

Spelling, lexical diversity, and pausing in the written texts of children with Language Learning Difficulties.

Julie Dockrell,

In collaboration with Vincent Connelly, Kirsty Walter & Sarah Critten



E·S·R·C
ECONOMIC
& SOCIAL
RESEARCH
COUNCIL



EWSC - Enhancing Writing Skills in Children
<http://psych.brookes.ac.uk/ewsc/research.asp>



Aims of the presentation

1. Oral language and writing development
2. Language learning disabilities and written text
3. Establish that children with LLD have problems with written text
4. Differential impact of spelling and oral language
5. Comparison of product and process measures



Oral Language and writing development

- Written text generation involves the translation of ideas into linguistic forms
- Increased oral language facility is associated with increased written language proficiency (McCutchen, 1986; Mehta, Foorman, Branum-Martin, & Taylor, 2005; Silverman et al., in press; Wagner et al., 2011)
- For younger writers underlying oral language processes show similar relationships to orally generated & written texts.
- Need further research to examine the way spoken language impacts on written text in the developing writer and how oral language interacts with other writing processes (Shanahan, 2006)
- Key for developing potential interventions (McCutchen, Stull, Herrera, Lotas, & Evans, 2014; Nelson & Tattersall, 2014).
- Studies of children who struggle with language has the potential to elucidate developmental pathways

3



Who are the children?

Language learning disabilities

- Various referred to as Specific language impairment, primary language impairment ...
- Problems in the acquisition and development of the structural aspects of the language system
 - » Receptive & expressive
 - » Phonology
 - » Lexicon
 - » Grammar

DSM-V-Language Disorder

*“persistent difficulties in the acquisition and use of language across modalities (i.e., spoken, **written**, sign language, or other) due to deficits in comprehension or production” and language abilities that are “substantially and quantifiably” below age expectation*

- Estimated 10% of pupils in Year 1
 - Will be in mainstream classes
 - More prevalent in lower SES & EAL pop (Dockrell et al, 2014)

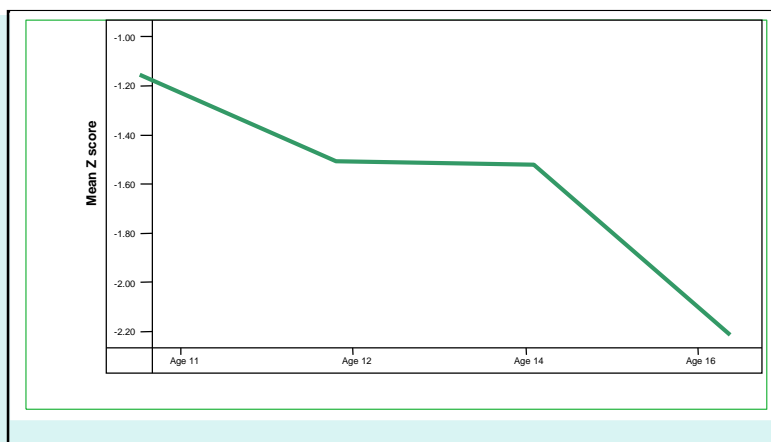
4

Language learning disabilities & written text

- Initial concerns raised and investigated (see for example Scott & Windsor, 2000; much longer history)
- Increasing evidence that children with LLD experience difficulties in the production of written text – most studies indicating a delay
- Analyses of these difficulties have focused on the written text product
- Cross sectional data have pointed to difficulties at -
 - Word level skills
 - Sentence construction accuracy and complexity
 - Text quality measures

5

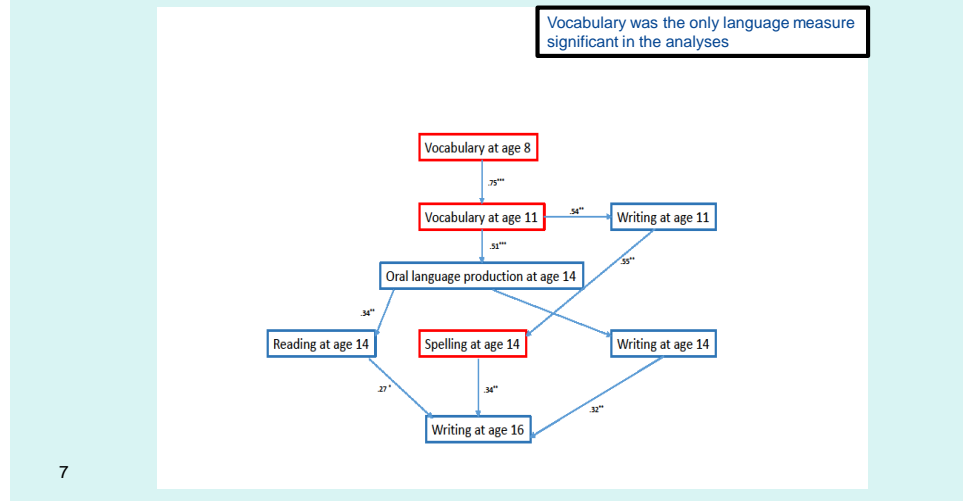
Why does it matter?



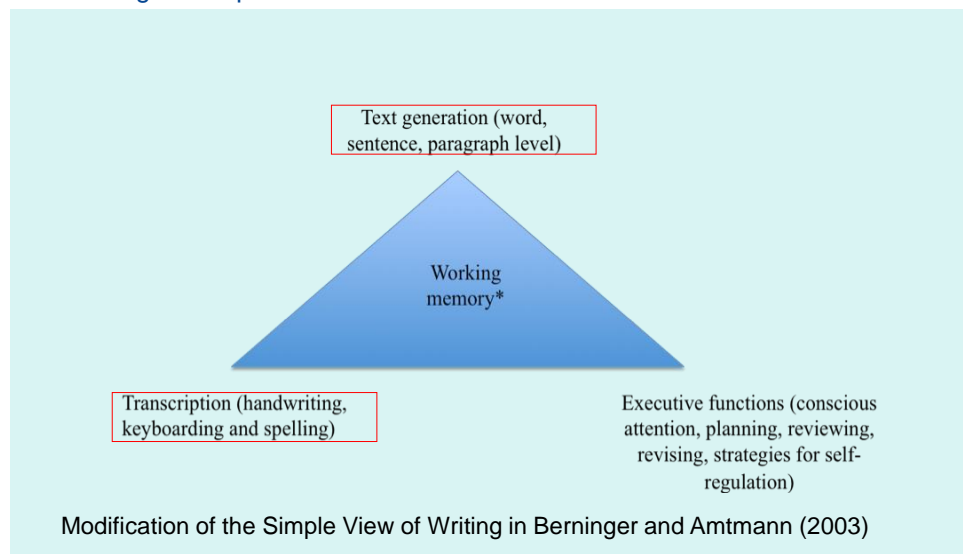
- Standard scores varied significantly over time
 - Age 11 > 12, 14, 16
 - Age 12 = 14
 - Age 16 < 11, 12 & 14



What predicts writing development: vocabulary & spelling

(Dockrell et al., 2009)



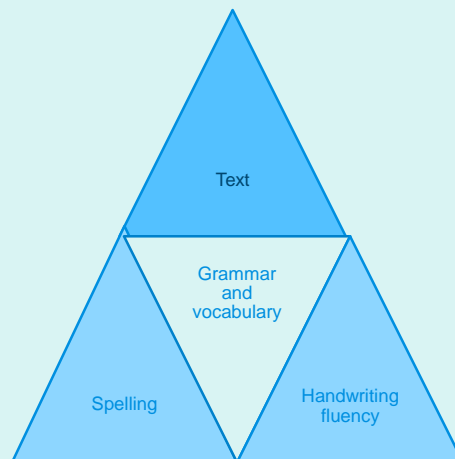
Consistent with current developmental descriptions (models?) of writing development



- Cross sectional comparative studies show that
 - Barriers from language system evident from both
 - Phonological skills  spelling?
 - Lexical levels  vocabulary (Dockrell & Connelly, 2013)
- **But**
 - LLD and writing - Delay or difference ?
 - Predictor language measures limited
 - » Single measures not reliable indicator of language effects
 - » Variance accounted for often small
 - Text focus should capture more than general measures of quality
 - Studies focus on product not process
 - » Equipotentiality – many different difficulties can result in similar products?

9

Overlap at the behavioural level



Can process measures differentiate (different patterns of development?)

10

Collecting and evaluating writing samples

- **Concerns about standardised assessments of writing**
 1. Not aligned with key writing components
 2. Not directly linked to instructional practice
 3. Cannot be scored and administered in classrooms
 4. Tests fail to communicate to teachers and learners what is important to learn
 5. For researchers tests confirm writing levels but no areas for research foci
- **Teacher assessments of writing**
 - » Challenging
 - » Key Stage 2 - substantial variation in the marks assigned to the same script by trained markers, with evidence of regression to the mean at both ends of the distribution (He, Anwyll, Glanville & Deavall, 2013)
- **Curriculum based measures (CBM-W)**
 - » Children write for short time limited period to a standard prompt
 - » Product coded for different text features
 - » Sensitive index of pupil's written text production (Espin et al., 2000)
 - » Sensitive to development, learning needs and genre (Dockrell et al. in press)
 - » Reliably scored and good validity with standardized and NC levels

11

Current Study:

- Three group design (SLI, CA & LA)
- Broader range of language skills assessed
- Reading and Spelling skills
 - Reading shown to capture much of the variance when included in analyses
- Short writing task (Curriculum Based Measure 5 minute Dockrell et al in press)
 - » Assessed for fluency
 - » Spelling accuracy
 - » Grammatical accuracy
 - » Text quality
- Temporal analysis (Eye & Pen pause analysis) = Process?
- Lexical Diversity Measure (Guirauds R Index Types/Square Root Tokens)

Participants:

Specific language impairment (SLI)

- N = 30 with a specific language impairment
- Elementary school 9 years 10 months old at screening
- Significant gap between language (CELF4) and non-verbal ability (BAS)
- Literacy difficulties – including reading, spelling and text production

Age Match (CA) – individually matched on chronological age

- N = 30 Typically Developing
- Elementary school 9 years 10 months years old at screening

Language Ability Match (LA) - matched on CELF-4 Formulated Sentences and British Picture Vocabulary Series (Receptive)

- N = 30 Typically Developing
- No significant differences in non-verbal ability standard score to SLI
- Significantly younger, Elementary school 8 years 1 month old at screening

5 minute writing task

Writing Task – Recorded on a digital writing tablet using “Eye & Pen”

“One day I had the best weekend ever...”



yesterday I had the best weekend ever. I went to a theme park with my dad on Sunday and on Saturday my mum bought me a game for my PSP. It was called Zombies. It's a game where you have to kill all the zombies and save your son. The best part was getting killed. That was my

Analysis

- **Group differences**
 - Standardised measures
 - Writing product
 - Writing process
- Correlations with writing process measures
- Predictions of writing

15

Product - Composition Measures

	LLD	CA	LA	
Number of words	52.0 (25.7)	76.4 (20.2)	51.7 (19.2)	CA>LLD=LA
Compositions Quality Rating (0-6)	2.42 (1.03)	4.23 (1.1)	2.73 (1.07)	CA>LLD=LA
Proportion of Spelling errors	11%	4%	3%	N sig
Lexical diversity (Guiraud's index)	4.47 (.90)	5.70 (.61)	4.97 (.91)	CA>LLD=LA

- LLD are writing less but matched to LA.
- LLD and LA matched for composition quality rating
- LLD more misspellings but do not differ significantly from comparison groups
- LLD and LA have lower levels of lexical diversity

Product: Patterns of writing delay which is commensurate with language levels

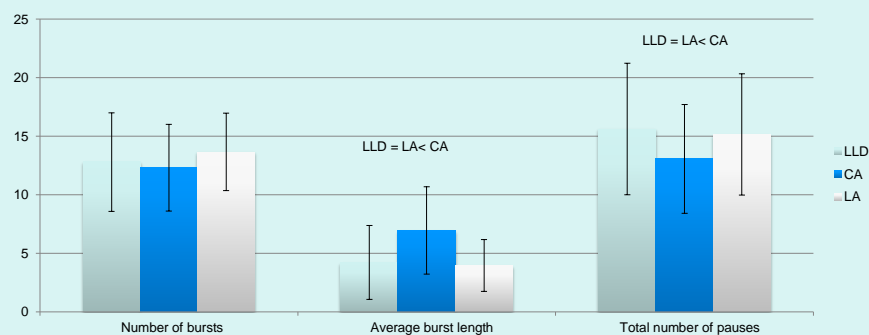
One time I had the best weekend ever. We went to Lapland and we went skiing. It was really funny! Everyone kept falling over, so we had lots of bruises by the end of the day. We went snowboarding as well, but my sister gave up and decided to throw snowballs at us instead! ① We then just decided to have a massive snowball fight between the whole family. We built an igloo with the help of a professional and we slept in it.

One time I had the worst weekend in my life. I went skiing and that was my worst weekend in my life.

Connelly, V., Dockrell, J.E., Walter, K., & Critten, S. (2012). Predicting the Quality of Composition and Written Language Bursts from Oral Language, Spelling and Handwriting Skills in Children with and without Specific Language Impairment. *Written Communication*. . 29,278-302.

EWSC

Process - Bursts and pauses- total



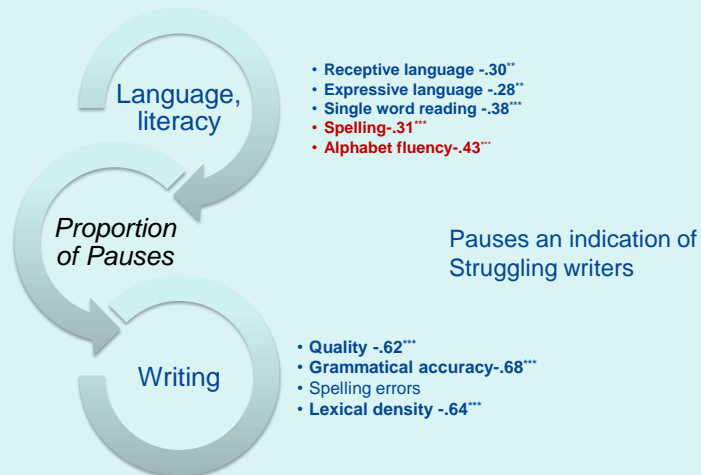
18

So far

- Language level a key feature in text production irrespective of whether this is commensurate with the child's chronological age
- Are bursts and pauses simply an indicator of loci of problem e.g. spelling
- Role of language and other relevant predictors ?

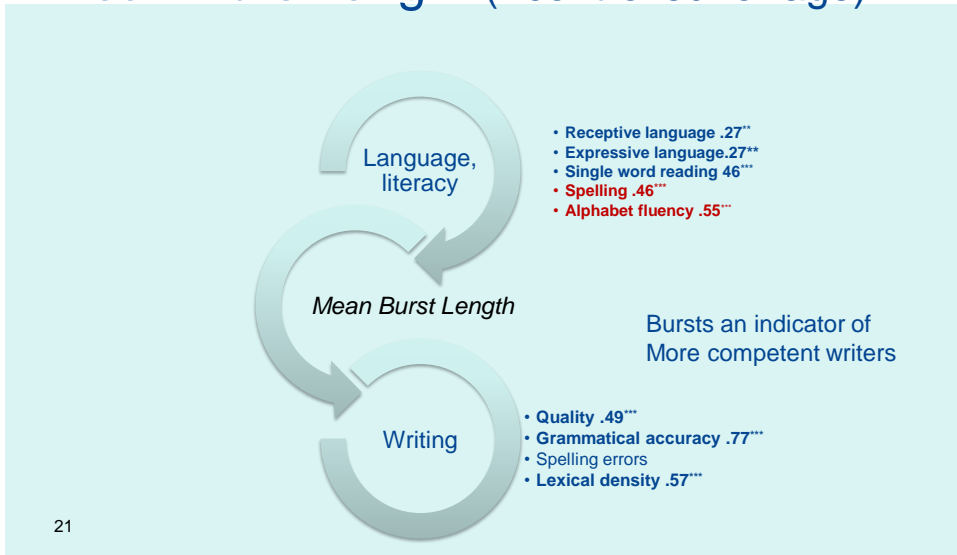
19

Pauses (r controlled for age)

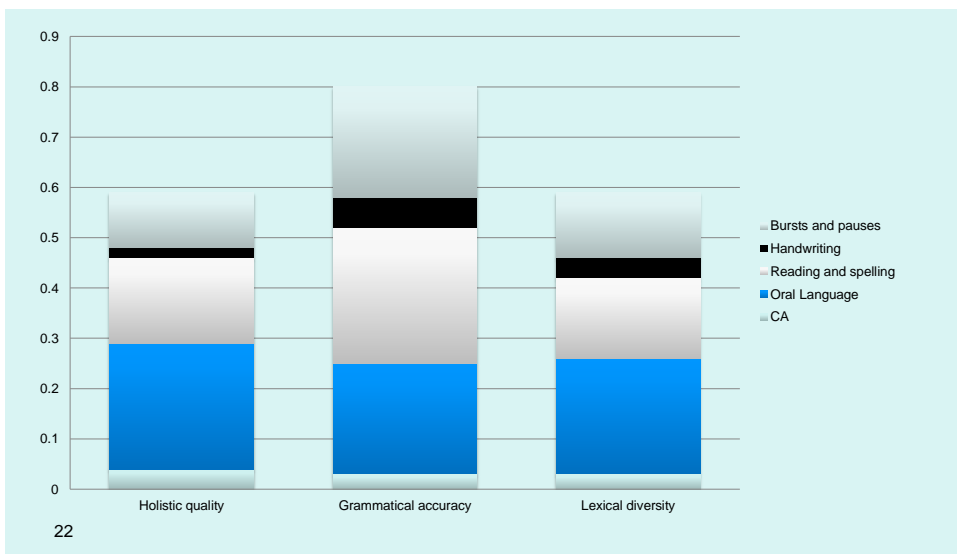


20

Mean Burst length (r controlled for age)

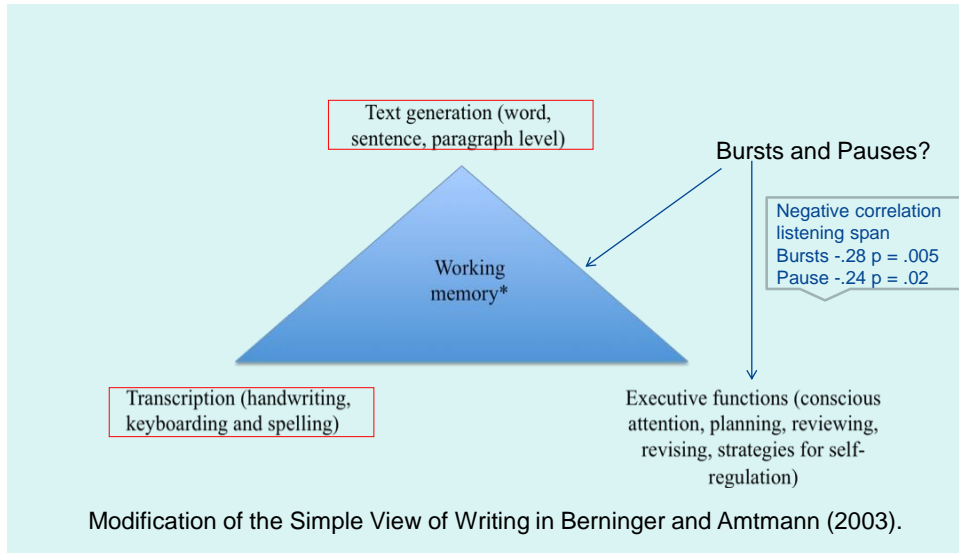


Predicting writing performance – linear regression





Contribution to developmental models of writing development?



Summary

1. Confirmed the delays experienced by students with LLD
2. Demonstrated these delays are also evident in writing processes measured by bursts and pauses
3. Proportion of pauses negatively correlated with language, literacy and writing measures
4. Mean length of bursts correlated positively with language, literacy and writing measures
5. Bursts and pauses significantly add to predictions of writing performance after language and literacy measures accounted for
6. Bursts and pauses reflect other cognitive factors involved in writing and discriminate across elements of the writing product



Implication

Developmental models of writing need to consider the factors which might be supporting burst length and pauses beyond a focus on spelling and handwriting

Idea generation?