Top-down measures in 7th grade writing: the effects of genre and SES

<table>
<thead>
<tr>
<th>Tsila Shalom</th>
<th>Dorit Ravid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levinsky Teachers’ College</td>
<td>Tel Aviv University</td>
</tr>
<tr>
<td>ISRAEL</td>
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</tr>
</tbody>
</table>
The Standards Project

• Funded by **Yad Hanadiv (Rothschild) Foundation** in Israel

• In collaboration with
  – CET (Center for Educational Technology)
  – Tel Aviv University School of Education
Research team at the Standards Project

• Elitzur Dattner
• Irit Katzenberger
• Guy Sha’ashua
Writing as the Hallmark of Literacy

• *Linguistic Literacy* (Berman & Ravid, 2008; Ravid, 2012; Ravid & Tolchinsky, 2002)
  
  – Ready and informed access to an encyclopedic range of language uses ranging across different discourse genres in speech and writing, framed in registers of use and geared towards appropriate communicative functions
Written texts

• The core of literate language, requiring the ability to control and shape the flow of content and information in discourse through linguistic means, while viewing the written text as an autonomous, whole entity

• *Thinking for writing* (Slobin, 2003)

7th graders (12-13 year olds)

• Poised to take off into adolescence, a time when many of the cognitive, social, and linguistic abilities necessary to produce written texts will be at their disposal

• The advent of powerful (meta)memory and executive functions, coupled with increasing understanding of how people and things operate and the vocabulary and grammar necessary to express these relationships
Writing

- Requires the active mediation and support of teachers
- Constructing a piece of written language imposes heavy demands on both bottom-up and top-down processing abilities

  - retrieving the specific words for the desired expression of content, combining them the appropriate syntactic and rhetorical structures, and integrating them smoothly and meaningfully in view of the overall goal of the text under construction
Standards

• Standards are published documents that establish specifications and procedures designed to ensure the reliability of the materials, products, methods, and/or services people use every day.

• Standards address a range of issues, including but not limited to various protocols to help ensure product functionality and compatibility, facilitate interoperability and support consumer safety and public health.
The problem in Israel

• No common, accessible knowledge base that will enable teachers assess the quality of students’ writing
• In the absence of systematic, evidence-based standards, everybody makes up their own local assessment of students’ texts with different considerations and preconceptions
• No real idea what to expect at each age level and from different genres
• Great variability, no reliability
Standards as a Means to a Solution

- Providing teachers with a research-based body of knowledge
- Evidence-based information on how to assess quality of text components and the text as a whole
  - Age-appropriate for 7th grade
  - Different school topics and genres
  - Ecologically valid for Israeli Hebrew
The Standards Project

• Develops standards for the assessment of writing in 7th grade Israeli students
  – Two SES backgrounds
    • mid-high and low
  – Three text genres
    • Narrative
    • Expository
    • Informative
Database

- Materials collected September 2011 from 90 7th grade students in two schools
  - Two SES neighborhoods and according to the Strauss scale
- Each student wrote three texts (270 texts altogether)
  - Narrative text – a personal-experience story about success or failure
  - Expository text – discussing the notions of success or failure
  - Informative text – about The Car
- Following a strict protocol
Standards

• Three dimensions of assessment
  – Top down
  – Interim
  – Bottom up

• Six levels in the assessment of each dimension
Three dimensions of assessment

- **Top-down**
  - Viewing the text as a global whole
- **Interim**
  - Discourse syntax
- **Bottom-up**
  - Morpho-lexicon
Three dimensions of assessment

• Top-down
  – Viewing the text as a global whole
  – “an autonomous text”

• Interim
  – Discourse syntax

• Bottom-up
  – Morpho-lexicon
Top-down components

• Content quality and quantity
• Global text structure
• Cohesiveness
Top-down components

• Each component assessed at 6 levels with specific attention to text genre
  – Highest levels genre specific

• With detailed criteria illustrated by examples from the database
Accompanying research

• Top down measures
• Two genres
  – Narrative
  – Expository
• Detailed analyses in 12 measures
## Participants and texts

<table>
<thead>
<tr>
<th></th>
<th>High SES</th>
<th>Low SES</th>
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<tbody>
<tr>
<td>Narrative texts</td>
<td>37</td>
<td>28</td>
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<tr>
<td>Expository texts</td>
<td>37</td>
<td>28</td>
</tr>
<tr>
<td>Narrative texts</td>
<td>37</td>
<td>Expository texts 28</td>
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<td></td>
<td>High SES</td>
<td>Low SES</td>
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<td>--------------------------------</td>
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<tr>
<td>Two narratives</td>
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<tr>
<td>No expository</td>
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<tr>
<td>Text 2 clauses or less</td>
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Top-Down Measures

1. Number of words
2. Number of Clauses
   I. Mean Clause Length
3. Content Quality
4. Content Quantity
   I. Words / Propositions
   II. Clauses / Propositions
5. Opening segment
6. Ending segment
7. Proportions
8. Demarcation
Top-Down Measures

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2. Number of Clauses
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8. Demarcation

Text size
Syntactic density
Scale 1-6
Number of propositions
Conceptual density
Global text structure
Cohesion
Results
Text size (1): # Words

- Low SES
- High SES

Narr > Exp

Expository
Narrative
Text size (2): # Clauses

Narr > Exp

Low SES

High SES

Expository
Narrative
Syntactic density: Mean Clause Length
(#Words/#Clauses)

Exp > Narr
Content Quality (Scale 1-6)

High SES > Low SES

Expository
Narrative
Content Quantity (#Propositions)

Narr > Exp

Low SES

High SES

Expository
Narrative
Conceptual density (1): # Words per Proposition

Exp > Narr
Low SES > High SES
Interaction Genre X SES

Low SES
High SES

Expository
Narrative
Conceptual density (2): # Clauses per Proposition

- Low SES > High SES
- Interaction Genre X SES

Expository > Narrative
Global text structure (1)
Opening segment (Scale 1-3)

Narr > Exp

Low SES

High SES

Expository
Narrative
Global text structure (2)
Closing segment (Scale 1-3)

Narr > Exp

Low SES
High SES

Expository
Narrative
Global text structure (3)

Text proportions (Scale 1-3)

Low SES

High SES

Narr > Exp

Narr > Exp
Interim Summary

• Text size
  – Syntactic density

• Content quality

• Content Quantity Narrative > Expository

• Gobal text structure
  – Opening segment, Closing segment, Proportions

• Demarcation

• Conceptual density
  Lower in low SES, especially in expository texts
# Pearson Correlations (** at .01 level)

## Expository

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<tr>
<th></th>
<th>CQ</th>
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<tr>
<td>Proportions</td>
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## Narrative

<table>
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# Pearson Correlations

** at .01 level, * at .05 level

<table>
<thead>
<tr>
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<th>Narr Content Quality</th>
<th>Narr Opening</th>
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<td>Exp Opening</td>
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<tr>
<td>Exp Ending</td>
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<tr>
<td>Exp Proportions</td>
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<td>Exp Demarcation</td>
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### Hierarchical Linear Modeling Coefficients for Genre, SES, Actor and Partner Effects of Proportions, Demarcation and Interactions on Content Quality

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
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<tr>
<td>Fixed effects</td>
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<tr>
<td>Intercept</td>
<td>4.12 (0.12)***</td>
<td>4.05 (0.11)***</td>
<td>4.29 (0.07)***</td>
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<td>Level 1</td>
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<td>Genre</td>
<td>-0.33 (0.13)*</td>
<td>-0.34 (0.11)**</td>
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<tr>
<td>Actor Effects</td>
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<tr>
<td>Proportions</td>
<td>0.33 (0.05)***</td>
<td>0.29 (0.06)***</td>
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<tr>
<td>Demarcation</td>
<td>0.81 (0.10)***</td>
<td>0.95 (0.25)***</td>
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<tr>
<td>Partner Effects</td>
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<tr>
<td>Proportions</td>
<td>0.14 (0.05)*</td>
<td>0.03 (0.05)</td>
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<td>Demarcation</td>
<td>-0.14 (0.10)</td>
<td>-0.17 (0.11)</td>
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<td>SES</td>
<td>0.41 (0.14)**</td>
<td>0.59 (0.15)***</td>
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<tr>
<td>Genre X actor Demarcation</td>
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<td>-0.11 (0.20)</td>
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<td>Genre X partner proportions</td>
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<td>Genre X partner Demarcation</td>
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<td>0.20 (0.20)</td>
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<td>Level 1 X level 2 interactions</td>
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<td>SES X actor Demarcation</td>
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<td>-0.31 (0.18)</td>
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<tr>
<td>SES X partner proportions</td>
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<td>-0.04 (0.10)</td>
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<td>SES X partner Demarcation</td>
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<td>0.47 (0.17)**</td>
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<td>Random Effects</td>
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<tr>
<td>level 1 $\sigma^2$</td>
<td>0.75 (0.86)</td>
<td>0.40 (0.64)</td>
<td>0.28 (0.53)</td>
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<tr>
<td>level 2 $\sigma^2$</td>
<td>0.51 (0.71)***</td>
<td>0.07 (0.27)*</td>
<td>0.11 (0.34)***</td>
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<td>Deviance</td>
<td>386.85</td>
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<td>242.90</td>
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<tr>
<td>$\Delta X^2$</td>
<td>-</td>
<td>115.92***</td>
<td>28.03***</td>
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First and second dyadic models

- Table 1 provides the estimates of the dyadic model as well as the sources of variation in the model. We run three sub-models and compare one to another in terms of additional explained variation. The first model includes intercept only, explaining 41% of the variation (Unconditional ICC). The mean quality for both assignments is 4.12 on a 1 to 6 scale. The second model shows that writing capabilities, proportions and demarcation are positively correlated with the outcome, but the marginal effect of demarcation is higher (.81 versus .33, in case both are measured on the same scale). Expository performance is slightly higher in comparison to narrative performance ($b_{\text{Genre}} = -.33$). The effect of proportions in one assignment on the performance of the other assignment, i.e., partner effect, is significantly positive. Lastly, the effect of SES on writing performance is positive. That is, students from a higher socio-economic background perform better than students from a lower socio-economic background.
Interaction Genre X partner Proportions

Better expository proportions increase the content quality of narrative text, but the quality of expository text is unaffected by the proportions of the narrative text.
Better proportions increase text content quality more for high SES texts, with a smaller increase for low SES texts.
Interaction SES x Partner Demarcation

Increase in demarcation increases content quality for high SES texts, while low SES texts remain unaffected.
Summary and discussion

• Content quality a robust measure related to global text structure and text cohesion within and across genres

• Expository structure predicts narrative content quality but not vice versa
  – 7th graders have already mastered narrative properties

• Text structure and cohesion predict content quality in high SES
  – Not so in low SES
Summary and discussion

- Recommend exposure to expository texts, writing thereof
- Especially in low SES
- Will strengthen narrative skills as well
Thanks to all members of the Standards Project

- Amalia Bar-on
- Orna Davidi-Bareli
- Leah Haim
- Gania Haviv-Nadan
- Luciana Napchan Krontal
- Ronit Levie