

The PF-STAR British English Children’s Speech Corpus

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Version 1.0, 14th December 2006



Abstract

The PF-STAR British English children’s speech corpus was collected as part of EU Framework 5 project IST-2001-37599 ‘PF-STAR: Preparing for Future Multisensorial Interaction Research’. The corpus was collected at three location, a university laboratory and two primary schools, by researchers at the Department of Electronic, Electrical and Computer Engineering at the University of Birmingham, UK. This corpus contains speech from 158 children aged 4 to 14 years. The majority of the children (excluding some of the younger children) recorded 20 ‘SCRIBE’ sentences, a list of 40 isolated words, a list of 10 ‘phonetically rich’ sentences, 20 ‘generic phrases’, an ‘accent diagnostic’ passage (the ‘sailor passage’) and a list of 20 digit triples. The recordings are divided into a training set (86 speakers, 703 recorded speech files, 7 hrs 29 mins 49.030 secs including non-speech), evaluation set (12 speakers, 97 recorded speech files, 53 mins 57.579 secs including non-speech) and test set (60 speakers, 510 recorded speech files, 5 hrs 49 mins 47.088 secs including non-speech).

1 Introduction

The PF-STAR British English children’s speech corpus was collected as part of EU Framework 5 project IST-2001-37599 ‘PF-STAR: Preparing for Future Multisensorial Interaction Research’. It is part of a multi-lingual speech corpus which includes recordings of Italian children’s speech recorded at ITC-irst, Trento, Italy, German children’s speech recorded at the University of Erlangen, Germany, and Swedish children’s speech recorded at KTH Stockholm. In addition, ITC-irst, the University of Erlangen and KTH recorded non-native English children’s speech (Batliner et al. (2005)).

The University of Birmingham corpus was collected at three location, a university laboratory and two primary schools, by researchers at the Department of Electronic, Electrical and Computer Engineering. This corpus contains speech

from 158 children aged 4 to 14 years. The majority of the children (excluding some of the younger children) recorded 20 ‘SCRIBE’ sentences, a list of 40 isolated words, a list of 10 ‘phonetically rich’ sentences, 20 ‘generic phrases’, an ‘accent diagnostic’ passage (the ‘sailor passage’) and a list of 20 digit triples. The recordings are divided into a training set (86 speakers, 703 recorded speech files, 7 hrs 29 mins 49.030 secs including non-speech), evaluation set (12 speakers, 97 recorded speech files, 53 mins 57.579 secs including non-speech) and test set (60 speakers, 510 recorded speech files, 5 hrs 49 mins 47.088 secs including non-speech).

The corpus has previously been used in experiments on automatic recognition of children’s speech (D’Arcy et al. (2004)), and the effects of age and bandwidth on human recognition of children’s speech (D’Arcy and Russell (2005)).

2 The Corpus

2.1 Overview

Speech data contained in this corpus is stored in WAV format. Accompanying each WAV file are two annotation files, in TRS and LAB format accordingly. The TRS file is compatible with the Transcriber Speech Annotation software, while the LAB file is a HTK compatible label file (where timing information is stated in units of 100ns).

2.2 Recording locations

The recordings were made at three locations:

- NL: A primary school¹ in Worcestershire, central England. The recordings were made in an open-plan library area in the centre of the school. The NL recordings have the highest levels of background noise, due mainly to movement of children between classes. A total of 75 (40 male, 35 female) were recorded at NL
- SP: A primary school in Birmingham. The recordings were made in a closed room, and for this reason the background noise levels are lower than for the NL recordings. A total of 54 children (24 male, 34 female) were recorded at SP
- BH: An industrial IAC soundproofed booth in the Department of Electronic, Electrical and Computer Engineering at the University of Birmingham. These recordings have the lowest background noise levels. The children in the BH set also took part in the ‘AIBO’ spontaneous and emotional British English children’s speech recordings (Batliner et al. (2004)). A total of 30 (18 male, 12 female) were recorded at the University of Birmingham.

¹In England children begin Primary school aged 4 or 5 and leave aged 10 or 11 years old

Written consent to make the recordings was obtained from the children’s parents, and in the cases of NL and SP the school Head Teacher, before the recordings were made. The member of university staff who made the recordings was subjected to a police CRB check before the recordings started.

2.3 Recording equipment

The recordings made at the two schools used the same type of Emkay head mounted microphone and ‘Telex’ desk microphone that was used in the ‘ABI’ (Accents of the British Isles) corpus of adult speech. However, in the two schools (NL and SP) the background noise levels were such that the recordings from the desk mounted microphone are likely to be of limited utility. In the sessions in the audiometric booth at the university (BH), parallel recordings were made using both the Emkay and Shure head mounted microphones, attached to the same head mount. These recordings will enable any acoustic differences between the Emkay microphone and the Shure microphone used in the ‘AIBO’ spontaneous children’s speech corpus Batliner et al. (2004), to be measured.

The recordings are 16 bit stereo, sampled at 22,050 samples per second. Analogue to digital conversion used an Edirol UA-5 external sound card with USB interface. Using this device means that the recordings were not affected by properties of a particular sound card. The children were prompted to speak using text presented by proprietary software running on the data-collection laptop.

2.4 Distribution of ages

The children were all between 4 and 14 years of age. The distribution of the children’s ages is shown in figure 1.

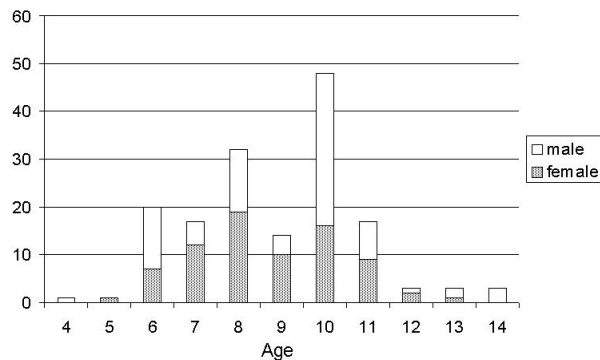


Figure 1: Distribution of ages of children recorded in the PF-STAR children’s speech corpus

2.5 File naming conventions

Data for each child is stored in individual directories. The naming convention for directories is as follows:

[Identifier][Gender][Age][Location]

For example, 042f08nl indicates Child 042, female, age 8 years, recording location NL school.

2.6 Material recorded

It was intended that each child should read the following material. However, in the case of some of the very young children this was not possible and only a subset was recorded:

- Up to 20 ‘SCRIBE’ sentences
- 40 ITC-irst isolated words
- 10 ITC-irst ‘phonetically rich’ sentences
- 20 ITC-irst ‘generic’ phrases
- The ‘Sailor’ passage
- 20 digit triples

The different types of material are described below.

2.6.1 The SCRIBE sentences

The SCRIBE sentences are an anglicised version of the phonetically balanced US TIMIT 460 sentence set (Garofolo et al. (1993)). They were derived from the US sentences by replacing ‘Americanisms’ with appropriate words or phrases from British English. The SCRIBE sentences have been used previously in the creation of corpora of British English spoken by adults, including the SCRIBE corpus (SCRIBE (1989)) and the ABI corpus (D’Arcy et al. (2004)).

For PF-STAR, each SCRIBE sentence was graded according to its difficulty of pronunciation. Using these gradings, sets of SCRIBE sentences were defined which were judged to be suitable for reading by children aged between 5 and 15. Within each age group the SCRIBE sentences were partitioned into lists of 10 sentences. The SCRIBE sentences are listed in Appendix A.

The set or sets of sentences which a particular child read depended on the child’s age and his or her identifier number (modulo 10). For example, speaker 042f08nl spoke a single list of ten sentences from the lists for children aged 7, 8 or 9 (appendix A.2), and since her identifier is 042 (and 042 modulo 10 is 2) she spoke list Sentences2or7 (appendix A.2.2).

Older children spoke two lists of SCRIBE sentences, making twenty sentences in all. For example, if the child in the previous section had been 10 years old, then she would have read Sentences2or7a and Sentences2or7b from appendix A.3.

There are some exceptions to this basic rule. In the two schools, children were generally recorded one class at a time and a common set of lists would be used for each class, based on the expected age of the children. It is sometimes the case that, for example, a 6 year old in a class of mainly 7 year olds will read a sentence list from the “7, 8 or 9 year olds” set. However, which sentence list was read is clear from the annotation files.

The SCRIBE sentences were chosen for reading by native English children. They were included because they are a standard set, and also to enable direct comparison with the adult British English speakers in the ‘ABI’ (Accents of the British Isles) corpus D’Arcy et al. (2004), each of who spoke SCRIBE sentences.

2.6.2 The ITC-irst isolated words

This is a list of 220 words selected by ITC-irst in consultation with Italian teachers of English. They were judged to be appropriate for reading by 10 year old Italian children learning English. The words are divided into five lists, each containing 44 words. Each list of words was designed in order to ensure coverage of the basic 44 phones of British English. These words were recorded by English, Italian and Swedish children in the PF-STAR project.

The complete list of ITC-irst isolated words is included in Appendix B.

2.7 ITC-irst ‘phonetically rich’ sentences

This is a set of 50 phonetically rich sentences which were again designed by ITC-irst in consultation with Italian teachers of English. The sentences were divided into five lists, each containing 10 sentences, and were designed to ensure coverage of the basic 44 phones of British English. They were judged to be appropriate for reading by 10 year old Italian children learning English.

The complete list of ITC-irst phonetically rich sentences is shown in Appendix C

2.7.1 ITC-irst ‘generic’ sentences

This is a list of 400 sentences which were designed by ITC-irst. As with the isolated words and phonetically rich sentences, the sentences were judged to be appropriate for reading by 10 year old Italian children learning English. The generic sentences were divided into 40 lists, each containing 10 sentences. These sentences were recorded by English, Italian and Swedish children, and hence will contribute to the non-native English baseline. The ITC-irst generic sentences are shown in Appendix D.

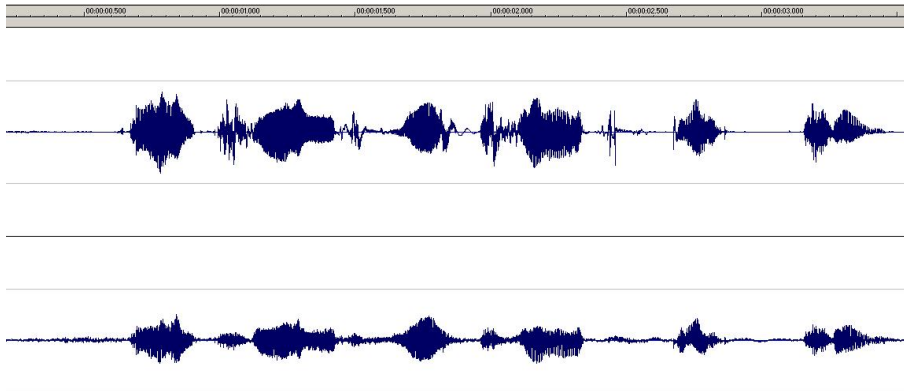


Figure 2: SoundForge (version 6) display for the start of SCRIBE sentence list *Sentences3or8a* from *008m11nl*. The top (left) channel is for the head-mounted Emaky microphone and the bottom (right) channel is for the Telex desk mic. The waveform corresponds to the partial sentence “*I tried for a tub tube...*”

2.8 The ‘Sailor’ passage

This is a standard passage which is used for accent classification in English. It was recorded to enable comparisons to be made with readings of the same passage by the adult speakers in the ABI corpus, and also to detect any accent-specific effects in the children. The passage was readable by older English children, but too difficult for younger children or for non-native speakers.

The accent diagnostic passage is shown in Appendix E.

2.8.1 Digit triples

Each child read one of 10 lists of 13 digit triples. The lists are shown in Appendix F.

3 An example

The following figures correspond to the prompt text *Sentences3or8a* spoken by subject *008m11nl* (an 11 year old boy recorded at school NL). The sentence prompt set is in the group for 10, 11 and 12 year olds, and is listed in appendix A.3.5. Figure 2 shows the start of this file as represented by the Soundforge² (version 6) sound editing tool. The top (left) and bottom (right) channels correspond to the head-mounted Emkay and desk-top Telex microphones, respectively. This is one of the recordings made in school ‘NL’, and the background noise in the right channel is clearly visible (see section 2.2). Figure 3 shows the

²www.sonymediasoftware.com/products/soundforgefamily.asp

Table 1: Part of the HTK-style label file for *Sentences3or8a* from *008m11nl*.

0	6000000	sp
6000000	25750000	i'd tried the tub
25750000	30230000	but
30230000	35420000	tube
35420000	39320000	but
39320000	44410000	[i]
44410000	50280000	sp
50280000	66550000	i'd tried the tube
66550000	89490000	but i hadn't enough change
89490000	93930000	sp
93930000	124890000	would a tomboy often play outdoors
124890000	134470000	sil
134470000	142770000	fill
142770000	149930000	that
149930000	152100000	sp
152100000	156980000	can
156980000	161760000	sp
161760000	164550000	a
164550000	168200000	[s-]
168200000	183940000	and spray the screen
183940000	199690000	with fresh spring water
199690000	219680000	sil
219680000	227260000	fill
227260000	235820000	that can
235820000	237970000	sp
237970000	249320000	and spray
249320000	272010000	the screen with fresh spring water
272010000	277360000	sp
277360000	283960000	special
283960000	295520000	task forces
295520000	298030000	sp
298030000	310190000	[rescue hosta-]
310190000	328970000	hostages from kidnappers
328970000	341390000	sil
341390000	360960000	special task forces
360960000	364020000	sp
364020000	387020000	rescue hostages from kidnappers
387020000	396420000	sp
396420000	408340000	get a tabby cat
408340000	427250000	to keep the rodents away
427250000	433310000	sp
433310000	458470000	bright sunshine shimmers in the ocean
458470000	485780000	sil

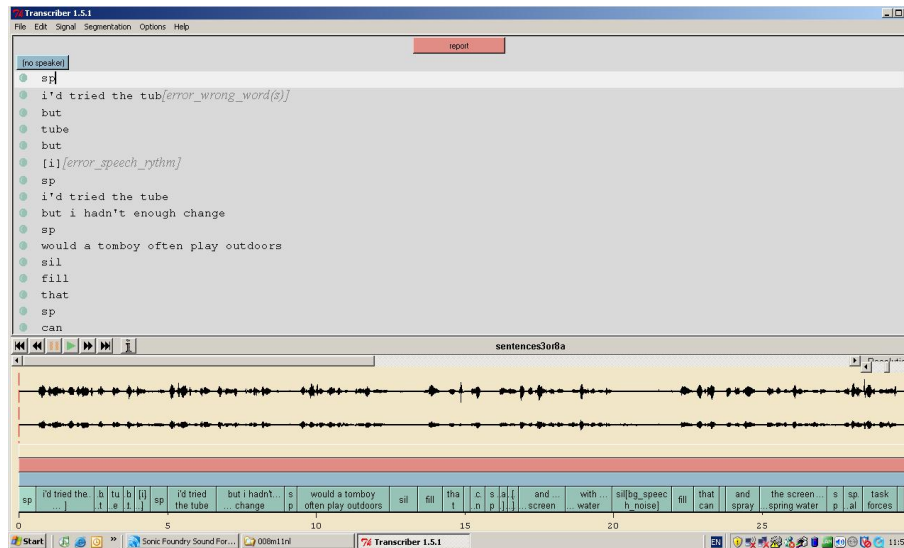


Figure 3: ‘Transcriber’ display for the SCRIBE sentence list *Sentences3or8a* from *008m11nl*. The top (left) channel is for the head-mounted Emaky microphone and the bottom (right) channel is for the Telex desk mic.

same stereo signal plus the label file as displayed by the Transcriber³ software. Finally, table 1 shows the corresponding HTK-style label file.

References

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³<http://trans.sourceforge.net/en/presentation.php>

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A The SCRIBE sentences

A.1 SCRIBE sentences for 5 and 6 year old children

A.1.1 Sentences1or6

This was easy for us
Pam gives driving lessons on Thursdays.
They all like long hot showers.
He ate four extra eggs for breakfast.
We welcome many new students each year.
Few people live to be a hundred.
Orange juice tastes funny after toothpaste.
Please shorten this skirt for Joyce.
Carl lives in a lively home.
A lone star shone in the early evening sky.

A.1.2 Sentences2or7

A roll of wire lay near the wall.
The full moon shone brightly that night.
Swing your arm as high as you can.
Is she going with you?
The paper boy bought two apples and three ices.
Guess the question from the answer.
The angry boy answered but didn't look up.
Will Robin wear a yellow lily?
Allow each child to have an ice lolly.
He picked up nine pairs of socks for each brother.

A.1.3 Sentences3or8

Often you'll get back more than you put in.
Beg that guard for one gallon of petrol.
Don't do Charlie's dirty dishes.
Why yell or worry over silly items?
Please dig my potatoes up before the frost.
My ideal morning begins with hot coffee.
Michael coloured the bedroom wall with crayons.
Fill that can and spray the screen with fresh spring water.
It's healthier to cook without sugar.

A.1.4 Sentences4or9

Tina Turner is a pop singer.
Spring Street is straight ahead.
Birthday parties have cup cakes and ice cream.

His shoulder felt as if it were broken.
I took her word for it.
Most young rabbits rise early in the morning.
Trish saw hours and hours of movies this Saturday.
Why else would Danny allow others to go?
They often go out in the evening.
The small boy put the worm on the hook.

A.1.5 Sentences5or10

The full moon shone brightly that night.
A roll of wire lay near the wall.
They all like long hot showers.
His shoulder felt as if it were broken.
We are open every Monday evening.
He picked up nine pairs of socks for each brother.
Why else would Danny allow others to go?
He stole a pound coin from a beggar.
Cut a small corner off each edge.

A.2 SCRIBE sentences for 7, 8 and 9 year old children

A.2.1 Sentences1or6

Help celebrate your brother's success.
Did Sean catch that big goose without help?
What is this large thing by the ironing board?
The taxi-cab broke down and caused a traffic jam.
Straw hats are out of fashion this year.
They all enjoy ice cream sundaes.
Laugh, dance and sing if fortune smiles upon you.
Just drop notes in any suggestion box.
A huge power cut rarely occurs.
My ideal morning begins with hot coffee.

A.2.2 Sentences2or7

Bob burned paper and leaves in a big bonfire.
That pick-pocket was caught red-handed.
When all else fails, use force.
Help Greg to pick a pepper and some tomatoes.
The saw is broken, so chop the wood instead.
Keep the thermometer under your tongue!
The singer's finger had a splinter.
Drop five forms in the box before you go out.
A leather handbag would be a suitable gift.
I honour my mum.

A.2.3 Sentences3or8

She is thinner than I am.
Did you eat lunch yesterday?
The tooth fairy forgot to come when Roger's tooth fell out.
The big dog loved to chew on the old rag doll.
They all like long hot showers.
Is this seesaw safe?
Cut a small corner off each edge.
He stole a pound coin from a beggar.
Why charge money for such rubbish?
I know I didn't meet her early enough.

A.2.4 Sentences4or9

A good attitude is unbeatable.
Ducks have webbed feet and colourful feathers.
A toothpaste tube should be squeezed from the bottom.
John cleans shellfish for a living.
Why buy oil when you always use mine?
Should giraffes be kept in small zoos?
Thick glue oozed out of the tube.
I'd tried the tube, but I hadn't enough change.
Of course you can have another tunafish sandwich.
When peeling an orange, it is hard not to spray juice.

A.2.5 Sentences5or10

The football team coach has a watch as thin as a wafer.
By eating yoghurt, you may live longer.
Jane may earn more money by working hard.
Coconut cream cake makes a nice dessert.
We plan to build a new bottling plant.
Are your grades higher or lower than Nancy's?
Her wardrobe consists of only skirts and blouses.
Should giraffes be kept in small zoos?
A young mouse scampered across the field and disappeared.
He will allow a rare lie.

A.3 SCRIBE sentences for 10, 11 and 12 year old children

A.3.1 Sentences1or6a

He will allow a rare lie.
Michael coloured the bedroom wall with crayons.
It's healthier to cook without sugar.
A huge power cut rarely occurs.

Just drop notes in any suggestion box.
Chocolate and roses never fail as a romantic gift.
Good service should be rewarded by big tips.
A large household needs lots of appliances.
The best way to learn is to solve extra problems.
Combine all the ingredients in a large bowl.

A.3.2 Sentences 1 or 6b

Of course you can have another tunafish sandwich.
They all enjoy ice cream sundaes.
They remained lifelong friends and companions.
A doctor was in the ambulance with the patient.
Do you have the yellow ointment ready?
If Carol comes tomorrow, arrange for her to have a meeting at two.
A chosen few will become generals.
She always jokes about too much garlic in his food.
First add milk to the shredded spinach and grated cheese.
Only the best players enjoy popularity.

A.3.3 Sentences 2 or 7a

Drop five forms in the box before you go out.
A leather handbag would be a suitable gift.
The singer's finger had a splinter.
Gary attacked the project with extra determination.
Even I occasionally get the Monday blues!
Serve the coleslaw after I add the oil.
Draw each graph on a new axis.
December and January are nice months to spend in Miami.
Only lawyers love millionaires.
Only the best players enjoy popularity.

A.3.4 Sentences 2 or 7b

My ideal morning begins with hot coffee.
They assume no burglar will ever enter here.
How much allowance do you get?
Would you allow acts of violence?
Are holiday vouchers available to us?
Please sing just the 'Cotton Club' theme.
Every cab needs repainting often.
Gwen grows green beans in her vegetable garden.
Youngsters love candy floss as a treat.
Basketball can be an entertaining sport.

A.3.5 Sentences3or8a

I'd tried the tube, but I hadn't enough change.
Would a tomboy often play outdoors?
Fill that can and spray the screen with fresh spring water.
Special task forces rescue hostages from kidnappers.
Get a tabby cat to keep the rodents away.
Bright sunshine shimmers on the ocean.
Too much curiosity can get you into trouble.
They enjoy it when I audition.
Put the butcher's block in the garage.
How do oysters make pearls?

A.3.6 Sentences3or8b

Laugh, dance and sing if fortune smiles upon you.
Jeff's toy go-cart never worked!
When peeling an orange, it is hard not to spray juice.
The news agency hired a great journalist.
Kangaroo point overlooked the ocean.
His failure to open the store by eight cost him his job.
The hallway opens into a huge chamber.
John's brother repainted the garage door.
Which theatre shows 'Mother Goose'?
Women may never become completely equal to men.

A.3.7 Sentences4or9a

Should giraffes be kept in small zoos?
Keep the thermometer under your tongue!
Ralph prepared red salmon with fresh lemon sauce for dinner.
Gregory and Tom chose to watch cartoons in the afternoon.
The fog prevented them from arriving on time.
In the long run, it pays to buy quality clothing.
His sudden departure shocked the cast.
Addition and subtraction are learned skills.
Eat your raisins outside on the porch steps.
Flying standby can be practical if you want to save money.

A.3.8 Sentences4of9b

Thick glue oozed out of the tube.
The hedgehog clearly saw his shadow, but stayed out only a moment.
Her wardrobe consists of only skirts and blouses.
Last year's glass shortage caused steep price increases.
Call an ambulance for medical assistance.
How permanent are their records?

'Highway' and 'freeway' mean the same thing in American English.
How oily do you like your salad dressing?
Be careful not to plough over the flower beds.
Please take this dirty table cloth to the cleaners for me.

A.3.9 Sentences5or10a

A young mouse scampered across the field and disappeared.
The gorgeous butterfly ate a lot of nectar.
Withdraw only as much money as you need.
Don't look for unwanted valuables in the bank vault.
Growing well kept gardens is very time consuming.
Cheap stockings lather the first time they're worn.
Tim takes shiela to see american movies twice a week.
Destroy every file related to my audits.
Are you looking for employment in april?
'Gremlins' is yet another exciting movie by stephen spielberg.

A.3.10 Sentences5or10b

I honour my mum.
I'd rather not buy these shoes than be over charged.
Thomas thinks a larger clamp solves the problem.
Which church do the smiths worship in?
Withdraw only as much money as you need.
How good in your endurance?
Do you hear the sleigh bells ringing?
Kindergarden children decorate their classrooms for all holidays.
Challenge each generals intelligence.
Call an ambulance for medical assistance.

A.4 SCRIBE sentences for 13 and 14 year old children

A.4.1 Sentences1or6a

The Thinker is a famous sculpture.
Bob's gold bracelet was a graduation present.
She slipped and sprained her ankle on the steep slope.
Rob sat by the pond and sketched the stray geese.
May I order an apricot mousse after I have eaten dinner?
The high security prison was surrounded by barbed wire.
The cranberry bog gets very pretty in autumn.
Steve collects rare and novel coins.
It's hard to tell an original from a forgery.
The avalanche triggered a minor earthquake.
Puree some fruit before preparing the skewered meat.

A.4.2 Sentences1or6b

The bonnet of the jeep was steaming in the hot sun.
Children can consume many fruit tarts in one sitting.
Who authorised the unlimited expense account?
Reading in poor light gives you eyestrain.
Project development was proceeding too slowly.
Bob found more clams at the rock-pool's edge.
Trespassing is forbidden and subject to penalty.
Military personnel are expected to obey government orders.
Those answers will be straightforward if you think them through carefully first.
Irish youngsters eat fresh kippers for breakfast.

A.4.3 Sentences2or7a

Where were you while we were away?
Penguins live near the icy antarctic.
The bungalow was pleasantly situated near the shore.
She encouraged her children to make their own Hallowe'en costumes.
The fifth jar contains big, juicy peaches.
If people were more generous there would be no need for welfare.
A huge tapestry hung in her hallway.
Regular attendance is seldom required.
As a precaution, the outlaws bought gunpowder for their stronghold.
Rock-and-roll music has a great rhythm.

A.4.4 Sentences2or7b

The giant redwoods shimmered in the glistening sun.
Each stag surely finds a big fawn.
Elderly people are often excluded.
My instructions desperately need updating.
His scalp was blistered from today's hot sun.
The clumsy customer spilled some expensive perfume.
Steve wore a bright red cashmere sweater.
Rationalise all errors.
This brochure is particularly informative for a prospective buyer.
Cottage cheese with chives is delicious.

A.4.5 Sentences3or8a

Cliff's display was misplaced on the screen.
Young people participate in athletic activities.
Bob bandaged both wounds with the skill of a doctor.
Smash lightbulbs and their cash value will diminish to nothing.
The eastern coast is a place for pure pleasure and excitement.
Shaving foam is a popular item on Hallowe'en.

Draw every outer line first, then fill in the interior.
Critical equipment needs proper maintenance.
The drunkard is a social outcast.
Any contributions will be greatly appreciated.

A.4.6 Sentences3or8b

Those thieves stole thirty jewels.
The prowler wore a ski mask for a disguise.
The emperor had a mean temper.
I itemise all accounts in my agency.
The cow wandered from the farmland and became lost.
Non-profit making organisations often have frequent fundraising events.
Doctors prescribe drugs too freely.
The two artists exchanged autographs.
Count the number of teaspoons of soysauce that you add.
They own a big house in the remote countryside.

A.4.7 Sentences4or9a

The system may break down soon so save your files frequently.
Once you finish greasing your chain, be sure to wash thoroughly.
Remember to allow identical twins to enter freely.
Our experiment's positive outcome was unexpected.
Remove the splinter with a pair of tweezers.
Almost all colleges are now co-educational.
The annoying rabbits slipped into Phil's garden every night.
Move the hostage nearer to the large window.
A moth zig-zagged along the path through Oliver's garden.
The schoolgirl couldn't disguise her feelings about the emergency conditions.

A.4.8 Sentences4or9b

That diagram makes sense only after much study.
George seldom watches daytime television.
The proof that you are seeking is not available in books.
Ralph controlled the stopwatch from the back seat.
Cement is measured in cubic yards.
Even a simple vocabulary contains symbols.
Valley lodge yearly celebrates the first calf born.
The frightened child was gently subdued by his big brother.
Russ saw pine trees and redwoods on his walk through the National Forest.
These exclusive documents must be locked up at all times.

A.4.9 Sentences5or10a

Nothing is as offensive as innocence.
How would you evaluate this algebraic expression?
The morning dew on the spider's web glistened in the sun.
Traffic jams occur on many relief trunk roads.
A lawyer was appointed to execute her will.
Herbert's birthday frequently occurs on Thanksgiving.
The Boston Ballet overcame their funding shortage.
It's illegal to postdate a cheque.
The carpet cleaners shampooed our oriental rug.
Spherical gifts are difficult to wrap.

A.4.10 Sentences5or10b

Butterscotch fudge goes well with vanilla ice cream.
That noise problem grows more annoying each day.
Young children should avoid exposure to contagious diseases.
The water contained too much chlorine and stung in his eyes.
We experience distress and frustration working for our degrees.
She wore warm, fleecy woollen overalls.
Iris thinks this zoo has eleven Spanish zebras.
Shipbuilding is a most fascinating process.
Clasp the screw in your left hand.
Approach your interview with steady composure.

B ITC-irst Isolated Word Lists

B.1 List 1

kid, tree, dog, water, cup, car, book, get, man, girl
sister, day, time, noise, town, boat, new, there, February, champion
year, pet, telephone, king, baby, body, finger, summer, animal, drink
jump, beach, table, wrong, drive, fruit, horse, window, station, brother
bath, nose, television, sport.

B.2 List 2

sit, green, frog, small, rubber, star, look, bed, bad, bird
father, make, child, oil, now, show, pool, hair, casual, here
yellow, pen, little, school, bag, under, big, arm, funny, song
juice, match, chocolate, road, favourite, traffic, house, sweets, sugar, with
three, scissors, pleasure, sun.

B.3 List 3

village, sea, color, door, come, garden, good, many, cat, person
mother, great, sky, coin, down, close, computer, where, sure, near
pupil, play, bottle, cook, Bob, dress, figure, music, front, thing
jungle, kitchen, like, train, vegetable, elephant, happy, wear, nation, that
birthday, easy, occasion, classroom

C ITC phonetically rich sentences

C.1 List 1

A birthday cake
Go over the bridge
He comes from England
I can hear voices
I like casual wear
The princess is beautiful
Touch your foot
Black coffee with sugar
The guards are jumping
Here is our lunch

C.2 List 2

Brush your teeth
Foxes eat small animals
I like watching television
Parrots are very clever
Tigers are good hunters
You're wearing brown boots
My favourite champion
John plays with toys
A small yellow bird
The bathroom is upstairs

C.3 List 3

February is in winter
I'm a young cowboy
She's got blond hair
The railway station
There are thirteen girls
The window is transparent
Near the open door
I like cooking vegetables
We've got zero points
There's too much confusion

C.4 List 4

Few occasions for reading
Goodbye little English boys

I'm touching my ears
I've got one brother
Three old books
You're in the playground
A glass of water
White bears can swim
Turn off the television
My horse is intelligent

C.5 List 5

Don't forget your toothbrush
He's drinking orange juice
There are twenty children
They live near towns
With a pointed nose
I'm not sure
I speak two languages
A person is painting
Good food for breakfast
A very good vision

D ITC generic sentences

D.1 List 1

Draw a blue pencil sharpener
I brush my hair
It's got big ears
My bear is purple
She's running
There are six dogs
Two people
Next to the toy shop
Sit on your chair
It lives in Europe

D.2 List 2

A beautiful vision
Draw an orange pen
I can count the boys
It's got four yellow ears
My birthday is in February
She's swimming
There are ten green bottles
Watch your step
here's a supermarket
It's in the fridge

D.3 List 3

Confusion of sounds
Draw a red book
I can do anything
It's got long pink hair
My birthday is in July
Show me a funny face
There are ten horses
We can't get out
The book on the table
I've got a color television

D.4 List 4

Don't open the windows
Draw a yellow pencil case

His voice is noisy
It's got one orange mouth
My birthday is on Thursday
Small toys
There are twelve pencils
We fall on the floor
The hat on the chair
February is a beautiful month

D.5 List 5

A grey mouse
England is in Europe
I don't like onions
It's got three green teeth
My father's shoes are big
Stand on your chair
A pig and two horses
We go to the park
Your coat is here
A good occasion for Sam

D.6 List 6

A large number of people
Everyone wakes up
I jump out of bed
It's got two purple noses
My favourite animal is the owl
Take off your coat
There is a mouse
We're eating ice-creams
He's a champion
You're in the bathroom

D.7 List 7

A long bridge
September is in autumn
I like carrots and potatoes
It's hot here
My favourite color is grey
Take off your jacket

There is one clown
I'm ready to go home
The tiger is hungry
You're in the jungle

D.8 List 8

A short tour in summer
It is a good occasion
I like cereal
It's near my house
My favourite day is Sunday
Tell me about your day
The room is very small
We've got a new teacher
Food for lunch
He's got three horses

D.9 List 9

A new television
A small kitchen
I like good occasions
It's high and wide
Bob is my favourite friend
Ten cowboys
The school starts in September
We want a black television
It's my lunch time
A mouse lives in the garden

D.10 List 10

A noisy person
Find the word
I like jelly and tomatoes
It's ten past three
My favourite food is cake
The alien is green
The sheep is in the farm
Write a postcard
Eight cats on the roof

Pigs can jump

D.11 List 11

A noisy street
It's time to say goodbye
I like red flowers
It's three o'clock
It's my favourite position
Animals are in the forest
The shop has computer games
Write the answers here
A big glass of milk
A quarter to six

D.12 List 12

A packet of sugar
Go to the dining room
I like toast with jam
I have a bath
My mum is happy with me
The baby's in the kitchen
The teacher is intelligent
You are a child
I drink water
At half past seven

D.13 List 13

A part of Europe
Go upstairs
A bird is on the tree
I've got a bird
My school is in Wood Road
The bag has red squares
The television is on the table
You are in the kitchen
I like cheese
I go to school

D.14 List 14

A pink house
He can jump
I love chocolate
I've got an idea
Near the window
The book is big
The toys are upstairs
You can count the girls
He's got brown eyes
I play with my friends

D.15 List 15

A place over there
They come from Africa
I love fishing
I've got a pink nose
Noisy people
The bottle is full
Close to the corner
Your birthday is in June
My leg is broken
An old tourist

D.16 List 16

A poor man
He has a sheep
I'm a bank manager
I've got a swimsuit
On Thursday
The chocolate is brown
They're escaping
You're a detective
That is his foot
A poor family

D.17 List 17

A small television
A very long street

I'm a footballer
I've got lots of presents
Our house has a door
The clowns are funny
They're here
A thing like that
Two long arms
She runs across the river

D.18 List 18

A tour in Italy
He is behind the curtain
I'm on the chair
I've got my flowers
Close to my house
The creature eats diamonds
Thirteen points
You're always late
My bear is here
He opens the box

D.19 List 19

A tourist
He is seven years old
I'm playing football
I've got purple hair
Outside the window
The doll has a blue hat
This is a museum
You're eating a pear
My favourite toy
Give me that bag

D.20 List 20

A very large park
He likes football
I'm ten years old
I've got straight hair
There's a mouse in the bedroom
The horse is beautiful
Aliens are on the moon

You're eating very fast
A beautiful place
The cat is on the chair

D.21 List 21

A waiting room
He lives in New York
Honey and biscuits
I've got white teeth
Pick up your book
The house is big
The onion is a vegetable
You're going to Italy
Look at the computer screen
The plant is on the table

D.22 List 22

A white jacket
Hello teacher
I'm touching my nose
I've lost my shoe
Point to the door
The jam is orange
This is our reading corner
You're happy
Turn right at the lion
It's got a long tail

D.23 List 23

A woman washing the car
Here are your glasses
I'm touching my toes
I want a book
Point to the floor
The jug is broken
The conclusion of the story
You live in a small village
They can help us
It's a great pleasure

D.24 List 24

A wrong thing
Here is our bike
It's really noisy
I want a chocolate bar
Poor people
The monkey eats green leaves
Three chairs
You're small
We can find some food
It's got four feet

D.25 List 25

Beautiful toys
Here is your present
I'm your teacher
I wash my face
Poor people like me
The monster has four ears
Three different things You're tall
He's got glasses
Seven dogs in the garden

D.26 List 26

[t] Boiling water
Here you are
In February this year
I work in a bakery
Put your finger on your arm
The monster has ten teeth
Six dusty books
Our car is blue
The top of the tower
Our teacher is young

D.27 List 27

Book number three
Her mouth is wide
In the bathroom

Join the dots
Put your hand on your head
The monster has two noses
Three yellow cars
You're wearing my hat
My ruler is purple
Two Elephants in the jungle

D.28 List 28

Boys and girls
She is drinking water
I said ball not bull
November or December
Put your pencil on your shoulder
The mouse is in the bag
Tuesday and Monday
You're young
My pencil is orange
The shop is closed

D.29 List 29

Brown shoes
He's going down
I sit on my chair
Just for sure
Sally is in the bathroom
The old agent
The radio is on the table
Your father is an adult
Your rubber is white
This mouse is grey

D.30 List 30

Brush your hair
He's going to Scotland
I think I'm late
Let's go inside the cave
Seven agents
The penguin eats fish
Today is Thursday

A pink bird
Your pencil sharpener is red
He's writing new words

D.31 List 31

Casual clothes
He's got a beard
I think we're lost
Lions are dangerous
March is before April
That person eats pancakes
Red tomatoes are very good
Your legs are long
The bottle is under the chair
Look at the lights

D.32 List 32

Chapter number two
He's got a mustache
It is for sure
Look at me
She has a red dress
The queen is beautiful
Tomato juice
Your right ear
I like chocolate cakes
He's riding a bicycle

D.33 List 33

Chinese food is delicious
He's in the living room
It is my pleasure
Look at my sister
She is French
The station is over there
Tortoises walk slowly
You've got two points
Put this on your head
She's eating a sandwich

D.34 List 34

Chocolate and biscuits
He's really cool
It's an orange bar
Look at the computer
She is very beautiful
Seven red apples
Touch the table
Five red balls
She's got a big mouth
I'm very hungry

D.35 List 35

Dad is cooking
He's sitting down
It's a pleasure
Look at the house
She kisses the frog
There are eleven apples
Touch your nose
Five new cars
He's got short legs
Open your mouth

D.36 List 36

Deer only eat plants
He's wearing a purple hat
A big circle
Look in my drawer
She lives in Paris
There are many toys
Turn around
One horse and two dogs
Play with a friend
Turn on the left

D.37 List 37

Different measures
She's wearing a red dress

It's a quarter to three
Many coins
She's a wonderful athlete
There are nine guitars
Turn left at the fountain
There are six girls
That frog is green
Buy these old things

D.38 List 38

Don't be late for dinner
His agent
It's a white square
Many things
She's got three animals
There are seven boys
Turn left at the tree
Page number six
A red fish
This car is noisy

D.39 List 39

Don't forget your hat
I am a blackbird
It's a yellow triangle
My bag is purple
She's got grey hair
There are seven cats
Turn right at the flowers
I've got eight friends
A ghost in the castle
She's singing a song

D.40 List 40

Don't touch the paintings
I am a white mouse
It's dangerous
My balloon is purple
She's reading
There are seven drums

Two coins
It's one o'clock
Thirteen new toys
Next to the museum

E The 'Sailor' passage

When a sailor in a small craft faces the might of the vast Atlantic Ocean today, he takes the same risks that generations took before him. But, in contrast to them, he can meet any emergency that comes his way with a confidence that stems from a profound trust in the advances of science.

Boats are stronger and more stable, protecting against undue exposure; tools and instruments are more accurate and more reliable, helping in all weather and conditions; food and drink are better researched and easier to cook than ever before.

F Digit triple lists

F.1 Digit List 1

524, 759, 101, 626, 202, 727, 366, 044, 843, 418, 990, 583.

F.2 Digit List 2

892, 964, 076, 228, 737, 005, 140, 819, 974, 357, 212, 551.

F.3 Digit List 3

027, 435, 908, 292, 806, 628, 533, 975, 542, 550, 310, 813.

F.4 Digit List 4

938, 370, 147, 660, 798, 181, 291, 864, 206, 043, 678, 554.

F.5 Digit List 5

786, 100, 071, 504, 302, 706, 051, 819, 657, 342, 859, 908.

F.6 Digit List 6

171, 098, 232, 670, 854, 386, 795, 429, 631, 349, 565, 113, 460.

F.7 Digit List 7

116, 453, 508, 033, 477, 680, 306, 915, 782, 248, 887, 030, 694.

F.8 Digit List 8

886, 035, 712, 786, 327, 480, 259, 354, 912, 132, 629, 318, 161.

F.9 Digit List 9

563, 677, 409, 279, 103, 424, 761, 045, 451, 075, 697, 894, 049.

F.10 Digit List 10

928, 637, 382, 415, 362, 120, 968, 899, 253, 455, 839, 435, 746.