

What do children read as they transition into and through adolescence? Insights from CYP-LEX, a new large-scale lexicon of books for children and young people

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The CYP-LEX project

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 - ▶ the prerequisites for becoming an expert reader [2–6]
- The speed with which children gain reading expertise depends on the *nature of language* they are exposed to
- Yet, presently, we know very little about *what* children and young people are reading

Corpus development

National reading surveys, publisher data, & book sales statistics from Amazon UK, BookTrust, Goodreads, LoveReading4Kids, etc.

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13+



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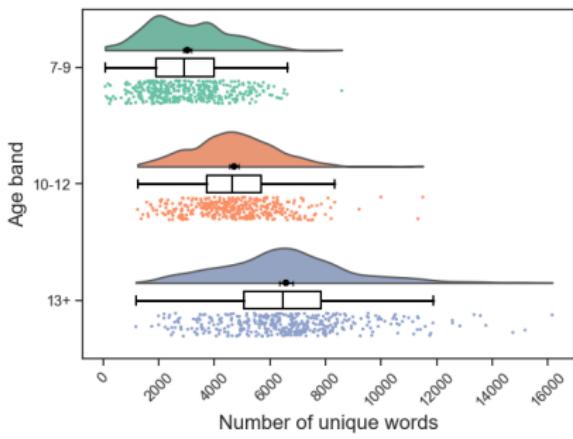
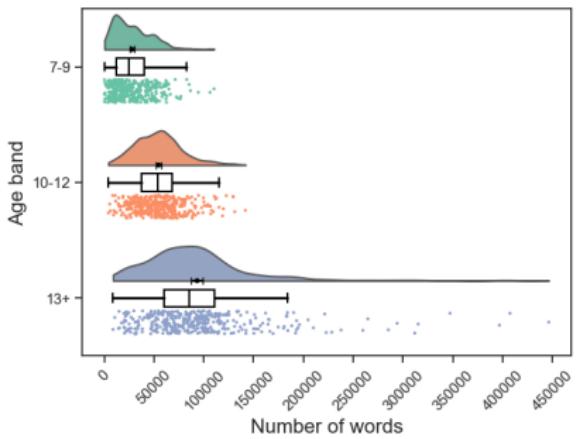
Cleaning, tokenisation, lemmatisation, PoS-tagging...

The CYP-LEX corpus

70,287,217 tokens & 105,694 types

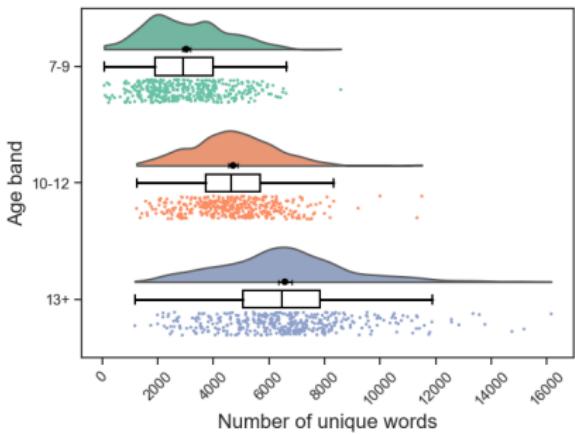
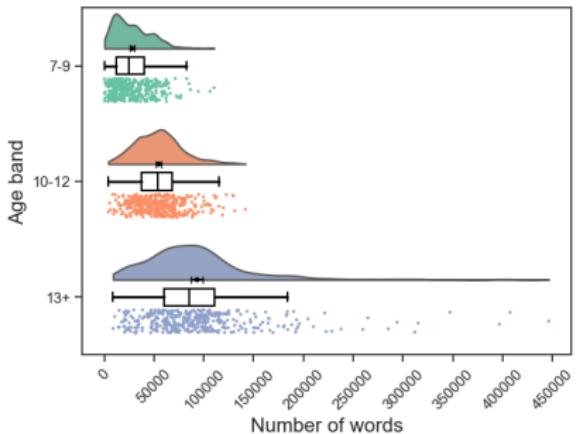
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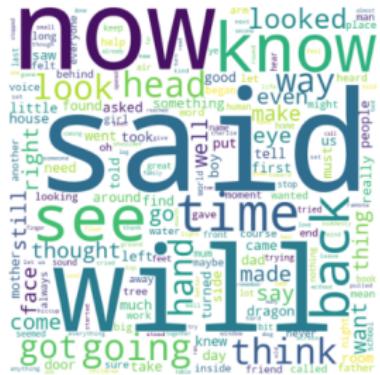
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	7-9	10-12	13+
N words	11,162,653	21,837,794	37,286,770
Average N (σ) words per book	27,907 (19,212)	54,594 (24,012)	93,217 (57,718)
N unique words	52,851	70,945	90,980
Average N (σ) unique words per book	3,028 (1,452)	4,713 (1,550)	6,447 (2,366)

Some words occur very widely...

7–9



10–12



13+



...and amount to half of the corpus

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“HA! HA! HA!”

The stern-faced crowd began to chuckle too.

“HO! HO! HO!”

“Well played, boy!”

“The child is a marvel with animals!”

“This pair should be on the stage!”

Feeling ten-foot tall now, Eric was wondering if there was something else he could do? Could these raspberries be blown into something resembling a tune? There was only one way to find out.

The boy didn't know many songs. One he often sang in school assembly and had, in fact, sung that very morning was “Rule, Britannia!”.

So, replaying the tune in his head, he began raspberrying out the notes of the chorus.

“PFFFT! PFT! PFT! PFT!”

Eric then fell silent in the hope that Gertrude would follow his lead.

The gorilla tilted her head and looked at the boy as if he was barmy.

Undeterred by this, Eric persisted. The boy repeated himself.

“PFFFT! PFT! PFT! PFT!”

Gertrude tilted her head to the other side. Then a mischievous thought flashed across her eyes, and she pursed her lips together and pushed her tongue forward.

“PFFFFFFF!!!!!!”

A long, low raspberry came out, once again covering the boy with gorilla sputtle.

“Good luck with that one, lad!” snorted a voice from behind.

“Next you'll be teaching it to play the piano!”

“Or dance for the Royal Ballet!”

“HA! HA! HA!”

Eric could sense people ebbing away, but he was sure it was worth one more try.

“PFFFT! PFT! PFT! PFT!”

This time the most WONDROUS thing happened. Gertrude joined in!

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"PEEET! PET! PET! PET!"

This time the most wondrous thing happened. Gertude joined in.

This time the most wondrous thing

“PFFFF! PFT! PFT! PFT!”

The to too.
" "
" !"
"The is a with !"
"This be on the !"
now, was if there was he could do?
be intc a ? There was only way
Could to out.
The n't know he in and had, in
that very was " !".
So, the in his head, he out the of the
" "
then in the that would his
The her head and looked at the as if he was
by this, The
" "
her head to the Then a her
, and she her and her
" "
A out, again the with
" with that !" a from
" you'll be it to the !"
"Or for the !"
" "
could , but he was it was more
" "
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This study was supported by grants from the National Science Foundation (NS-03034) and the National Institute of Child Health and Human Development (HD-04000).

This time the most Wondrous
REVIEW—P. 2

“PFFT! PFT! PFT! PFT!”

...but it's the other, less common, words that make up the stories!

...yet, many of the less common words may be unfamiliar

Percentage of CYP-LEX words that children DO NOT encounter on TV

	Cbeebies 0–6 years <i>N</i> = 27,236	CBBC 6–12 years <i>N</i> = 58,691	SUBTLEX-UK adults <i>N</i> = 160,024
7–9 age band <i>N</i> = 52,851	61%	30%	9%
10–12 age band <i>N</i> = 70,945	70%	42%	14%
13+ age band <i>N</i> = 90,980	76%	52%	21%

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Word use in books vs. on TV

Word frequency correlations for shared words

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25,627 new words in 10–12 compared to 7–9

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73% encountered \leq 3 times

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A circular arrangement of approximately 100 new words from the 10-12 band, with some words appearing in multiple colors. The words include: osteichthyes, christmastides, frazzles, morello, traceries, chairmanship, strength, unconsuming, undervests, deplete, scath, georgians, reclusiveness, darfur, polygons, rexminine, unrigated, unmysterious, calvaire, earworms, pinpricking, cheapened, dunnocks, stalklike, ibsen, liaise, islandless, schmuck, littlegjohn, ismael, ebbtide, warne, unoriginal, unreel, resection, handleys, chaises, Dustin, ramified, knobstick, enrolls, wroth, catheters, beguilingly, kleider, regicide, libeled, tabla, detent, fairmont, ingres, lightship, biomass, smokable, mortem, kirkyard, avocations, englishness, benefaction, dirts, torbay, krug, quia, inrushing, laughers, garble, zebrawood, emboldening, detouring, toweling, turnstone, mesopotamians, donas, runch, coexisting, merde, mistrustfulness, sapwood, transcaucasian, dereliction, disgorgor, hanratty, salvagers, tweeddale.

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1% encountered \geq 100 times

A dense, colorful cloud of words representing newly coined vocabulary. The words are arranged in a roughly triangular shape, with more words at the bottom left and fewer at the top right. The colors of the words vary, including shades of green, blue, red, yellow, and purple. Some words are clearly legible, while others are more faded or overlapping.

Some of the words visible in the cloud include:

- osteichthyes
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- morello
- traceries
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- chairmanship
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- georgians
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- unmysterious
- calvaire
- scath
- polygons
- rexamine
- pinpricking
- cheapened
- dunnocks
- stalklike
- merth
- preternaturally
- littlejohn
- langleys
- earworms
- ibsen
- liaise
- islandless
- schnuck
- resection
- ismael
- crotched
- ramified
- unreel
- summersets
- enrolls
- wroth
- cateters
- chaises
- ebbtide
- warne
- unoriginal
- tabla
- detent
- fairmont
- ingres
- beguilingly
- dustin
- libeled
- knobstick
- mortem
- kirkyard
- meiler
- regicide
- rete
- smokable
- torbay
- krug
- lightship
- avocations
- englishness
- biomass
- benefaction
- dirts
- zebrawood
- emboldening
- avocational
- qua
- inrushing
- laughers
- garble
- choriambus
- donas
- runch
- transcaucasian
- charily
- detouring
- coexisting
- toweling
- reread
- reappraised
- mesopotamians
- flowerets
- ashmolean
- inkpots
- merde
- mistrustfulness
- turnstone
- sapwood
- salvagers
- tweeddale
- disgorger
- dereliction
- hanratty
- mudholes

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Many new words in each band

31,025 new words in 13+ compared to 10–12

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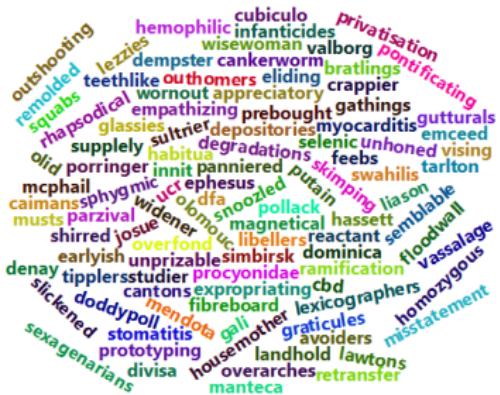
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outshooting hemophilic cubiculo privatisation
remoided lezzies infanticides valborg pontificating
squats teethlike Dempster cankerworm bratlings
rhapsodical glasses othomers eliding crappier
supinely sultrier prebought gathings
olid porringer habitus depositories myocarditis gutturalis
mcpheil sphymic init panniered putain emceed
caimans phrygian ucr ephesus skimping swahilis
musts parzial widener dfa snoozed pollack liaison
shirred jouse overfond oblong libellers reactant sellable
earlyish unprizable simborsk magnetical hassett
tipplers studious procyonidean dominica ramification
deny doddypoll cantons expropriating cbd floodwall
slickened stomatis mendoza feebroad vassalage
sexagenarians prototyping galis graticles homozygous
divisa housemother overarches avoiders ni statement
manteca landhold lawtons retransfer

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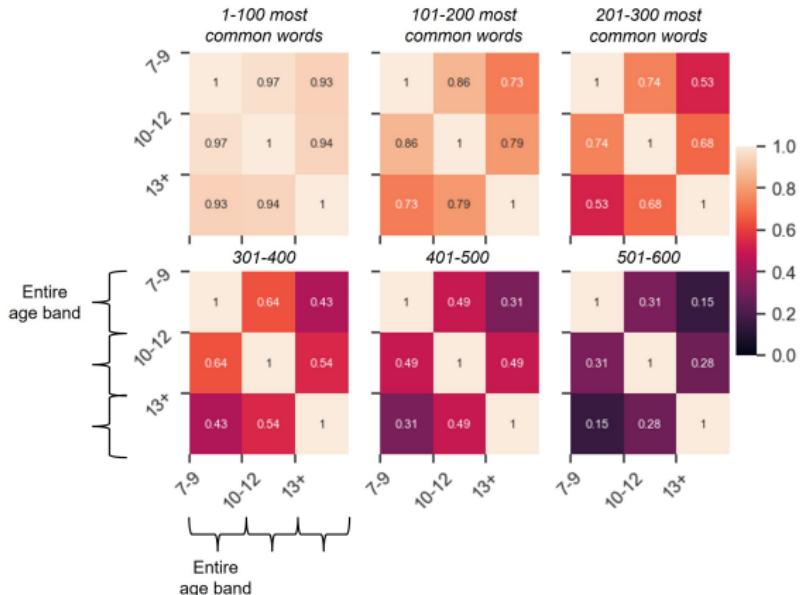


Vocabulary across the age bands

600 most common words in sets of 100

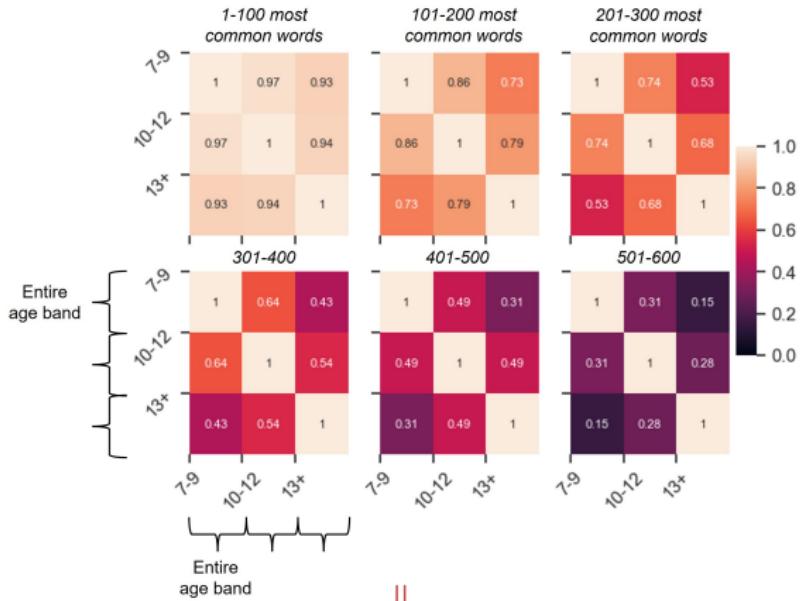
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Similar only in terms of the 200–300 most common words

Vocabulary across the individual books

75 most common *lemmas* in sets of 25

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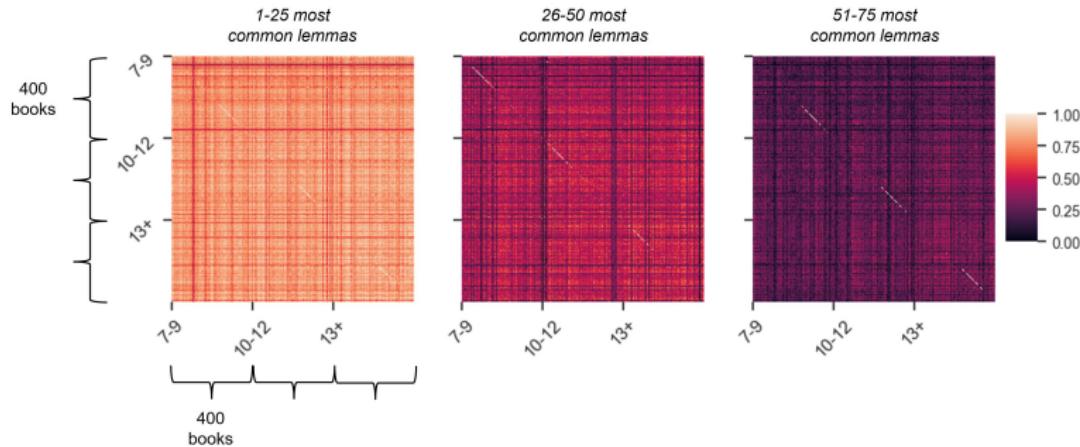
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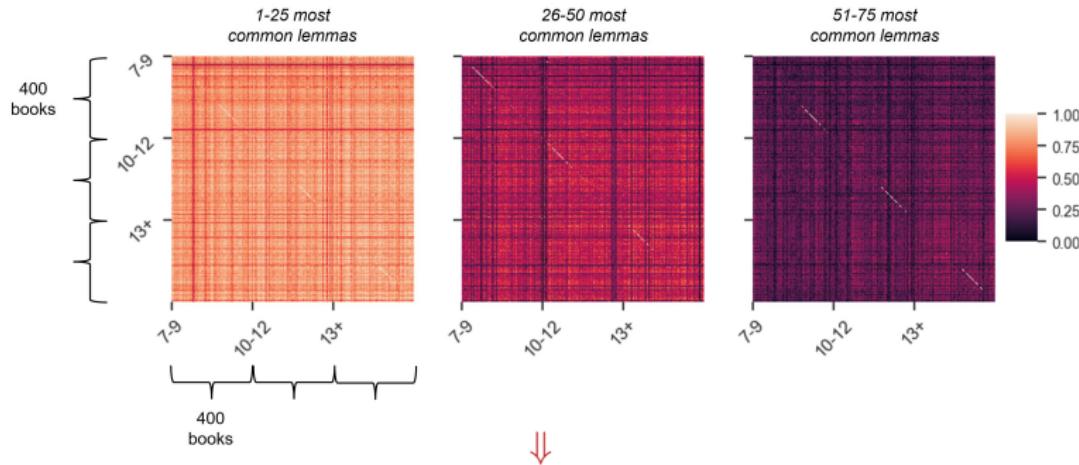


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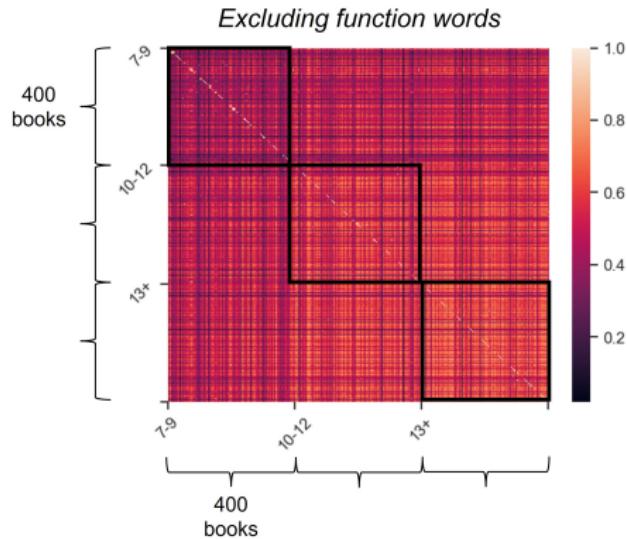
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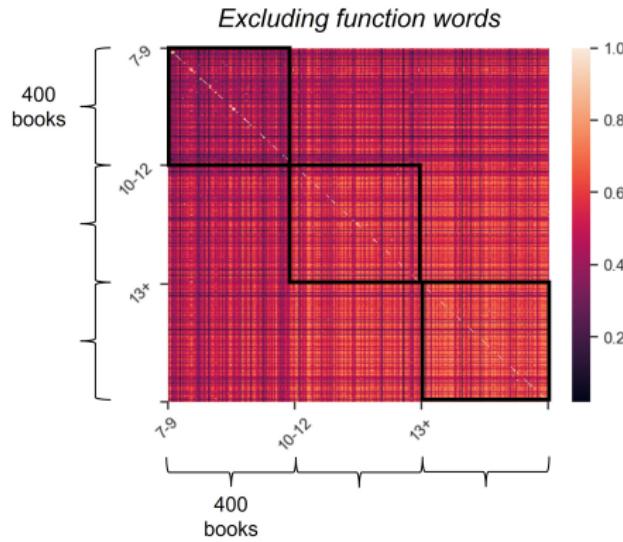
Similar in terms of their most frequent lemmas but rapidly diverge

Vocabulary *within* the age bands

Vocabulary *within* the age bands



Vocabulary *within* the age bands



Books in the 7–9 age band are less similar to one another than those in the other age bands are to one another

Conclusions

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 - Reading widely is key

Thank you!

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