show words again and keep them prominent
- Say 16 voices, American accents
- All say the same thing: “I’m going out of the room now, but I’ll be back later” – preferably in an American accent
- Say to listen carefully to each voice

Positioning

- Make sure child is close enough to screen (for speaker and to see Happy, Sad, Angry, Afraid)

Loudness

- Make sure the voices are loud enough (~83 is a good loudness). If child reacts and it’s too loud, turn it down a little; if child appears to be having any problem hearing easily, ask, and turn it up

Use of prompts

- If child says he or she hasn’t heard, or doesn’t know, ask him or her to have a guess (and write a “Y” in the guessing box)
- Do *not* repeat the sentence unless there is a loud distraction so that the child could not hear
- Try and avoid any “don’t know”s (children will sometimes refuse to give you an answer but avoid where possible)

Filling in boxes

- If the child says he or she is guessing or it is clear that the answer is a guess, always write it down in the correct box. Query it (put Q) if you think the child might be guessing (the response might be correct or incorrect)
- If the child takes a long time to answer, put an “S” in the box for *slow*, regardless of whether the child’s response is correct or not. If the child answers very quickly and it appears to be somewhat impulsive, put an “Q” for quick –regardless of whether the child’s response is correct or not. This might be during the sentence itself

- Mention when you are half-way through

Introduction

- Talk about the sort of things that you like doing
- No right or wrong answers, just interested in what you like doing
- Go round to child's side and crouch down
- Avoid saying that the envelopes have *statements* on them. It's not a very child-friendly word
- Give general explanation: two post-boxes, blue and red, and you've got envelopes with writing on, which you'd like the child to post into the post-boxes
- Tell you how to decide where to post the envelopes
    - First step to decide which post-box to post into, second step to decide which slot to post into
    - I'll read out what's on each envelope, in the blue and red, and I want you to decide whether you're more like the children in the blue writing or the red writing.
    - Board games example: "Some children enjoy playing board games a lot" in the blue writing but "other children don't enjoy board games at all" in the red writing – who are you more like? The children who enjoy board games a lot (in the blue writing) or the children who don't enjoy board games at all (in the red writing)
    - So you're more like the children who…. so you'd put it in the … box. But before you do, you need to decide where to post it (can you see this says "sort of true for me" and "really true for me")
    - So I want to know if that's only *sort of true for you*, [point to writing on box] you sort of enjoy playing board games a lot or it's *really true for you*, [point to writing on box] you really enjoy playing board games a lot
    - Sum up: so you're putting it in the … box because you're more like…. And you're putting it in the … slot because it's …true for you

- Say that you'll go round to the other side so you cannot see how child is posting
- Say that first we'll talk about toys..

Main

- Read over the top with blue writing against the blue box and red against the red
- Some children play with jewellery [pat the blue box up near the writing; can also say "in the blue writing"] but other children don't play with jewellery [pat the red box; can also say "in the red writing"]
- "So if you feel like you're more like the children who play with jewellery, you'd put it in the blue box and if you feel like you're more like the children who don't play with jewellery, put it in the red box"
- "And then is that *sort of true for you*, or *really true for you* [pointing to both sort of true and really true sentences on post-boxes]?"
- Do this for as many as necessary until you are sure the child has got the hang of it. For some children, it is important to do this for all questions. Even if the child appears to understand, there is no problem with carrying on with prompting.

Appendix 3: Personnel and Funding

Focus visits manager: Sue Sadler
Deputy manager: Amanda Carmichael (from March 2001)
Clinical director: Dr John Henderson
Data Administration: Sue Bonnell, Maureen Brennan, Kate Northstone

Receptionist staff:

Patrick Bell, Joy Branscombe, Clare Bristow, Lisa Clarke, Nicki Craven, Tricia Hutchinson, Jan Jenkin, Cheryl Johnson, Alison Kinnersley, Jill Klee, Elizabeth Miller, Anna Prescott, Charlotte Purches, Linda Sanders, Glenn Saunders, Lily Schlaen, Kate Sherlock, Lucy Southway, Kaija Turvey, Janet May Williams, Judy Willis.

Trained by Kaija Turvey
Advised by Jennie Cross (for parent interviews)

Activities and Posting sessions:

Abbie Jordan, Alison McGrath, Amy Roe, Ben Weaver, Claire Cheswick, Clare Bell, Cleo Estrera, Daniel Hucker, Faye Armstrong, Fiona LeRoy, Giles Greene, Hannah Morris, Jaidan D'Arcy, James McGurk, Jane Vian, Jayne Chavez, Jeremy Horwood, Julia Holder, Katie Crews, Larisa Duffy, Lucy Ellis, Lucy Parker, Nicola Byatt, Nicola Peacock, Paula Morris,
Rebecca Mosley, Robert Chillcott, Sarah Ross, Sarah Farthing, Sue Watkins, Zoe Lowrie.

Trained by Clare Bell

Speech & Language:

Beth Perry, Cleo Estrera, Carolyn Small, Faye Armstrong, Helen Gee, Jane Vian, Jayne Chavez, Jaidan D'arcy, Kate Hindle, Lucienne Green,
Mary Pears, Melissa Peters, Sarah Farthing, Victoria Fletcher-Wood.

Trained by Sue Roulstone; Ongoing training by Mary Pears
Advised by Sue Roulstone

Lung function:
Amanda Wyatt (TL), Calum Mattocks, Desiree Tomlinson, Joanna Merrylees, Andrew Fairweather, Carolyn Stubbs, Kerri Seymour, Heidi Watts.

ALW, CGM, JMM trained by Dr John Henderson; DRT, AJF, CSS, KAS, HJW trained by ALW, CGM & JMM
Advised by Dr John Henderson and Dr Adrian Kendrick

Admin Team:

Alan Amey (TL Dec ’00-June ’01), Hazel Blake, Amanda Carmichael, Judith Grinsted, Hilary Grove, Lucy Hunt (TL to Sept ‘00), Tricia Hutchinson, Helen Loveridge (acting TL Oct-Dec ’00, TL from July ’01), Pauline Morgan, Colin Sadler, Janet Williams.

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

Funding secured

This data is being collated

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