

The development of reading and spelling skills

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Collaborators on experiments

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Writing may represent spoken language at different levels

- Morpheme (*morphographic* system)
- Syllable (*syllabic* system)
- Phoneme (*alphabetic* system)

What kind of alphabetic system is English?

“chaotic and indefensible” (Dewey)

“just a chaotic concoction of oddities without order and cohesion” (Follick)

“English can’t be spelt” (Shaw)

More vs. less regular alphabets

More regular



Less regular

Finnish

Italian, Spanish

Portuguese, Dutch

French, Danish

English

Information in English spelling

- Related words
 - *citation, cite*
- Grammatical category
 - *in vs. inn*
- Word origins
 - *spaghetti vs. spageddy*

- Context-free sound-to-spelling relationships
 - “b” always spelled as *b*
- Context-sensitive sound-to-spelling relationships
 - “s” often spelled as *s*, as *sat*, but may be *c*, as in *cent*
 - “ou” may be *ow* as in *owl, down, how*, or *ou* as in *out, couch*

Hurdles that typically developing children face

- Learning that writing represents language
- Segmenting language into appropriate units
- Classifying units in way assumed by writing system
- Learning conventional symbols for linguistic units
- Learning context-sensitive patterns

Learning that writing represents spoken language

- Pictures vs. written words
- Drawing vs. writing



minute

hour

Segmenting language into
appropriate units

If I had a bac brd I
wod fiy no sop a
rad the wed

Segmentation errors

- Initial clusters
 - *sop* for *stop*
 - *fiy* for *fly*
- Final clusters
 - *rad* for *round*
 - *wed* for *world*

Classifying units in the way assumed by the writing system

- chruk, chruc

- sbitr

Learning conventional symbols for units

- tr
- Ifunt

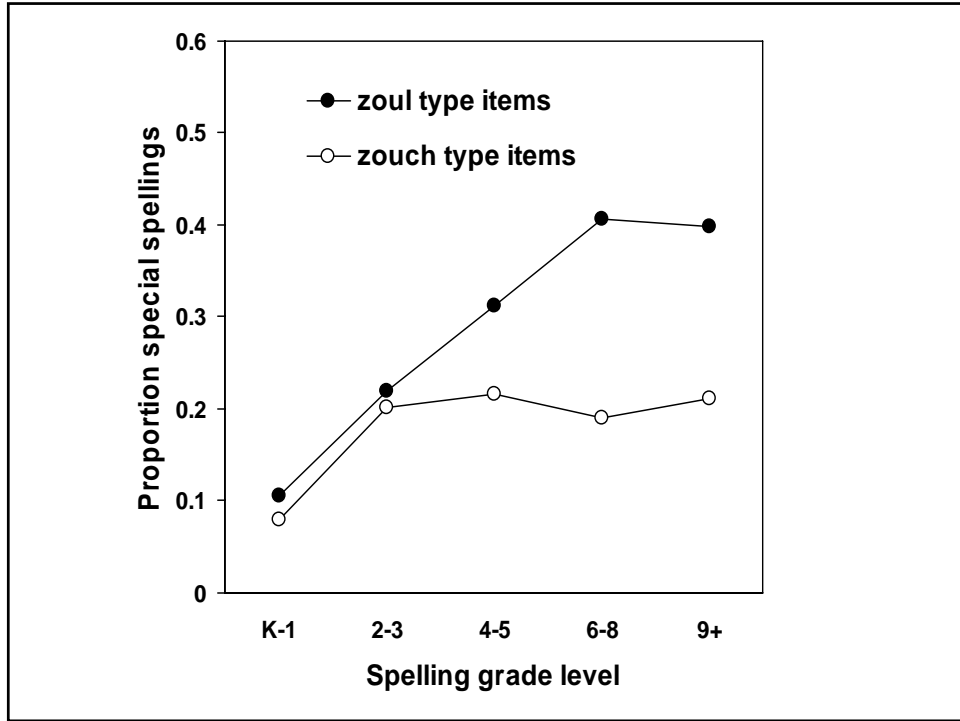
- yat, wat, wet, wesc, yow, annydy

Proportions of spellings with various initial letters for common words with initial “w” sound

Initial letter	Kindergartners	First graders	Second graders
w	.49	.89	.99
y	.17	.03	.00
Other letters	.34	.08	.01

Learning links between units of sound and letters that are not one to one

- Spell “zoul”-type items
- Spell “zouch”-type items
- How often do children use the special spelling *ow* for the “ou” sound?



- houl
- fite
- dreem

Hurdles for typically developing children

- Learning that writing represents language
- Segmenting language into appropriate units
- Classifying units in way assumed by writing system
- Learning conventional symbols for linguistic units
- Learning context-sensitive patterns

Conclusions about typically developing children

- Spelling is not just memorization
- Errors have an underlying logic
- Children have some difficulties, at first, even on words with one-to-one correspondences between sounds and spellings
- Teachers must appreciate patterns in English writing system and logic behind children's errors

Spelling in children with dyslexia

- Same hurdles as typically developing children?
 - Slower learning of spelling
 - Same kinds of errors
- Different from younger typically progressing children?
 - Different kinds of errors

Are dyslexics similar to or different from younger typically developing children with same spelling level?

- Bourassa and Treiman, 2003:
 - 30 dyslexics
 - mean age 11 years, 1 month
 - mean spelling grade level 2.49
 - 30 normally progressing younger children
 - mean age 7 years, 5 months
 - mean spelling grade level 2.44

- Cassar, Treiman, Moats, Pollo, & Kessler, 2005
 - 25 dyslexics
 - mean age 11 years, 7 months
 - mean spelling grade level 2.15
 - 25 normally progressing younger children
 - mean age 6 years, 8 months
 - mean spelling grade level 2.11

Spelling errors in children with dyslexia

- krt
- pepl
- gone
- bop
- Children with dyslexia show similar numbers and types of errors as typical beginners

Teacher study (Cassar et al., 2005)

Can teachers distinguish between older dyslexic children and younger normally progressing children on the basis of their spellings?

and	and	and
arm	run	rueme
boy	boy	boy
bump	boum	bump
cart	krke	crte
circle	crkl	srcle
city	situe	sity
cook	coke	cuke
correct	kract	crent
cut	cut	cute
dime	dime	dime
dress	drase	drese
enter	ntre	entr

Group	Prop. correct	Confidence rating (1-5)
All participants (<i>N</i> = 44)	.49	3.36
Participants with most teaching experience with children with serious reading and spelling problems (<i>N</i> = 10)	.51	3.55
Participants with teaching experience with both normally progressing children in early elementary school and dyslexics (<i>N</i> = 10)	.50	3.39

Teachers' comments

- “The more of these I did, the less confident I became.”
- “I worked on this for a period of time ... all except two samples could be either a young typical child or an older dyslexic student. ... I did not fill out the other forms as I could not classify these students as either typical or dyslexic.”

Conclusions about spelling in children with dyslexia

- Face same hurdles as typically developing children
 - Slower learning of spelling and reading
 - Same kinds of errors
- Need for explicit and systematic teaching
- Teachers must appreciate patterns in English writing system and logic behind children's errors

If I had a bac brd I wod fiy
no sop a rad the wed

Children's early spelling has an underlying logic

That logic is much the same for children with dyslexia and children without