Persistence and consequences of language and speech difficulties in preschool children

Emma Hayiou-Thomas
Ruth Leavett, Hannah Nash & Maggie Snowling
BDA 2014

# Speech & Language difficulties

- Speech AND/OR Language
  - LI and SSD often – but don't always – co-occur (Pennington & Bishop, 2009)
  - Different – but overlapping- aetiologies
    - High heritability for SSD
    - Strong environmental influence on isolated language impairments (Bishop & Hayiou-Thomas, 2008)
  - Different response to treatment (Law et al., 2000)
  - Consequences for literacy
    - Isolated SSD carries little risk
    - Co-morbid LI+SSD carries high-risk
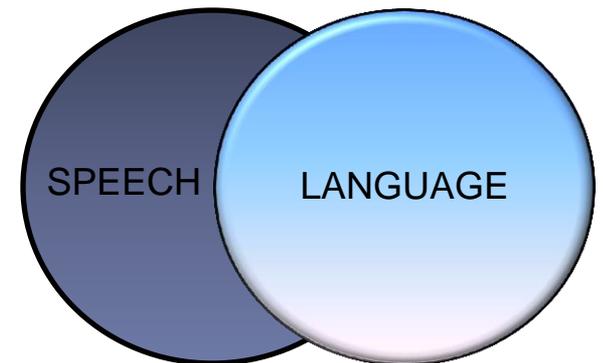
SPEECH LANGUAGE

The Study

- How do isolated speech and language difficulties compare to a combined deficit?
  - Preschool profile: T1, age 3½
  - Persistence: T1 – T3
  - Profile at school entry: T3, age 5

The Study

- How do isolated speech and language difficulties compare to a combined deficit?
  - Preschool profile: T1, age 3½
  - Persistence: T1 – T3
  - Profile at school entry: T3, age 5

- *Focus on LI and SSD regardless of Family Risk for dyslexia*
- *Focus on status at T1*

Defining subgroups at T1 – Age 3½

- ## Language Impairment (LI)
  - Below cut-off on 2/4 language tests
  - CELF-P2 basic concepts, expressive vocabulary, sentence structure (scaled score <= 8), TEGI screener

- ## SSD
 - DEAP articulation percent Consonants Correct
  - Below 74%

Question 1

- Does the initial severity of speech or language impairments differ for single (LI-only or SSD-only) vs double-deficit (LI+ SSD) groups?

Age 3½: Profiles of LI & SSD groups
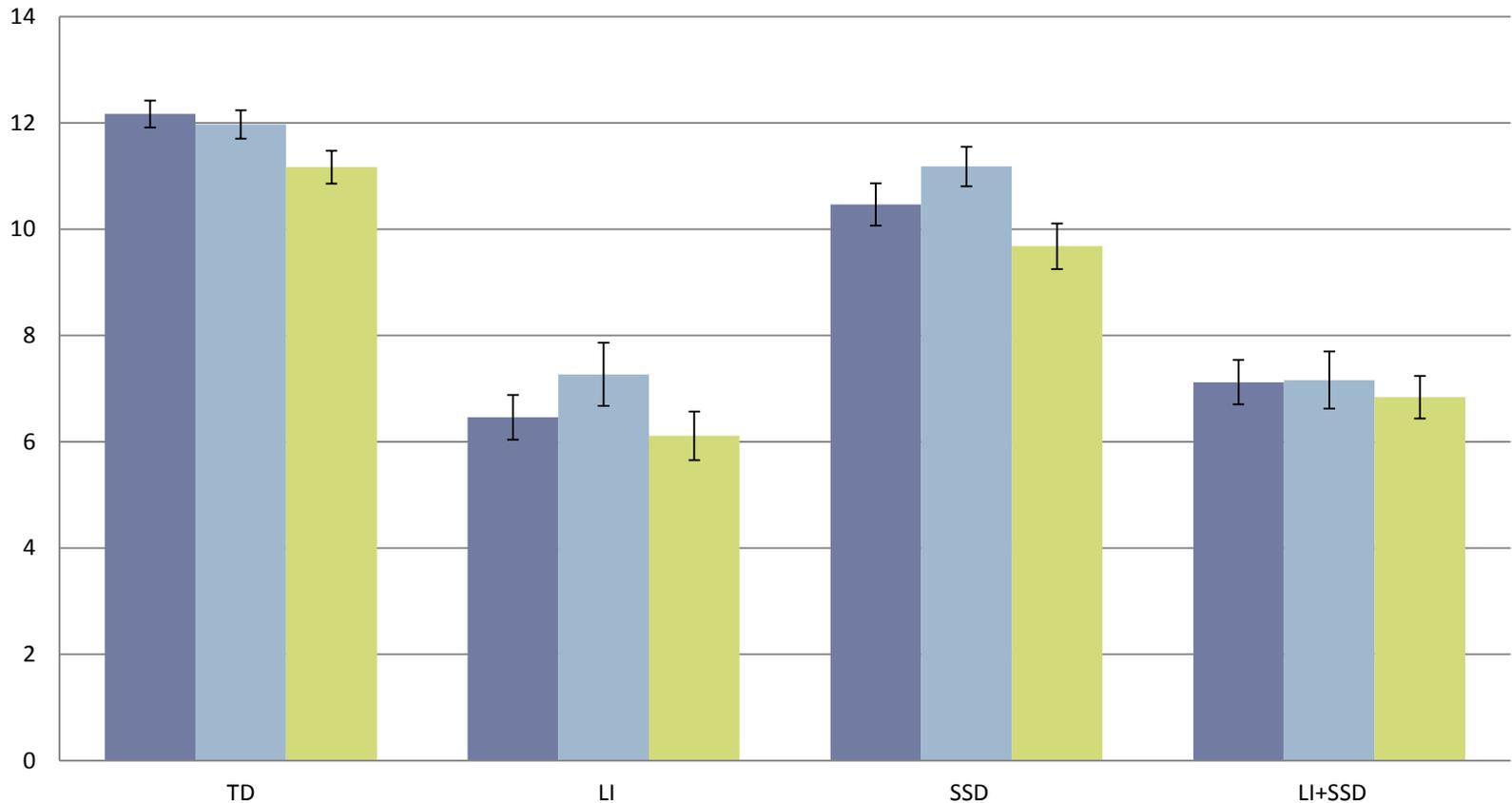
Language measures used to define groups (CELF)

Age 3½: Profiles of LI & SSD groups

Language measures used to define groups (CELF)
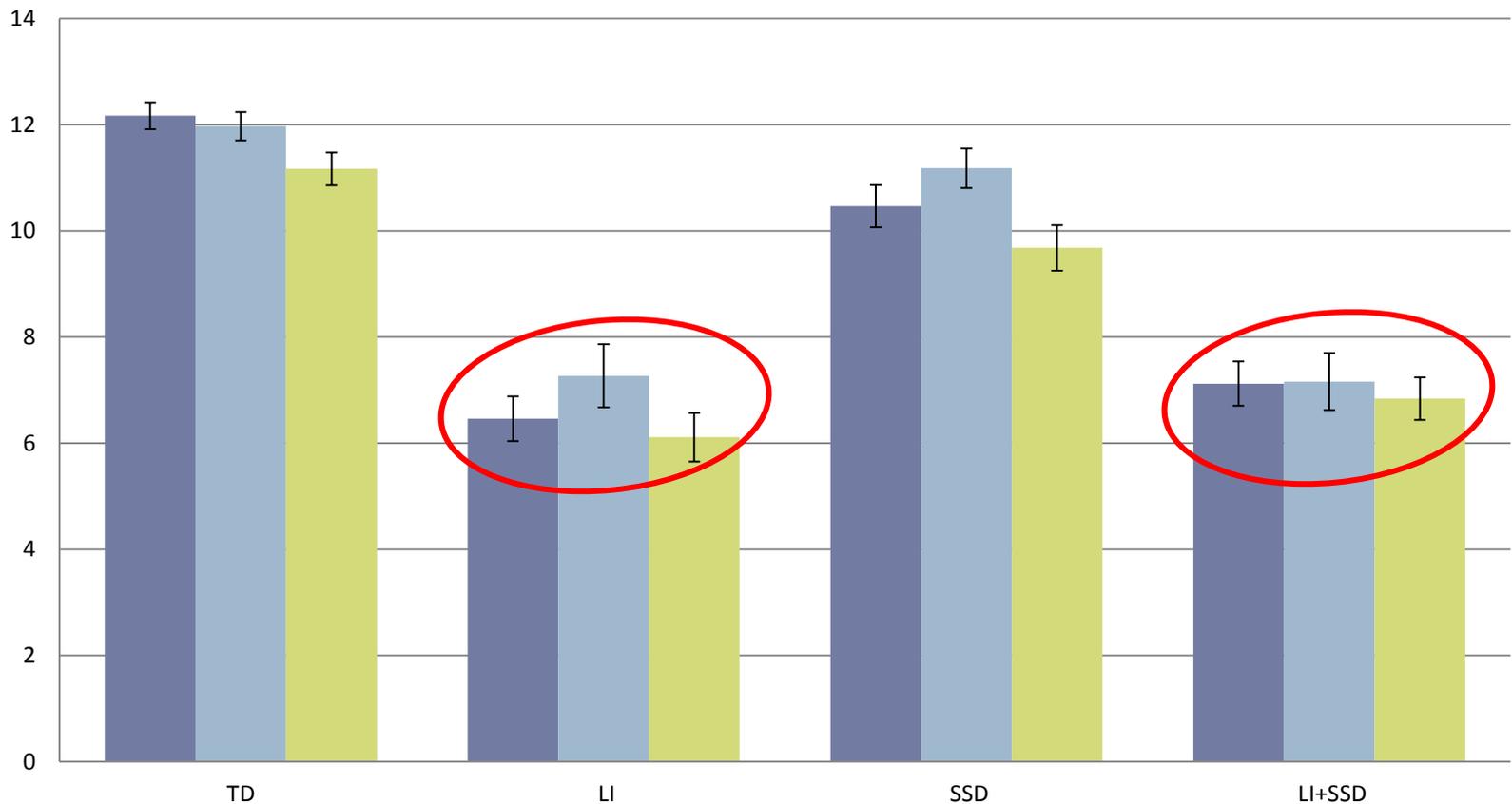
TD > SSD > LI = LI+SSD

Age 3½: Profiles of LI & SSD groups

Speech measure used to define groups (DEAP - % consonants correct)
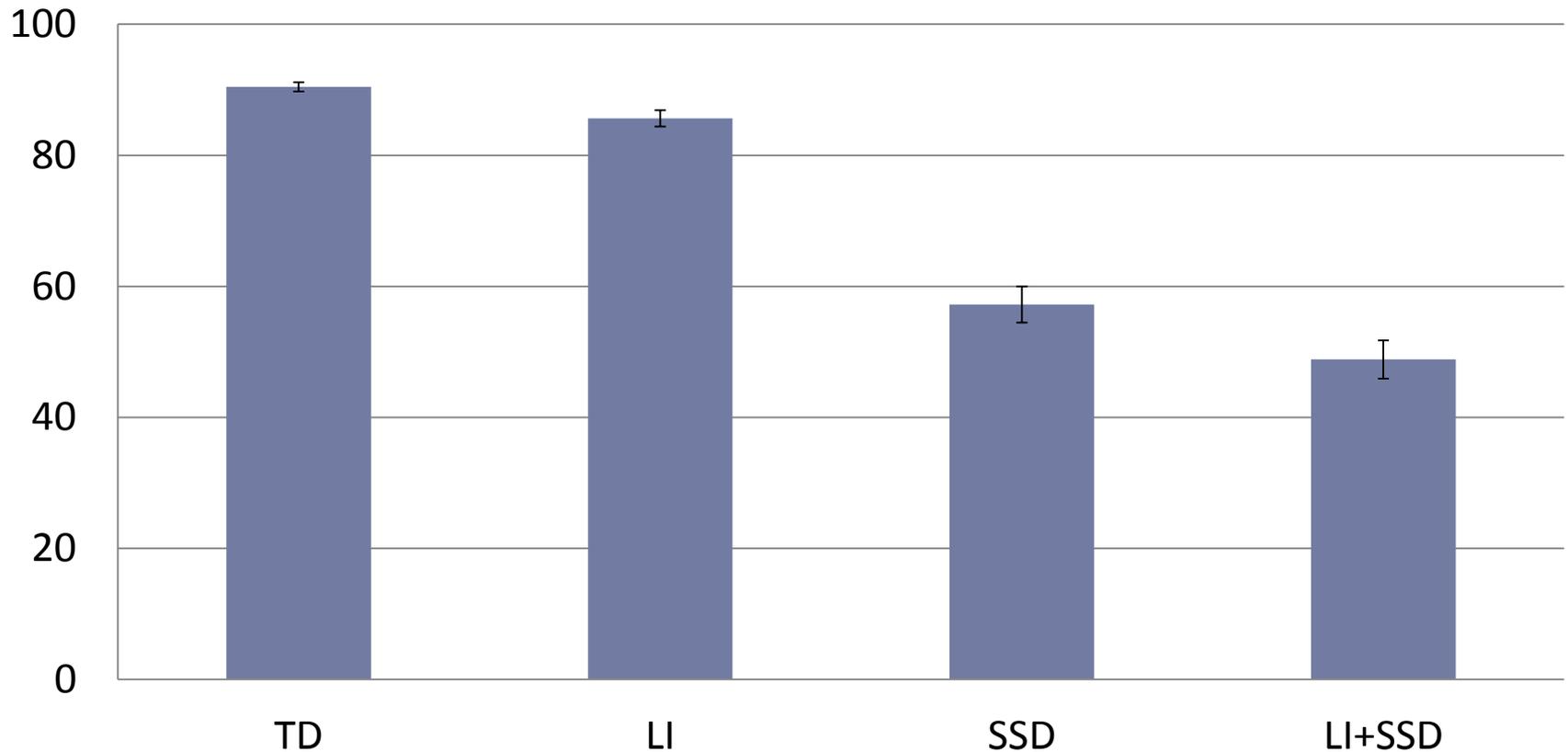
Age 3½: Profiles of LI & SSD groups

Speech measure used to define groups (DEAP - % consonants correct)
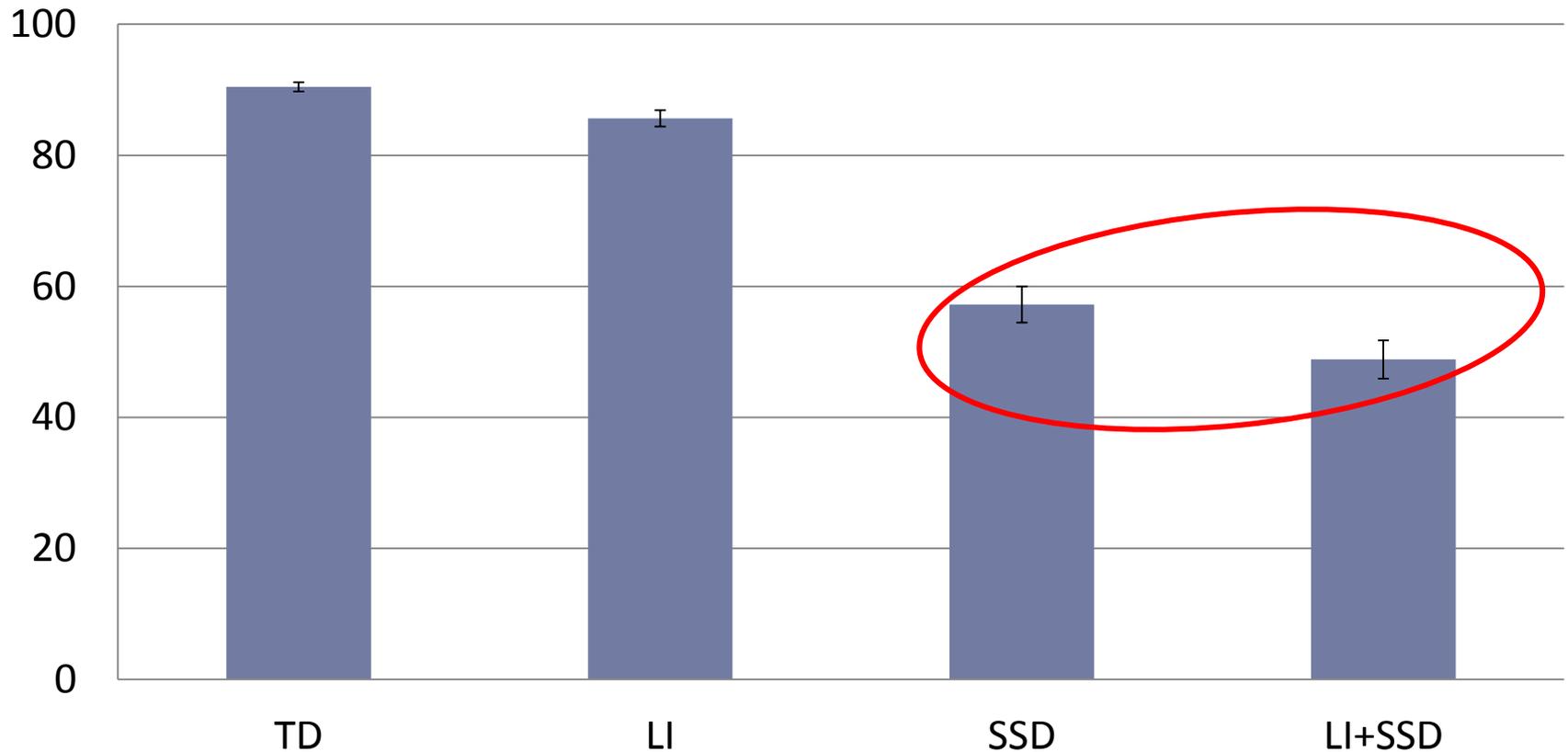
TD = LI >> SSD > LI+SSD

Question 1

- Does the initial severity of speech or language impairments differ for single (LI-only or SSD-only) vs double-deficit (LI+ SSD) groups?
  - No difference for LI
  - Very small (but significant) difference for SSD

Question 2

- Which is more persistent between the ages of 3 ½ and 5: SSD, language impairment, or the combination of the two?

Defining subgroups at T3 – Age 5

- ## Language Impairment (LI)
  - Below cut-off on 2/3 language tests
  - CELF-P2 expressive vocabulary, sentence structure (scaled score <= 8), TEGI screener

- ## SSD
  - Below 95% consonants correct (DEAP)
    - *Only administered to children identified with SSD at T1*

Persistence

	T1	T3 TD LI SSD LI+ SSD
TD	71	
LI	27	
SSD	28	
LI+SSD	37	

Persistence

	T1	T3 TD	LI	SSD	LI+ SSD
TD	71	71 100%		-	-
LI	27	16 59%	11 41%	-	-
SSD	28				
LI+SSD	37				

Persistence

	T1	T3			
		TD	LI	SSD	LI+ SSD
TD	71	71 100%		-	-
LI	27	16 59%	11 41%	-	-
SSD	28	7 25%	0 0%	19 68%	2 7%
LI+SSD	37				

Persistence

	T1	T3 TD	LI	SSD	LI+ SSD
TD	71	71 100%		-	-
LI	27	16 59%	11 41%	-	-
SSD	28	7 25%	0 0%	19 68%	2 7%
LI+SSD	37	4 11%	4 11%	12 32%	17 46%

Persistence

	T1	T3 TD	LI	SSD	LI+ SSD	
TD	71	71 100%		-	-	
LI	27	16 59%	11 41%	-	-	
SSD	28	7 25%	0 0%	19 68%	2 7%	75%
LI+SSD	37	4 11%	4 11%	12 32%	17 46%	89%

Question 2

- Which is more persistent between the ages of 3 ½ and 5: SSD, language impairment, or the combination of the two?

    – Combination of LI+SSD is most persistent

    – SSD more persistent than LI

- What is the outcome at age 5, in terms of early literacy skills, for those children identified at 3 ½ as having isolated vs combined speech and language impairments?

Age 5: Phonological skills

Phoneme Isolation
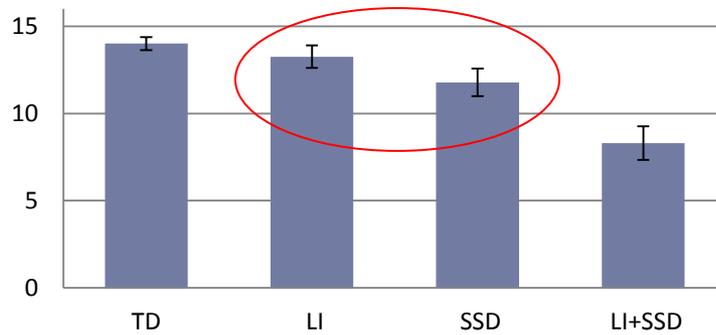
**Phoneme Deletion**
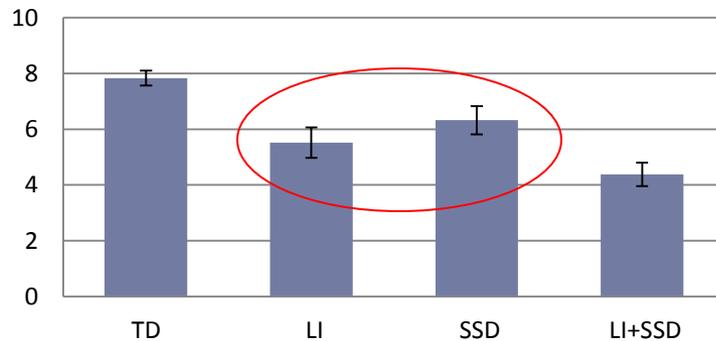
Nonword Repetition
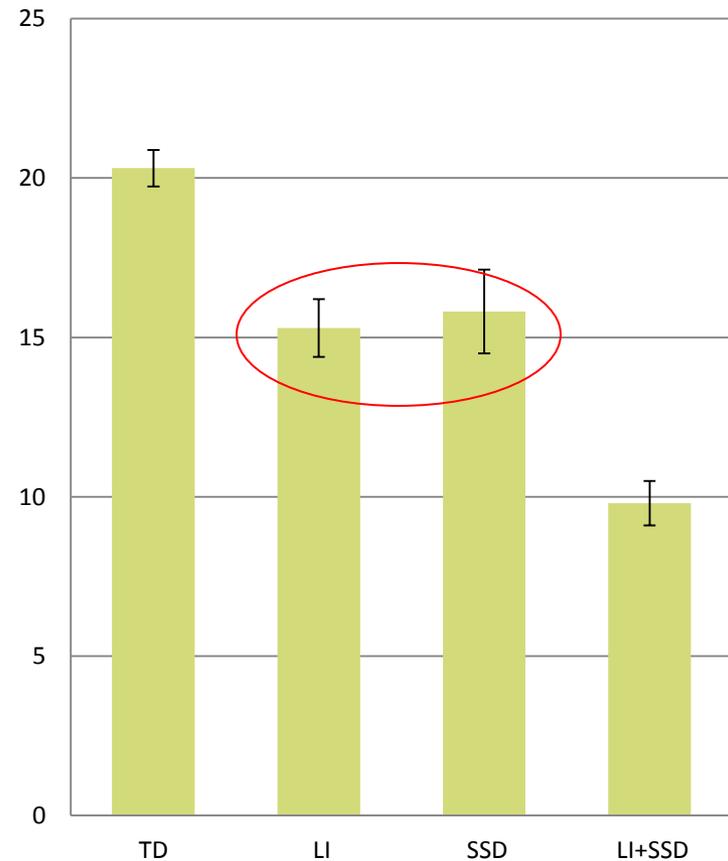
TD > SSD = LI > LI+SSD*

Age 5: Pre-literacy skills

RAN Objects (rate)
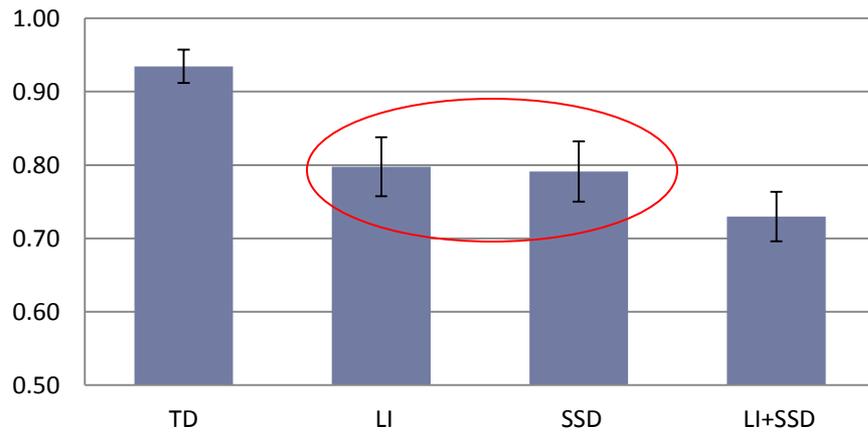
Letter-Sound Knowledge
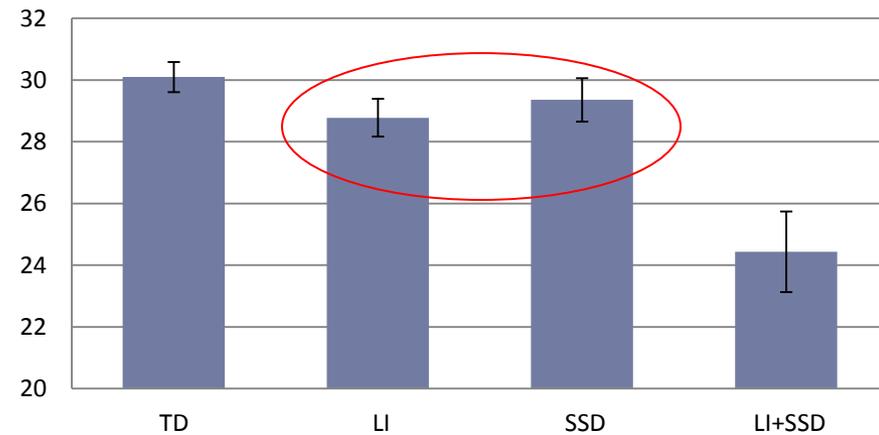
TD > SSD = LI > LI+SSD*

Age 5: Early reading skills

Early Word Reading
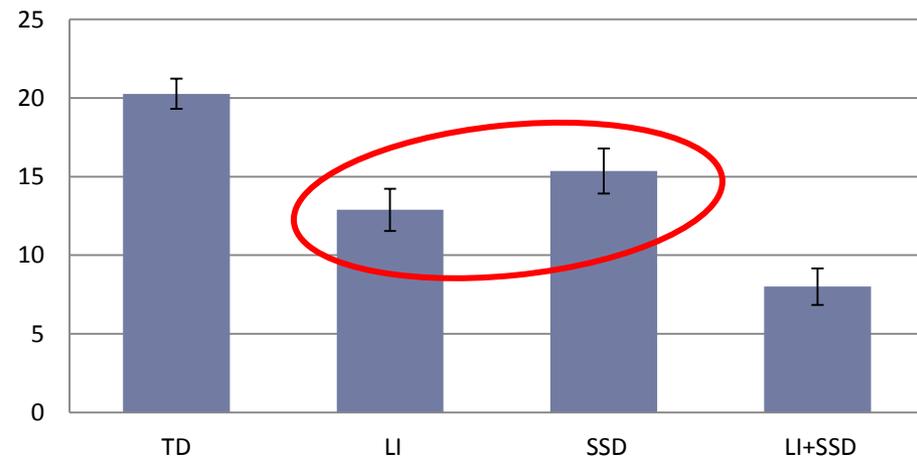
Sight Word Reading
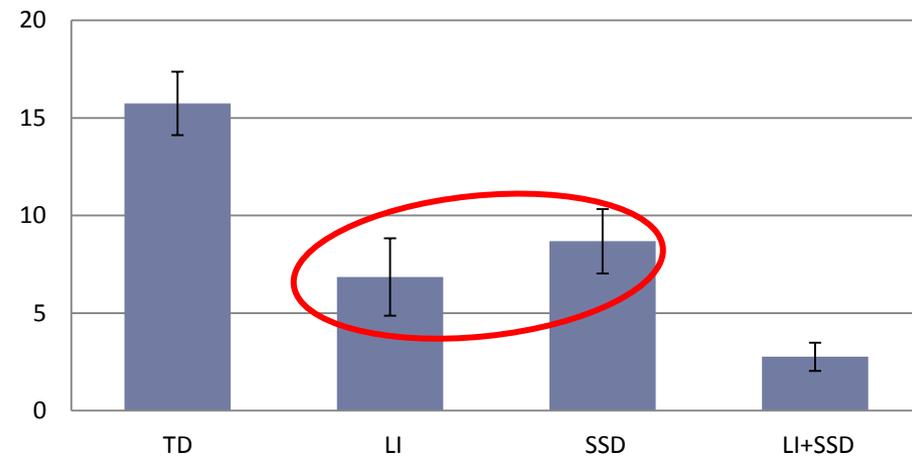
TD > SSD = LI > LI+SSD*

Question 3

- What is the outcome at age 5, in terms of early literacy skills, for those children identified at 3½ as having isolated vs combined speech and language impairments?

  - Mild deficits for isolated difficulties

  - Severe deficits for combined speech & language impairments

Conclusions

- Profile at age 3
  - LI+SSD: LI in terms of language, SSD in terms of speech
  - No evidence of more generalised or severe difficulties

Conclusions

- Profile at age 3
  - LI+SSD: LI in terms of language, SSD in terms of speech
  - No evidence of more generalised or severe difficulties

- Persistence
  - Speech impairments appear to be more persistent than isolated language impairments in the preschool years
  - Combined deficit LI+SSD most persistent

Conclusions

- Profile at age 3
  - LI+SSD: LI in terms of language, SSD in terms of speech
  - No evidence of more severe difficulties

- Persistence
  - Speech impairments appear to be more persistent than isolated language impairments in the preschool years
  - Combined deficit LI+SSD most persistent

- Profile at age 5
  - Stepwise pattern across early literacy measures: consistently worse outcome for combined deficit compared to either single-deficit group

Conclusions

- Profile at age 3
  - LI+SSD: LI in terms of language, SSD in terms of speech
  - No evidence of more severe difficulties
- Persistence
  - Speech impairments appear to be more persistent than isolated language impairments in the preschool years
  - Combined deficit LI+SSD most persistent
- Profile at age 5
  - Stepwise pattern across language, speech, and literacy measures: consistently worse outcome for combined deficit compared to either single-deficit group

- Speech and Language difficulties: separable and additive risk factors.

Future Directions

- Persistence

- Family-risk status

- Speech, language, decoding and reading comprehension outcomes at age 9.

Thanks for listening!

Preschool Profiles of LI & SSD groups

Language measures used to define groups (CELF)
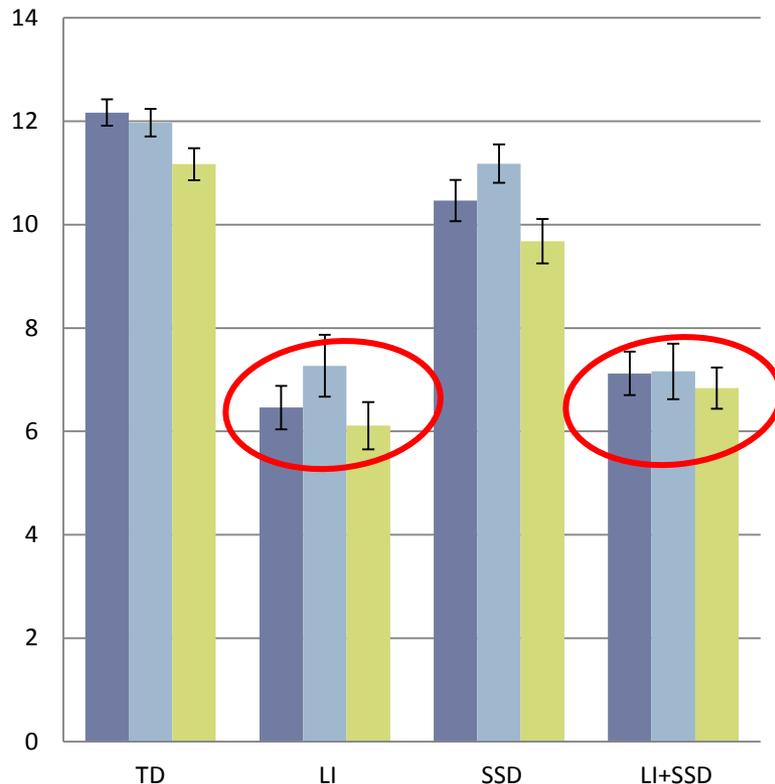
TD > SSD > LI = LI+SSD

Language measures used to define groups (TEGI: % pass)
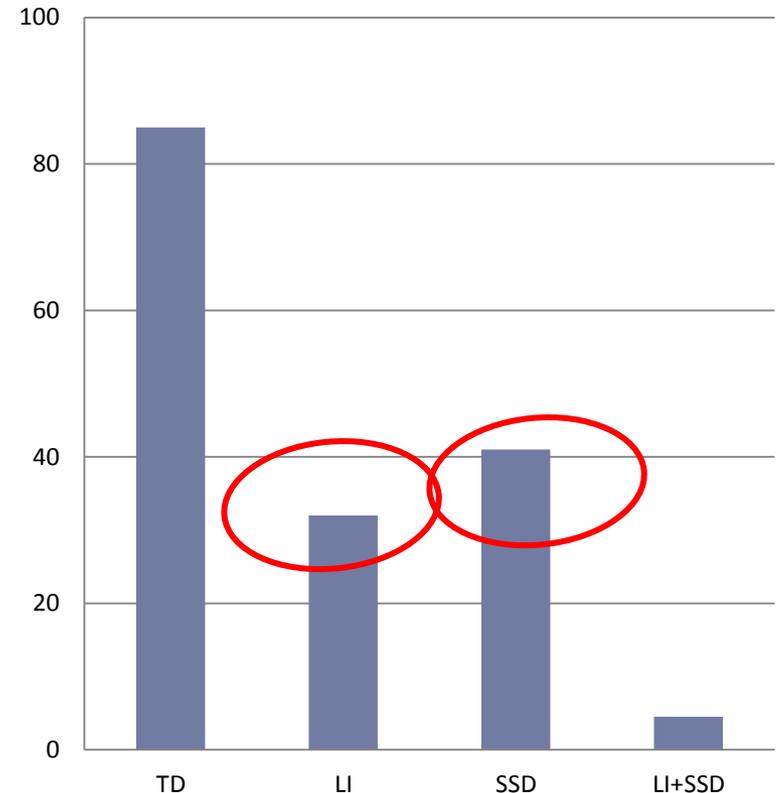
TD > SSD = LI > LI+SSD

Preschool Profiles of LI & SSD groups
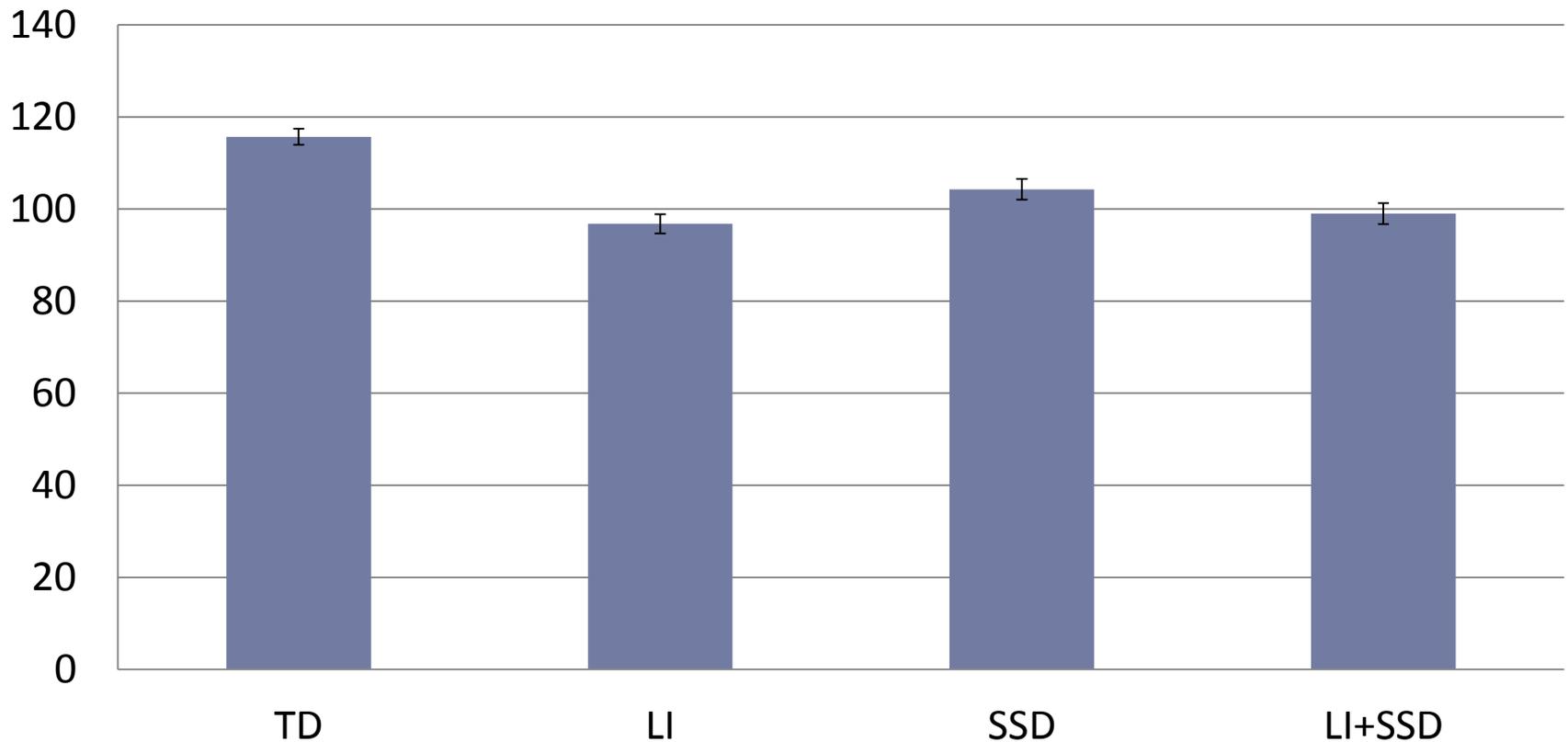
Performance IQ

# Preschool Profiles of LI & SSD groups

Performance IQ
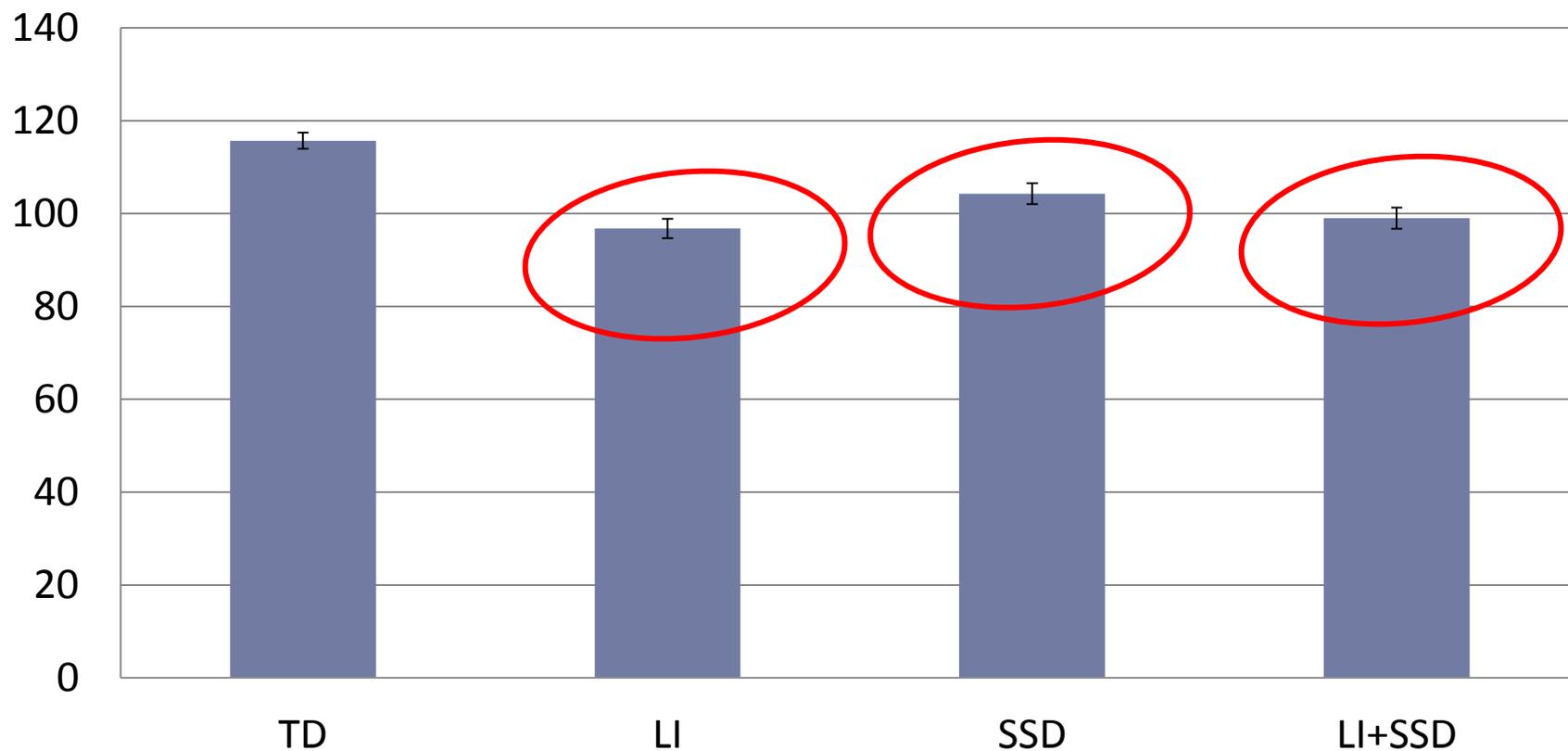
TD = LI = SSD = LI+SSD

Profile at age 5: Speech & Language

CELF Expressive Vocabulary: T3
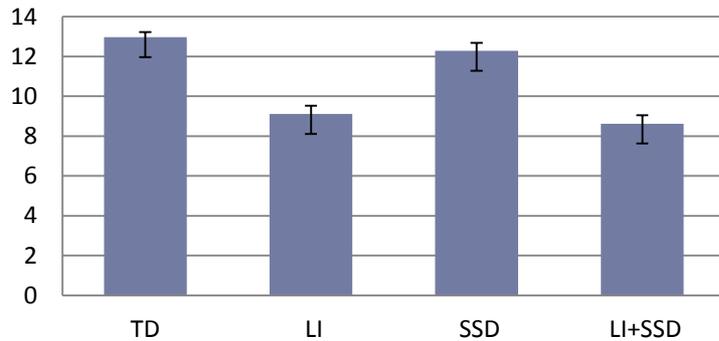
CELF Sentence Structure: T3

DEAP pcc: T3