

research ED

Professor Kathy Rastle
Dr Maria Korochkina

Words in books: a challenge, a blessing, or both?



**Economic
and Social
Research Council**

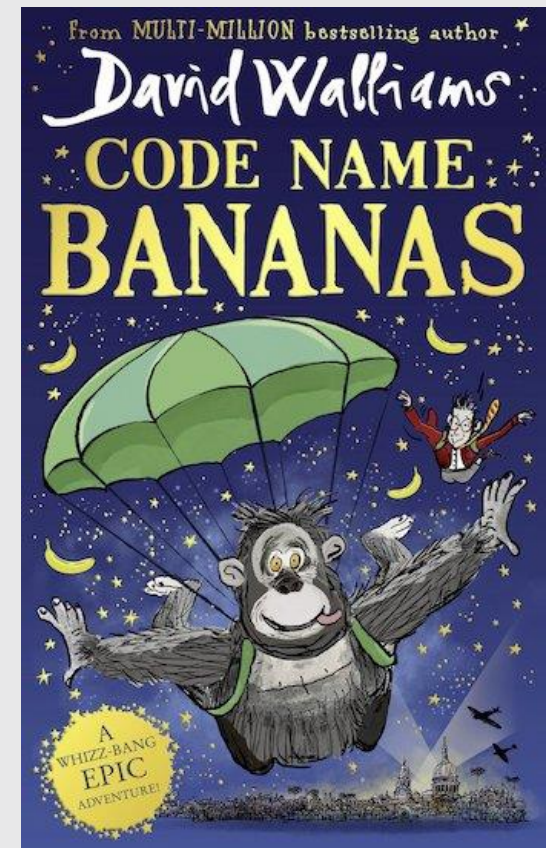
@kathy_rastle
Kathy.Rastle@rhul.ac.uk
Maria.Korochkina@rhul.ac.uk

The complexity of reading



ROYAL
HOLLOWAY
UNIVERSITY
OF LONDON

“Then a mischievous thought flashed across her eyes, and she pursed her lips together and pushed her tongue forward”.

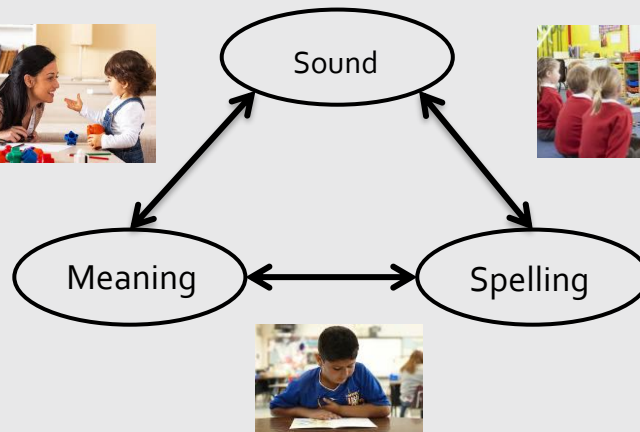


The journey to skilled reading



ROYAL
HOLLOWAY
UNIVERSITY
OF LONDON

Oral language
foundations



Phonics
instruction

Text experience

What challenges does text experience pose and what opportunities does it bring?

Keep an eye out for the lightbulbs!



ROYAL
HOLLOWAY
UNIVERSITY
OF LONDON



CYP-LEX

The Children and Young People's Books Lexicon



ROYAL
HOLLOWAY
UNIVERSITY
OF LONDON

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



1,200 popular books, 400 books per age band

7-9 years

10-12 years

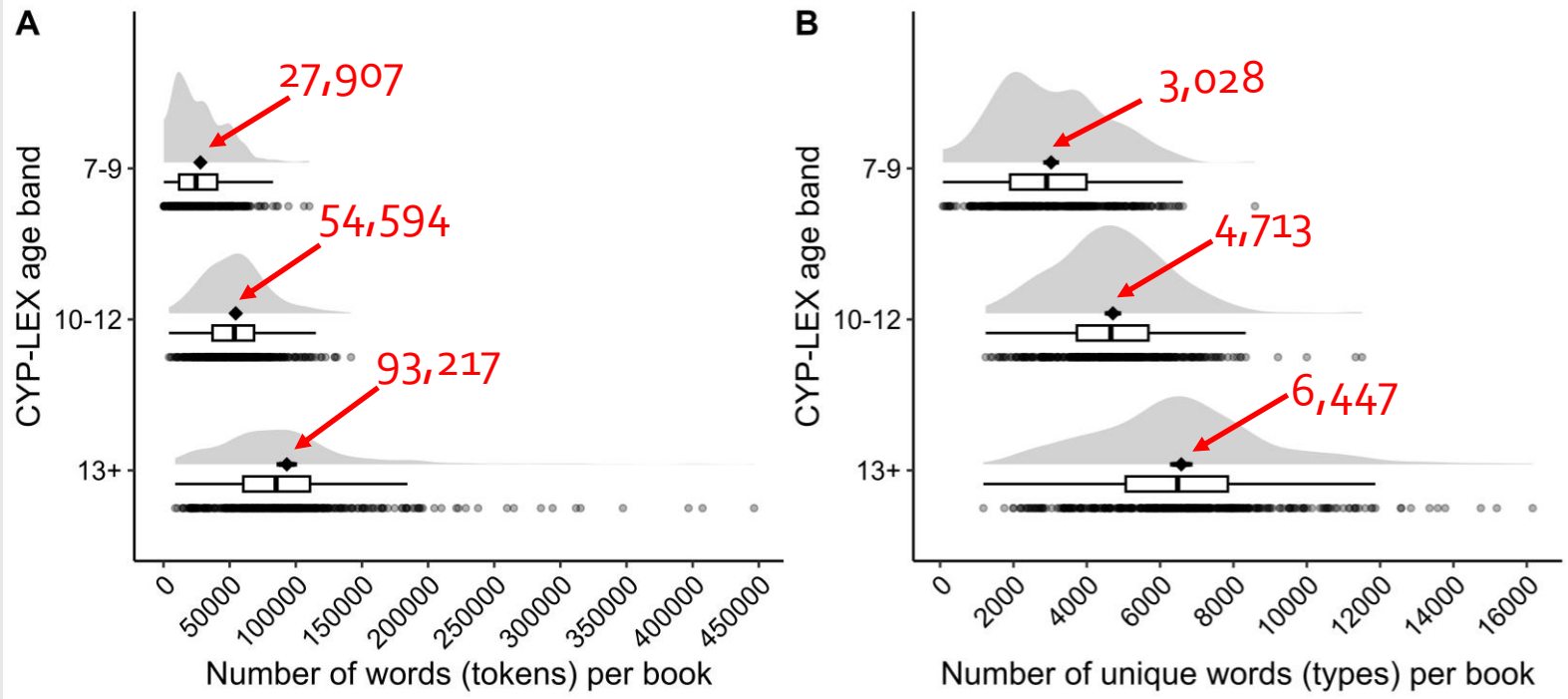
13+ years



Many distinct words in each age band



- Over **70 million words** and **over 100K** distinct words in 1,200 books
- **50K+** distinct words in the 7-9 age band alone



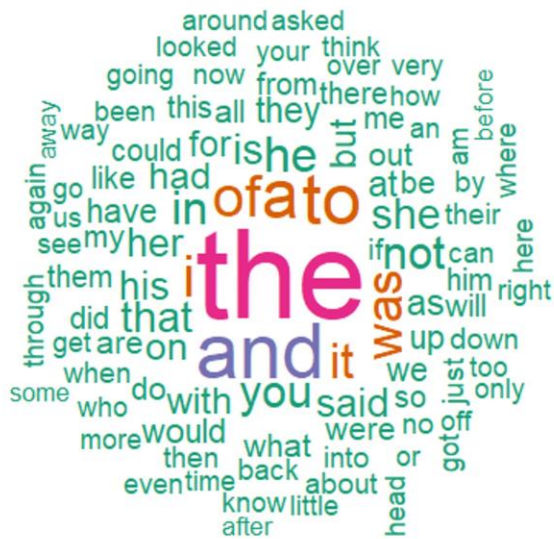
- Vast numbers of distinct words in books
- **Memorising words by rote is not an option**

100 words make up 54% of the books...

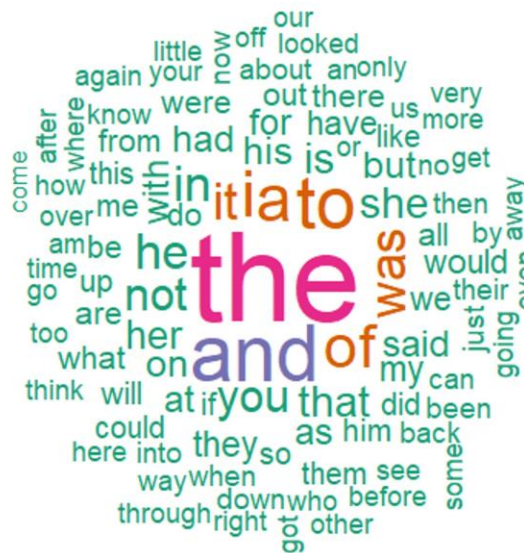


...that's about 37 million words!

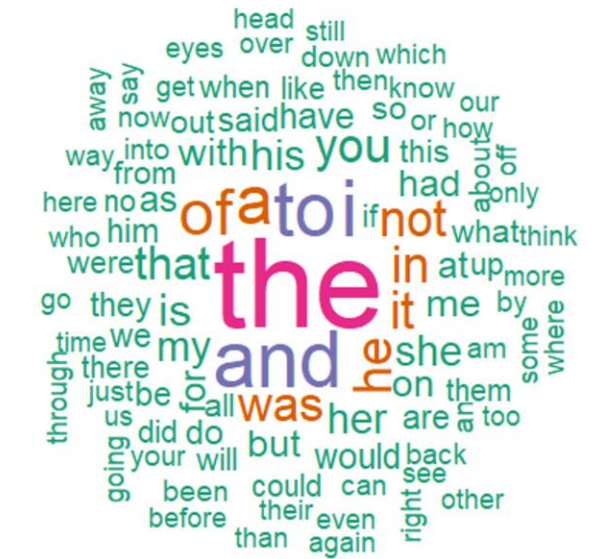
A 7-9 age band



B 10-12 age band



C 13+ age band



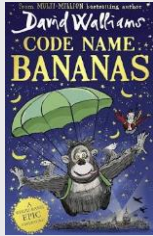
Yet, these words aren't very useful for understanding



ROYAL
HOLLOWAY
UNIVERSITY
OF LONDON

“Then a mischievous
thought flashed
across her eyes, and
she pursed her lips
together and
pushed her tongue
forward”.

“Then a
her , and
she her
and
her
”.



- Children will quickly learn to recognise these words by sight
- Recognising every second word effortlessly **will not be enough to understand** the text

Many words may be unfamiliar



Percentage of CYP-LEX words **not** encountered on TV

	CBeebies (<i>up to 6 yrs</i>) + CBBC (<i>6-12 yrs</i>) 63,081 words	9 BBC channels 159,235 words
7-9 age band	28%	
10-12 age band	40%	
13+ age band		21%

- Children encounter many words in books that are **not in their spoken vocabulary**
- This occurs from the **earliest** years of independent reading



Children **will be needing support** to understand the words they encounter in books

Most words are not used repeatedly



	% words used more than 100 times	% words used less than 50 times
7-9 age band	12%	81%
10-12 age band	14%	79%
13+ age band	16%	77%

- Increasing % of frequently used words as books become more advanced
- **Not enough exposure** to learn to recognise most words by sight



It is crucial that children acquire **strong decoding skills** early on

Books vary greatly in the words they use



- In each age band, 30% of distinct words appear in **1 book out of 400**
- Most of these words are used **once** in that book
- **Low similarity** in vocabulary **across the individual books**
- In the 7-9 age band, books are less similar to one another than in the other age bands



Each book contains many words that are not encountered in any other book



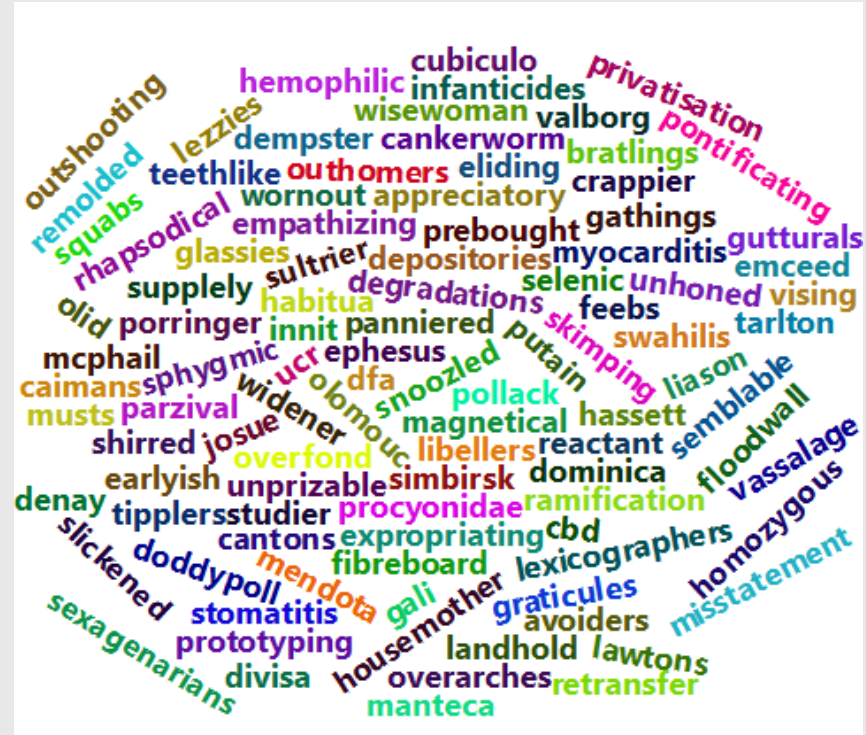
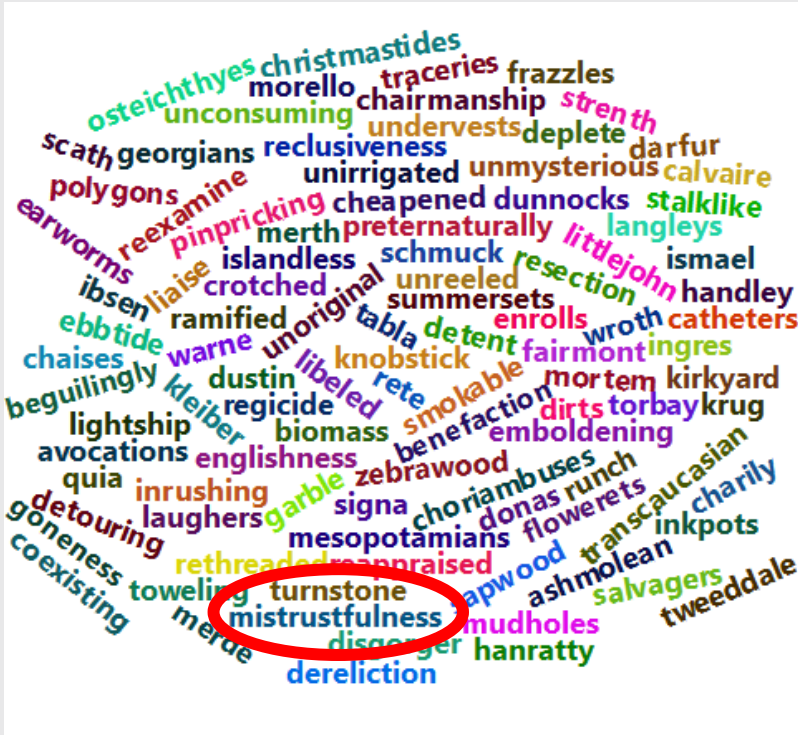
- **Each book is a challenge**
- To encounter as many different words as possible as often as possible, children **must read widely**

Over 70% of “new” words are used infrequently...



ROYAL HOLLOWAY UNIVERSITY OF LONDON

... and many contain several morphemes!



Children will need **strong morphological knowledge** to understand new words in books

The power of morphology



- Most English words are built by **recombining stems and affixes**

cleaner, cleanly, unclean
teacherer, bankerer, builderer

- Morpheme knowledge is also crucial for computing the meanings of **unfamiliar** words

bright + -ify → brightify

- Limited time for explicit teaching of morphology, so morpheme knowledge often acquired through **text experience**

Few complex words are used repeatedly



- Roughly **half of all distinct words** in each age band are complex
- But **few complex words are used repeatedly** or in many books

	7-9	10-12	13+
Occur 5 times or less	50%	42%	35%
Occur 100 times or more	8%	11%	15%

- Children are **likely to see** a complex word, but **unlikely to ever see it again!**



- **Difficult** to learn to recognise complex words by sight
- It is critical to be able to **break words apart**

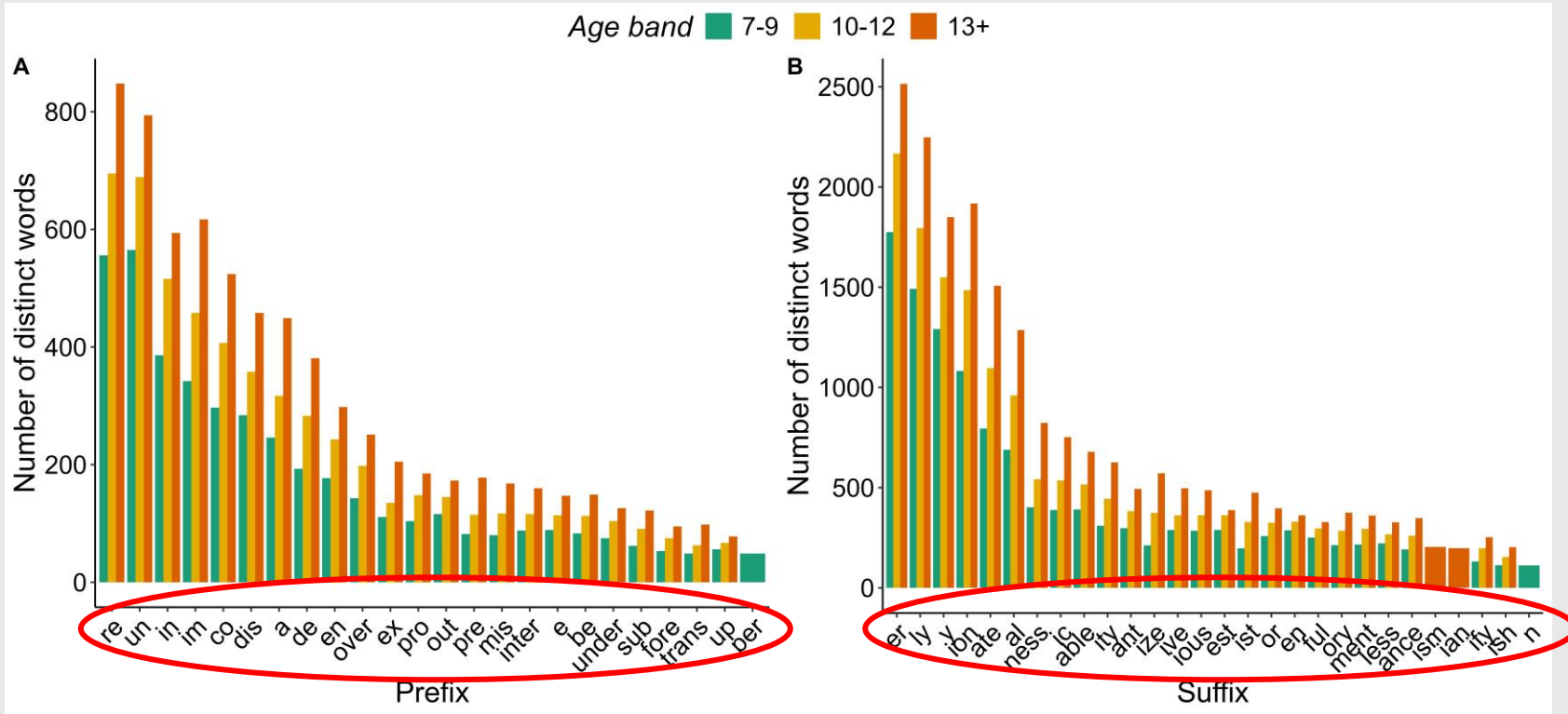
Pre-requisites for affix learning



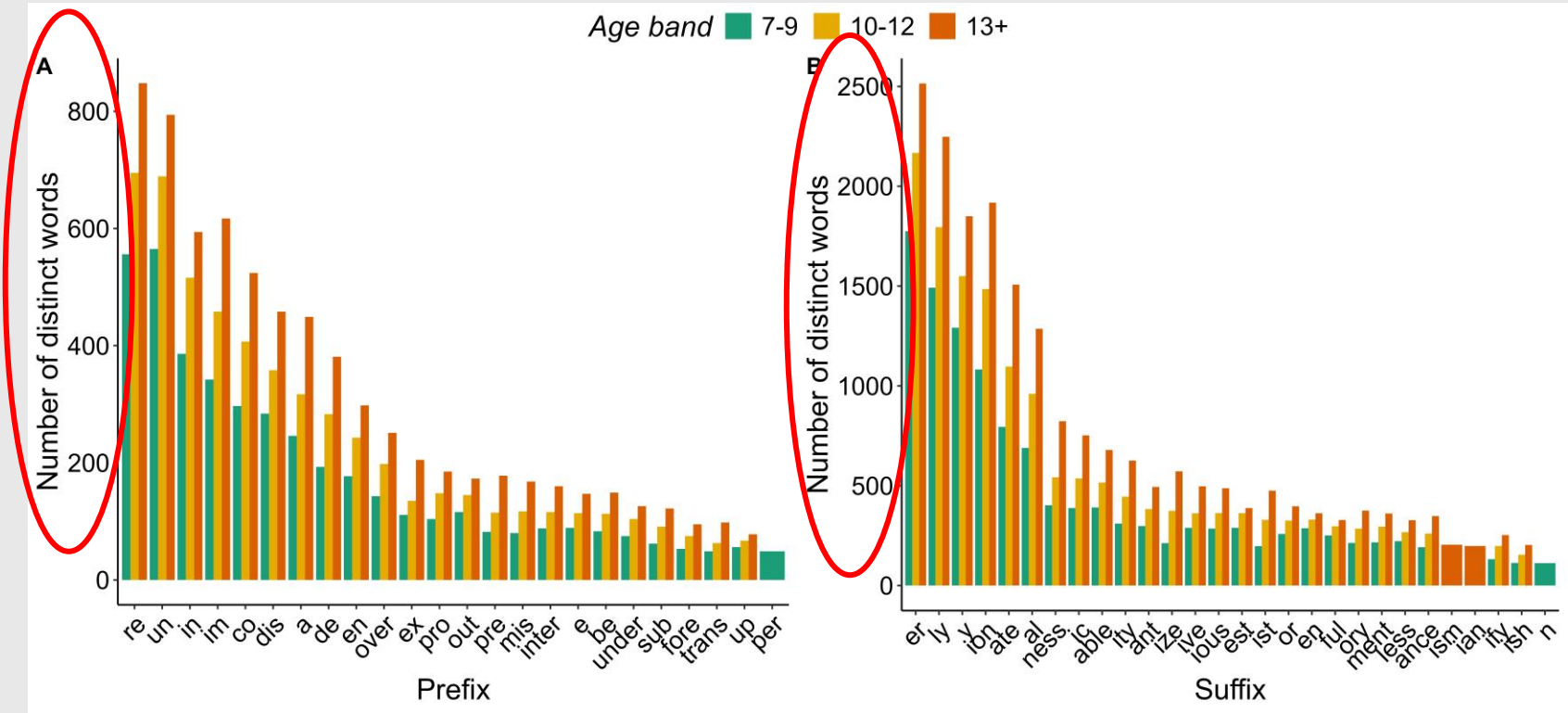
<u>u</u> nknown	<u>s</u> ubconscious
<u>u</u> nfair	<u>s</u> ubheading
<u>u</u> nafrail	<u>s</u> uboptimal
<u>u</u> nlikely	<u>s</u> ubjugate
<u>u</u> nconvinced	<u>s</u> ubmit
<u>u</u> nsecure	<u>s</u> ubject
<u>u</u> nwell	<u>s</u> ubside (sub + -sidere)

- Must have **consistent** meaning transformation
- Must occur with a high number of **distinct stems**
- Must be **detectable**

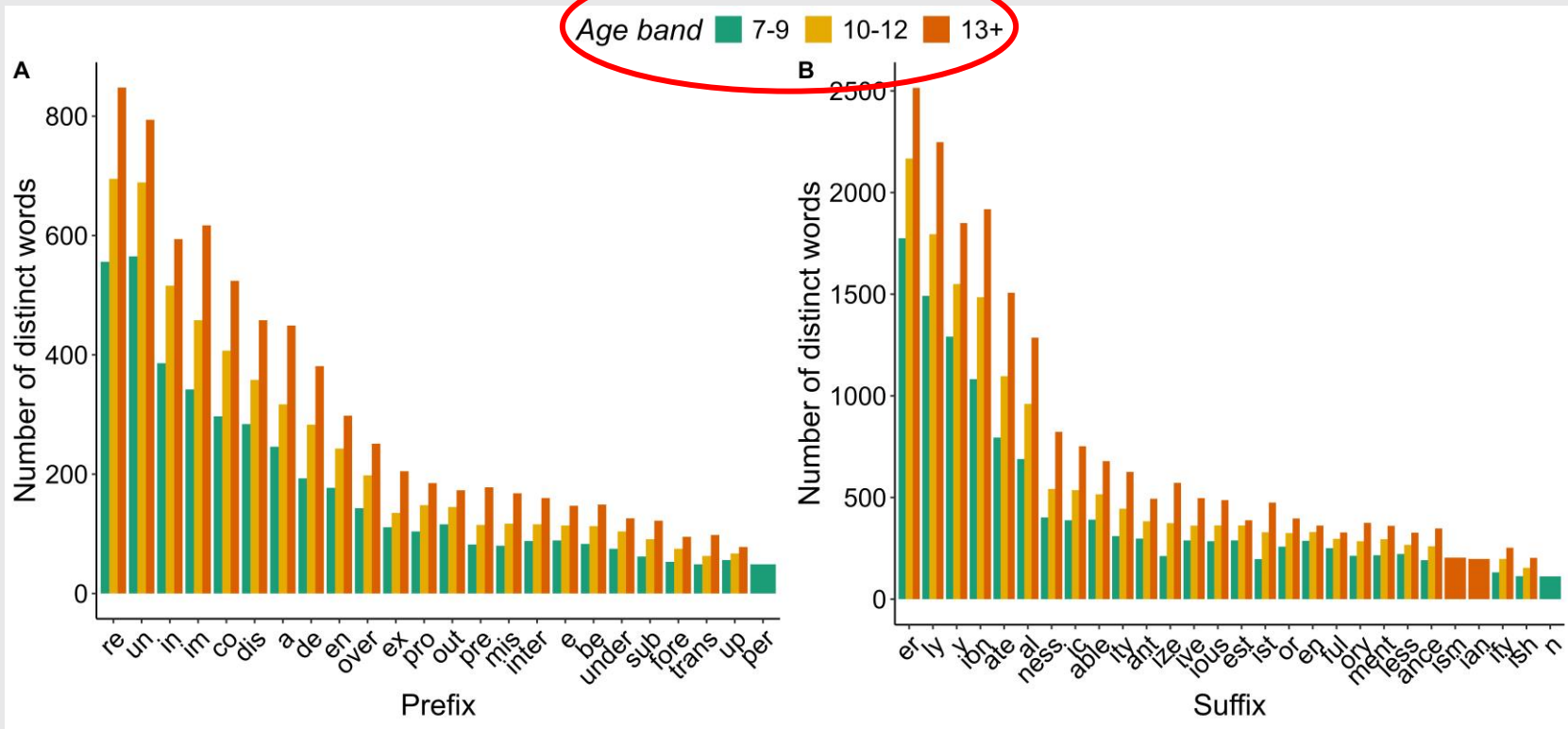
Few affixes are used with many different stems



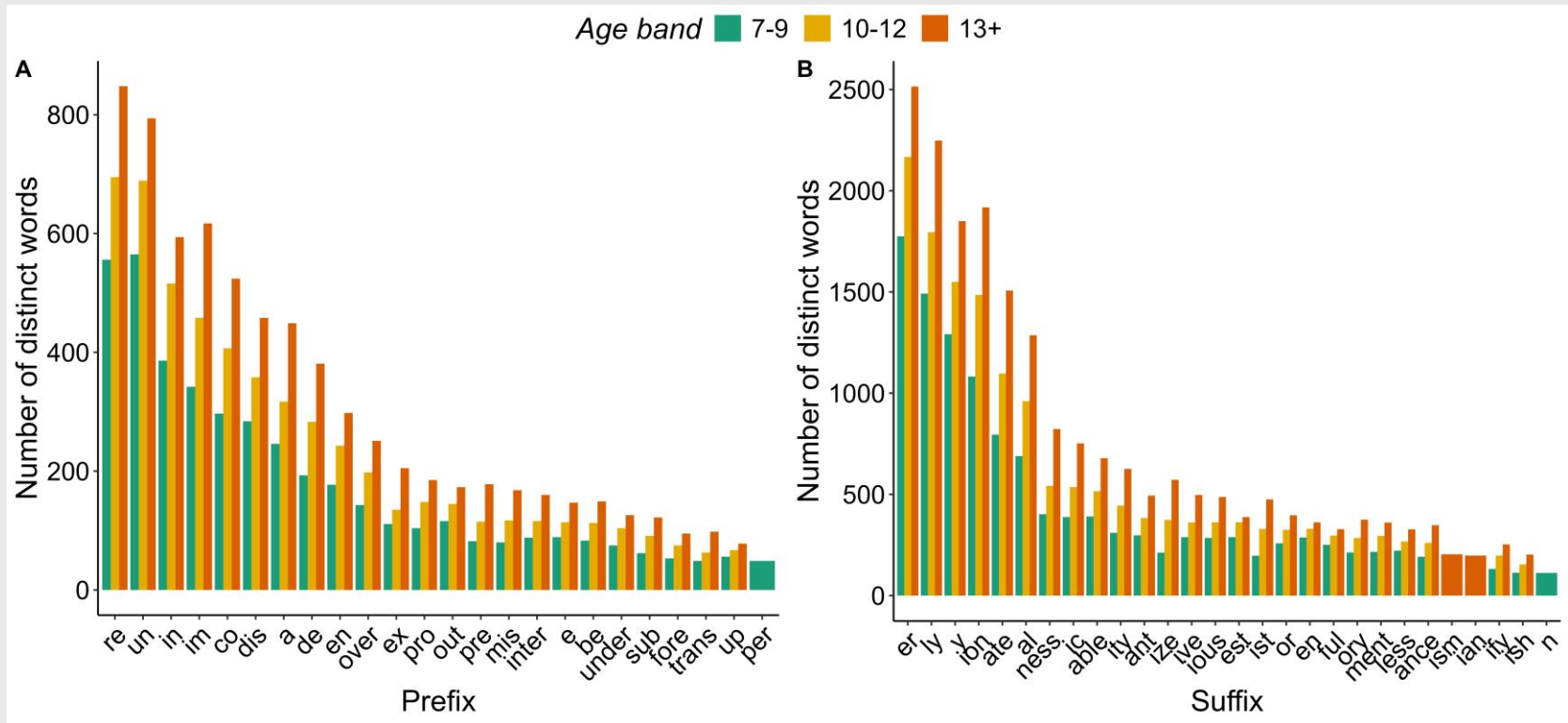
Few affixes are used with many different stems



Few affixes are used with many different stems



Few affixes are used with many different stems



- Limited exposure before 13+ texts
- Only a few affixes are frequent: *un-*, *re-*, *in-*, *-er*, *-ly*, *-y*, *-ate*

Few affixes are easy to detect



Easy to detect

un- (unknown, unwise, undo)

-ly (warmly, openly, friendly)

Mostly undetectable

in- (inject, include, involve)

-ate (facilitate, allocate, irrigate)

Often undetectable or difficult to parse

-y (gravity, trinity, comply, rely, subsidy)

Pseudo-affixation

-er (corner, brother, number)



- Many complex words **will not add to a reader's experience** of the affixes
- The **opportunity** for affix learning via text is **limited**

A case for morphology instruction?..



- Complex words comprise a large proportion of words in children's books
- Beyond a handful of affixes, morpheme knowledge will be **difficult to acquire** from text



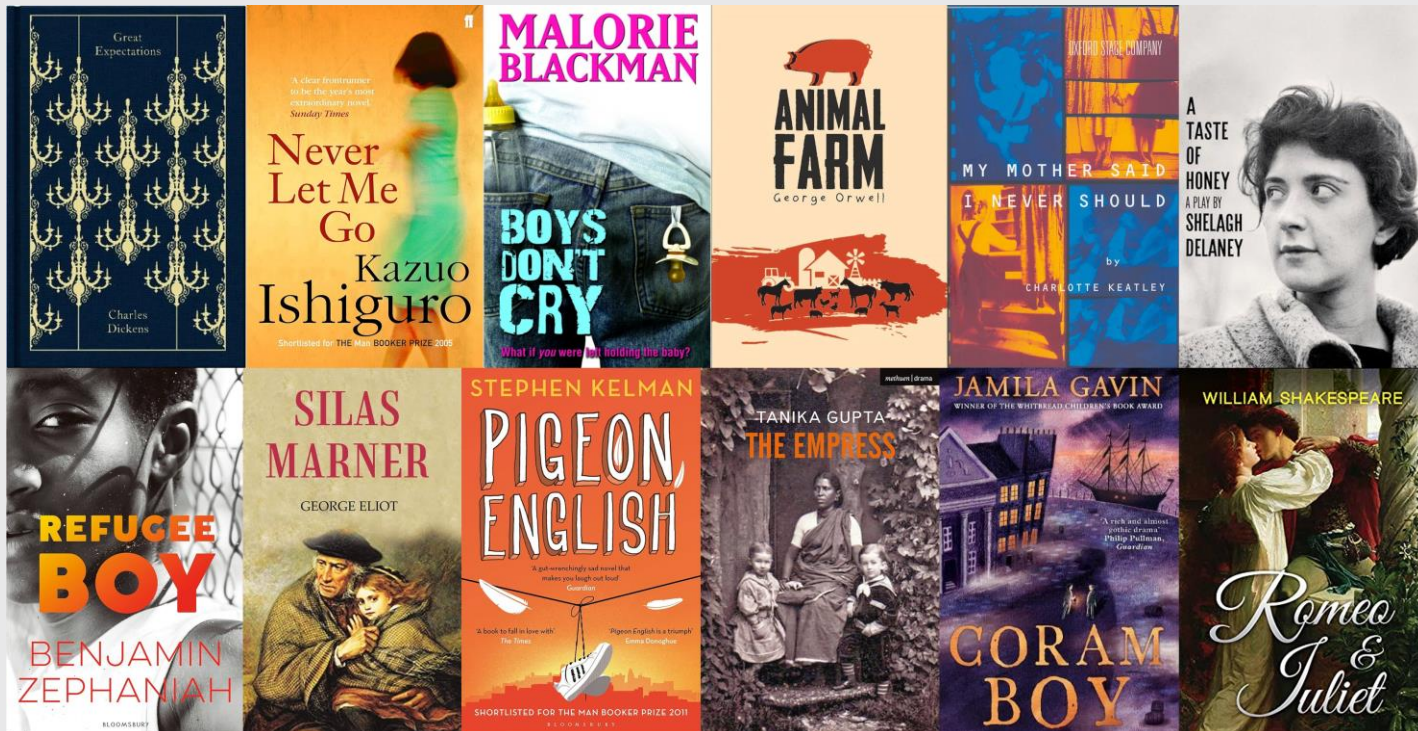
- Is there value in **more systematic** morphology instruction?
- There is **potential for substantial impact** on vocabulary acquisition and reading comprehension
- Yet, there may be significant **challenges in implementation**
- We'd love to hear **your thoughts** on this!

A closer look at the 13+ books...



ROYAL
HOLLOWAY
UNIVERSITY
OF LONDON

32 prose books from the AQA and EdExcel specifications for English Literature GCSE



How do these books compare to the popular books?

Highly dense vocabulary in the GCSE books



ROYAL
HOLLOWAY
UNIVERSITY
OF LONDON



- GCSE books are **half as long as** popular books, but contain a **similar number of distinct words**
- GCSE books are much **less homogenous** in the words they use



- **More** vocabulary through **less** text in the GCSE books
- May be **harder to understand the text as a whole**

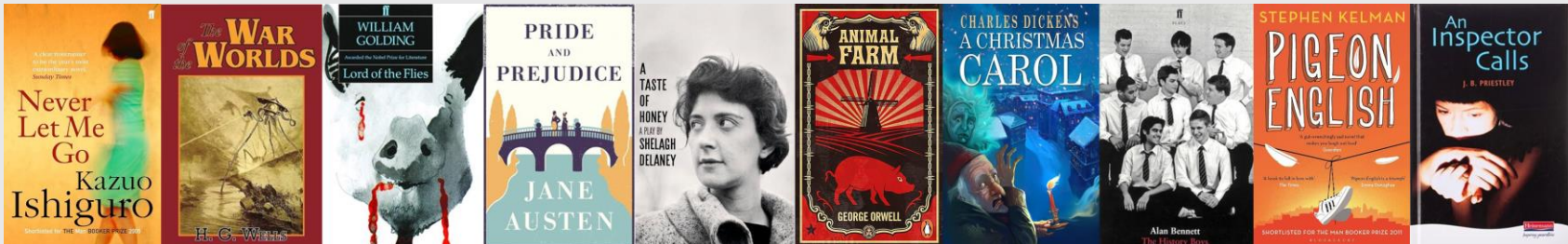
Many unfamiliar words in the GCSE books



- Only **33%** of the distinct words **occur regularly** in popular books
- The remaining **67%** are **used sparsely**
- **3,000** distinct words **never used on 9 BBC TV channels over 3 years**
 - *poulterer, bonneted, dowerless, bedight, sepulchre, catechize*
 - *brusquely, docilely, imploringly, beatifically, superciliously*



- GCSE texts **will stretch** even those who read widely
- Weaker readers **may not be able to engage** with the GCSE texts at all



Many unfamiliar words in GCSE books are new roots



- Children **often** encounter unfamiliar words in books
- In popular books, many of these “new” words are **morphologically complex**
→ Meanings **can be derived** from the words’ constituents: [mourn] + [-ful] + [-ly]
- In GCSE books, most “new” words are **new roots**
→ Meanings **cannot be derived** from smaller units
 - *aspidistra, crimplene, beseech, coccidia, gambol*



- Pupils **must rely on context or instruction** to understand these words
- Deriving meaning from context requires **advanced language and reading skills**

Conclusions



- 💡 Books offer a wonderful **opportunity** to build vocabulary
- 💡 Yet, book vocabulary is **challenging** from the get-go
- 💡 Children need **strong foundational reading skills** to access popular books
- 💡 Children need to **read widely** to build reading proficiency
- 💡 There is a **partnership** between reading skills and reading motivation
- 💡 Children with good foundational reading skills will be able to read, understand what they are reading, and derive pleasure from books, **leading to a virtuous cycle**

Further reading



ROYAL
HOLLOWAY
UNIVERSITY
OF LONDON

<https://doi.org/10.31219/osf.io/vg8c3>

The vocabulary barrier in the General Certificate of Secondary Education (GCSE) in English Literature

Maria Korochkina and Kathleen Rastle

Department of Psychology, Royal Holloway, University of London, United Kingdom

Open Access



Sage Journals

Quarterly Journal of Experimental Psychology
OnlineFirst
© Experimental Psychology Society 2024, Article Reuse Guidelines
<https://doi.org/10.1177/17470218241229694>

Original Article



The Children and Young People's Books Lexicon (CYP-LEX): A large-scale lexical database of books read by children and young people in the United Kingdom

Maria Korochkina ¹, Marco Marelli², Marc Brysbaert ³, and Kathleen Rastle ¹



Maria Korochkina & Kathy Rastle · Mar 12 · 5 min read

rastlelab.com/blog

What Words do Children Encounter When They Read for Pleasure?

tes
magazine

Teaching & Learning ▾ Scotland Leadership ▾ Newsletters Jobs and more ▾ 

What makes GCSE English lit so hard for students?

New research has analysed GCSE literature texts against popular fiction – and found three key reasons why so many young people struggle with the qualification

4th August 2024, 8:00am

Maria Korochkina and Kathleen Rastle



Please help with our research!



ROYAL
HOLLOWAY
UNIVERSITY
OF LONDON

How does text experience shape children's linguistic knowledge?

Do television subtitles improve children's reading fluency?



Year 3 through to Year 11



Years 2 and 3

@kathy_rastle
kathy.rastle@rhul.ac.uk

Thank you!



ROYAL
HOLLOWAY
UNIVERSITY
OF LONDON

Further reading



ROYAL
HOLLOWAY
UNIVERSITY
OF LONDON

<https://doi.org/10.31219/osf.io/vg8c3>

The vocabulary barrier in the General Certificate of Secondary Education (GCSE) in English Literature

Maria Korochkina and Kathleen Rastle

Department of Psychology, Royal Holloway, University of London, United Kingdom

Open Access




Sage Journals

Quarterly Journal of Experimental Psychology
OnlineFirst
© Experimental Psychology Society 2024, Article Reuse Guidelines
<https://doi.org/10.1177/17470218241229694>

Original Article



The Children and Young People's Books Lexicon (CYP-LEX): A large-scale lexical database of books read by children and young people in the United Kingdom

Maria Korochkina ¹, Marco Marelli², Marc Brysbaert ³, and Kathleen Rastle ¹



Maria Korochkina & Kathy Rastle · Mar 12 · 5 min read

rastlelab.com/blog

What Words do Children Encounter When They Read for Pleasure?

tes
magazine

Teaching & Learning ▾ Scotland Leadership ▾ Newsletters Jobs and more ▾ 

What makes GCSE English lit so hard for students?

New research has analysed GCSE literature texts against popular fiction – and found three key reasons why so many young people struggle with the qualification

4th August 2024, 8:00am

Maria Korochkina and Kathleen Rastle

