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Department of **Education**

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The clinical application of SALT to evaluate intervention program effectiveness in a school context
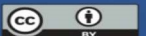
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Purpose

- Academic and Speech Pathology measures used concurrently.

- Oral language measured with a variety of genres (Whitworth et al., 2015).

- Whole school data collection focusses on fictional narrative due to its links with literate language (Westby, 1985), and its correlation with later academic success (Wellman et al., 2011).

- Language Sample Analysis (LSA), using SALT (Miller et al., 2015) software, is a common analysis tool for criterion referenced tests (Danahy Ebert & Scott, 2014).

Narrative Sampling in the School Context

- SALT standard measures (Danahy Ebert & Scott, 2014):
  - Mean Length of Utterance in morphemes (MLUm),
  - Number of Different Words (NDW),
  - Percentage of Maze words (%MzWrds), and
  - Error Codes (ErrCodes).
- Additional measures were drawn from the teaching program (Gillam & Gillam, 2013; Gillam & Pearson, 2004; Heilmann et al., 2010; Peterson et al., 2010).

Program Measure & Codes

Group	Feature	Code
Beginning	Setting (Time & Place)	[OS]
	Character	[OC]
Critical Triangle	Initiating Event	[IE]
	Internal Response	[IR]
	Plan	[P]
Middle	Actions	[A]
	Complication	[COMP]
Ending	Solution/Resolution	[S]
	Consequence/Tie-up	[C]
Microstructure	Connectors	[TC] & [CC]
	Adverbs	[AM], [AP] & [AT]

Method

- Participants
  - 64 Pre-Primary students (5;11-6;7)
  - 27 Year 1 students (6;11-7;4)

NEMLDC

Method

- Procedure
  - Teachers collected samples of students retelling *Peter & the Cat* (Allan & Leitão, 2003) using LSA protocol (Westerveld & Gillon, 2002).
  - Speech Pathology team checked the transcriptions and segmented sentences into C-Units in accordance with SALT procedure.
  - Assessment repeated one year later.

Hypotheses

Feature	Expected Change
%MzWrds	Decrease
ErrCodes	Decrease
MLUm	Increase
NDW	Increase
Setting	Increase
Character	Increase
Initiating Event	Increase
Internal Response	Increase

Feature	Expected Change
Plan	Increase
Actions	Increase
Complication	Increase
Solution/Resolution	Increase
Consequence/Tie-up	Increase
Connectors	Increase
Adverbs	Increase

Inter-Rater Reliability

Intraclass Correlation Coefficient

Feature	ICC/Cohen's κ
%MzWrds	.948
ErrCodes	.923
MLUm	.913
NDW	.99
Setting	.53
Character	.243
Initiating Event	-.147
Internal Response	-.07

Feature	ICC/Cohen's κ
Plan	.592
Actions	.488
Complication	.839
Solution/Resolution	.32
Consequence/Tie-up	.356
Connectors	.762
Adverbs	.838

Key
Poor
Fair
Good
Excellent

PP – Yr1 t-Test Results (n=64)

Feature	Average 2015	Average 2016	Significance	Cohen's d	Key
MLU-Morphemes	6.14 (1.194)	7.008 (1.087)	<.001*	0.605	Small
Number of Different Words	48.656 (16.1)	62.703 (16.578)	<.001*	0.734	Medium
% Maze Words	0.086 (0.055)	0.073 (0.048)	.117	0.199	Large
Error Codes	7.86 (4.58)	8.547 (4.838)	.331	0.122	
Actions	2.688 (1.638)	4.344 (2.123)	<.001*	0.746	
Connectors	3.852 (4.332)	5.109 (4.576)	.001*	0.454	* Significant Change
Adverbs	1.385 (1.755)	1.365 (1.621)	.878	0.019	

NEMLDC

PP – Yr1 McNemar's Test Results (n=64)
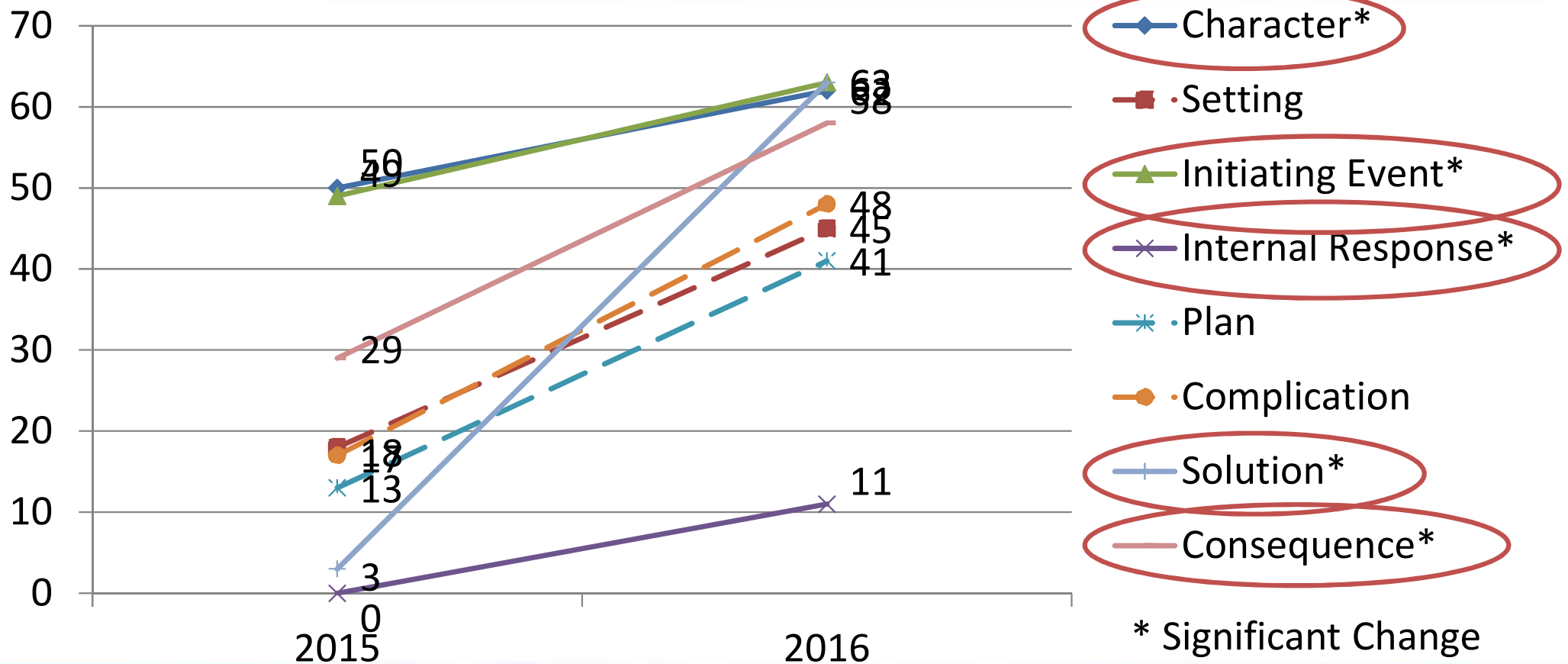
Yr1 – Yr2 t-Test Results (n=27)

Feature	Average 2015	Average 2016	Significance	Cohen's d	Key
MLU-Morphemes	6.942 (1.173)	6.689 (1.209)	.439	0.151	Small
Number of Different Words	60.778 (15.631)	63.444 (13.734)	.343	0.186	Medium
% Maze Words	0.098 (0.056)	0.075 (0.053)	.084	3.459	Large
Error Codes	6.704 (4.852)	5.185 (4.119)	.590	0.380	
Actions	2.889 (1.397)	4.074 (1.741)	.016*	0.497	
Connectors	5.63 (4.923)	4.463 (3.695)	.045*	0.405	* Significant Change
Adverbs	1.407 (1.824)	1.704 (1.882)	.173	0.270	

Yr1 – Yr2 McNemar's Test Results (n=64)

Legend:
- Character*
- Setting
- Initiating Event*
- Internal Response*
- Plan
- Complication
- Solution*
- Consequence*

* Significant Change
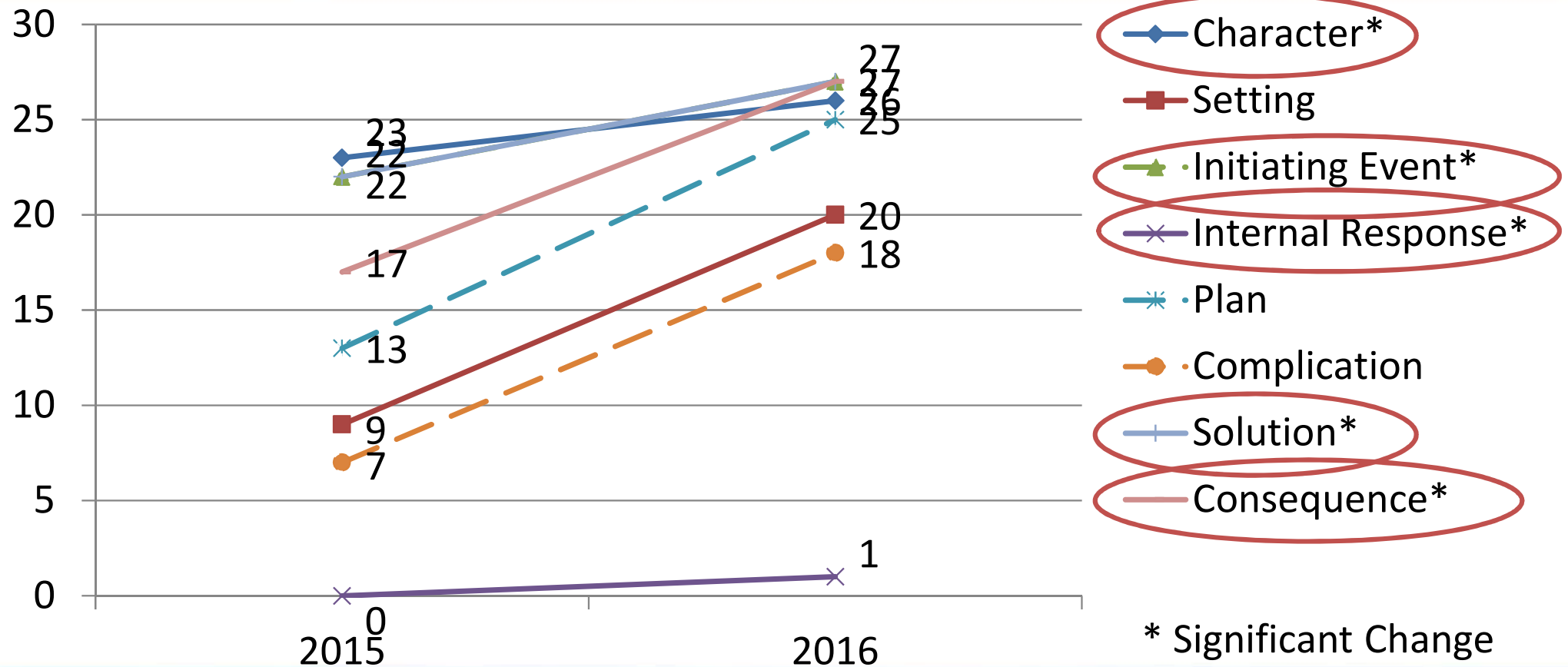
Conclusions

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Feature	PP-1	1-2
%MzWrds	Dec	Dec
ErrCodes	Inc	Dec
MLUm	Inc*	Dec
NDW	Inc*	Inc
Setting	Inc	Inc
Character	Inc*	Inc*
Initiating Event	Inc*	Inc*
Internal Response	Inc*	Inc*

Feature	PP-1	1-2
Plan	Inc	Inc
Actions	Inc*	Inc*
Complication	Inc	Inc
Solution/Resolution	Inc*	Inc*
Consequence/Tie-up	Inc*	Inc*
Connectors	Inc*	Dec*
Adverbs	Dec*	Inc

Key
Sig Decrease
Decrease
Increase
Sig Increase

* Significant Change

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- No age-norms for students.

- No control group.

- Binary coding system.

- Setting time and place were coded together as 'Setting'.

- Use of raters wasn't structured.

Further Directions

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- Continue to collect year-end data to build a database of LDC students' narrative performance.
  - 2017 data collection point already planned
- Correlational analysis with academic measures.
- More defined macrostructure coding system.

References

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Publication Update

- Publications related to the data presented here can be found at the websites for the [North East Metropolitan Language Development Centre](http://northeastldc.wa.edu.au/our-school/research-and-development/) or the [Journal of Clinical Practice in Speech-Language Pathology](https://www.speechpathologyaustralia.org.au/SPAweb/Members/Publications/Journal_of_Clinical_Practice.aspx)

    - http://northeastldc.wa.edu.au/our-school/research-and-development/
    - https://www.speechpathologyaustralia.org.au/SPAweb/Members/Publications/Journal_of_Clinical_Practice.aspx