

# Quality talk interactions in Melbourne preschools

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Acknowledging the:  
Wurundjeri people,  
Traditional mentors of this land

# Why talk interactions?

- Primary way children learn
- Vygotsky, Bruner, Bakhtin's "loan of consciousness"
- Or scaffolding (Wood, Bruner, Ross)
- Interthinking (Mercer)
- Sustained Shared Thinking (Siraj-Blatchford et al)
- But...not knowing how this occurs remains a "deep problem" (Rogoff 1990)

# What is Quality talk?

- Talk that extends, broadens, deepens, adds to a child's concepts or "thinking" abilities
- It takes a series of these interactions
- An extended conversation
- A Zone of Proximal Development
- An Intermental Developmental Zone
- An episode of Sustained Shared Thinking

# Why preschools?

- Most Australian states report 80-90% children have some ECE each week
- NZ participation may be as high as 95%
- Often child's 1<sup>st</sup> professionally trained & audited extended out of home experience
- ECE teachers can and do advise parents
- Importance of one supportive other adult
- Pre-"formal" curriculum – changeable
- Critical time: language & ToM development
- academic and social foundation for school

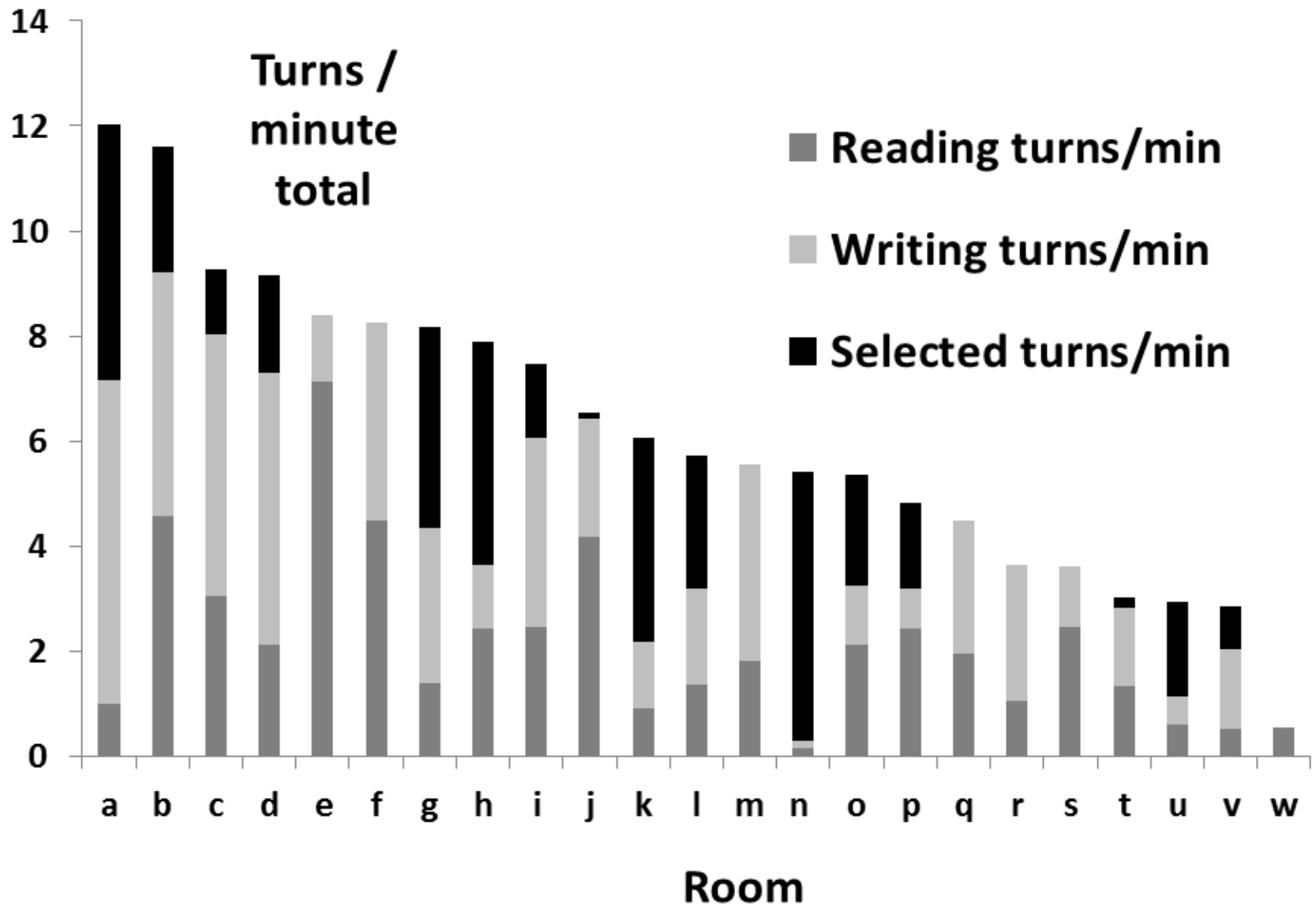
# Quantitative dominant mixed method

- talk mediating joint intellectual activity poses a considerable methodological challenge for a discourse analyst - Mercer
- "illuminative" rather than "evaluative", direct observation of "pedagogical forces" associated with the "genuinely effective aspects of education practice" Trow 1967
- Continuously iterative and dynamically evolving discovery methodology

## Method –Quantitative description

- SST turns: teacher + children = turns/min
- Questions: closed, open, statement
- Acknowledgments, product or strategies
- Gricean maxims: feedback
- Conceptual “blending”: feedback
- Qualitative analysis of typical and exceptional cases
- Quality of language use: MLU and TTR
- Patterns: in use of above quality “indicators”

# SST turns/min across 3 activities in 23 rooms



# SST episodes across 23 rooms ordered by length in turns.

Room	SST lengths by turns		<u>Longest SSTs</u>		Pattern	SSTs Total
			1st	2nd		
c	106,73,	48,45,37,21,18,14	106	73	Long	8
b	104,81,	10,7	104	81	Long	4
k	83,	30,17,3	83	30	Long	4
a	67,56,	44,20,19,19,18,18,14,10,9,8,5,5,3	67	56	Mixed	15
e	65,	38,33,26,17,17,16,8,6,6,5,4,4,3	65	38	Mixed	14
m	64,	32,8,3	64	32	Mixed	4
h	62,52,	16,13,11,10,10,9,8,8,7,6,6,5,5,3	62	52	Mixed	16
f	62,	34,19,12,11,9,8,8,7,7,7,6,6,4,4	62	34	Mixed	15
n	61,	38,32,19,5,4.	61	38	Mixed	6
d	60,58,	26,24,13,13,8,8,7,6,5,3,3,3	60	58	Mixed	14
l	44,15,14,11,10,7,5,5,3,3		44	15	Short	10
i	39,33,25,23,17,16,14,10,10,10,9,9,8,6,5,5,4,4,3 x7		39	33	Short	25
q	39,19,18,14,12,7,6,3,3		39	18	Short	9
t	39,11,10,8,7,7,6		39	11	Short	7
u	38,18,13,11,10,5,4		38	18	Short	7
r	36,27,17,3		36	27	Short	4
j	30,26,26,25,17,15,15,15,11,10,10,7,7,7,4,3,3		30	26	Short	17
g	27,26,25,15,14,11,9,9,7,7,6,5,5,3,3,3,3		27	26	Short	17
p	27,22,20,19,17,16,13,9,7,7,4		27	22	Short	11
s	25,22,12,10,10,7,6,4,3		25	22	Short	9
o	24,16,13,5,3		24	16	Short	5
v	21,17,15,13,7,6,5		21	17	Short	7
w	10,6		10	6	Short	2



# Is SST activity associated with quality indicators?

Room New ranking	Room	Indicators per minute Z scores							Pattern
		Questions Total /mZ	Questions Open /mZ	Acknowldg /mZ	Blends /mZ	Gricean /mZ	SST turns /mZ	6 Indicat av Z	
1	a	<b>0.22</b>	<b>1.49</b>	<b>1.67</b>	<b>2.01</b>	<b>-0.43</b>	<b>2.05</b>	<b>1.17</b>	Mixed 3
2	b	<b>1.92</b>	<b>-0.93</b>	<b>1.01</b>	<b>-0.43</b>	<b>2.75</b>	<b>2.02</b>	<b>1.06</b>	Long 2
3	h	<b>1.53</b>	<b>1.05</b>	<b>-0.11</b>	<b>1.49</b>	<b>1.23</b>	<b>0.44</b>	<b>0.94</b>	Mixed 3
4	d	<b>0.63</b>	<b>2.07</b>	<b>1.33</b>	<b>0.38</b>	<b>-0.48</b>	<b>1.03</b>	<b>0.83</b>	Mixed 2
5	c	0.42	0.80	-0.33	0.55	1.51	1.06	0.67	Long 3
6	j	0.79	-0.40	1.38	1.50	-0.13	0.11	0.54	Short 2
7	f	0.44	-0.11	1.35	-0.14	0.18	0.70	0.40	Mixed 3
8	g	-1.12	0.54	-0.13	1.88	0.23	0.59	0.33	Short 3
9	k	-0.59	1.06	0.67	0.66	0.09	-0.06	0.31	Long 1
10	e	0.28	0.98	0.11	-0.80	-0.10	0.75	0.20	Mixed 2
11	<u>N</u>	0.48	0.12	0.92	-0.31	-0.23	-0.28	0.12	Mixed 1
12	<u>R</u>	0.26	0.66	1.20	-0.67	-0.89	-0.90	-0.06	Short 2
13	<u>O</u>	1.58	-0.73	-0.71	-1.29	0.85	-0.32	-0.10	Short 2
14	S	0.05	-0.36	-0.29	0.06	0.45	-1.11	-0.20	Short 2
15	Q	-0.13	-0.27	-0.06	-0.73	0.05	-0.54	-0.28	Short 2
16	M	-1.13	-0.99	-0.96	0.19	1.23	-0.24	-0.32	Mixed 2
17	P	-0.01	0.01	-0.84	0.41	-1.19	-0.50	-0.35	Short 3
18	i	-0.80	-0.89	-0.99	1.00	-0.85	0.33	-0.37	Short 3
19	T	-0.20	0.51	-1.47	-0.35	-0.87	-1.15	-0.59	Short 1
20	V	-0.28	-0.10	-0.47	-0.44	-0.98	-1.30	-0.59	Short 2
21	U	-0.35	-1.72	-1.74	0.36	-0.84	-1.17	-0.91	Short 2
22	L	-2.11	-1.83	-0.68	-0.59	-0.21	-0.17	-0.93	Short 3
23	W	-1.81	-0.84	-0.86	-1.29	-1.46	-1.97	-1.37	Short 0
		0.69	0.64	0.74	0.54	0.57	0.86	Pearson $r$ (21)	
		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	$p$ one tailed	

What are the differences between non-SST and SST dialogue  
in terms of:

a. Quality Indicators

b. children's participation in the dialogue

This is a Within comparison primarily,  
But then compares that “within” change, between 23 rooms.

SST Pattern	Room		<u>Indicator changes moving from non-SST dialogue into SST episodes</u>							Number negative or no change
			Closed Q / Ut	Open Qs / Ut	Op/Cl Qs ratio	Total Qs / Ut	Acknow / Ut	Blends	Gricean / Ut	
Mixed 3	1	a	0.02	0.07	0.35	0.11	0.064	4	0.048	0
Long 2	2	b	0.09	<b>-0.01</b>	<b>-0.06</b>	0.06	0.144	<b>0</b>	0.261	3
Mixed 3	3	h	0.06	0.04	0.13	0.10	0.005	4	0.208	0
Mixed 2	4	d	<b>0.00</b>	0.14	0.76	0.18	0.059	3	0.060	1
Long 3	5	c	0.03	<b>-0.01</b>	<b>-0.07</b>	0.02	0.004	5	0.139	2
Short 2	6	j	<b>0.00</b>	0.09	0.44	0.15	0.019	4	0.126	1
Mixed 3	7	f	<b>-0.05</b>	0.08	0.36	<b>0.00</b>	0.015	2	0.022	2
Short 3	8	g	<b>0.00</b>	0.12	1.53	0.17	0.020	2	0.085	1
Long 1	9	k	0.05	0.10	0.57	0.18	0.008	3	0.090	0
Mixed 2	10	e	<b>-0.02</b>	0.07	0.47	0.10	0.059	<b>0</b>	0.009	2
Mixed 1	11	N	0.11	0.03	0.04	0.06	<b>-0.040</b>	2	0.012	1
Short 2	12	R	0.24	<b>0.00</b>	<b>-0.15</b>	0.36	<b>-0.031</b>	1	0.013	3
Short 3	13	O	<b>0.00</b>	0.05	0.16	0.06	0.060	<b>0</b>	0.158	2
Short 2	14	S	0.10	0.07	0.22	0.15	0.003	3	0.222	0
Short 2	15	Q	0.02	0.04	0.22	0.13	0.059	1	0.210	0
Mixed 2	16	M	<b>-0.05</b>	0.02	0.24	<b>-0.01</b>	0.007	2	0.150	2
Short 3	17	P	<b>-0.08</b>	0.15	0.86	0.08	0.072	4	0.064	1
Short 3	18	i	0.09	0.07	0.25	0.10	<b>-0.009</b>	5	0.039	1
Short 3	19	T	<b>-0.04</b>	0.12	1.06	0.09	0.035	1	0.087	1
Short 2	20	V	<b>-0.02</b>	0.08	0.43	<b>-0.02</b>	0.048	<b>0</b>	0.036	2
Short 3	21	U	0.10	0.03	0.10	0.11	0.049	1	0.128	0
Short 3	22	L	0.02	0.03	0.23	<b>0.00</b>	0.007	1	0.085	1
average			0.03	0.06	0.37	<b>0.10</b>	0.030	2.18	0.102	
Change: <b>up</b>	<i>down</i> , same		<b>12</b> , 6, 4	<b>20</b> , 2, 0	<b>19</b> , 3, 0	<b>19</b> , 2, 1	<b>19</b> , 3, 0	<b>18</b> , 0, 4	<b>22</b> , 0, 0	
average	% change		16%	267%	271%	161%	42%	400%	340%	

## Conclusions; What are the differences between nSST - SST

- Teacher use of quality indicators generally increased substantially, but differently
- All increased Gricean maxims
- Most teachers increased open Qs (except 2b) and Acknowledgments (except 3h)
- Teacher share of number of total words increased, especially at start of SSTs
- This correlated to 6 indicator ranking 0.49 Pearson,  $p$  two-tailed,
- A higher use of indicators is likely to have required more words. “Orchestration” increased

Differences nSST – SST:  
 quality of language (a)  
 Mean Length of  
 Utterance (MLU)?  
 ALL rooms children's MLU  
 increased except one, but  
 had very high MLU in  
 nSST dialogue

MLU nSST average of 6 cuts	<b>MLU SST 150 word cut</b>	Change nSST av to SST	% Change nSST av to SST
2.5	<b><u>5.2</u></b>	2.65	105%
3.1	<b><u>4.8</u></b>	1.74	56%
4.0	4.8	0.86	22%
3.7	<b><u>4.4</u></b>	0.72	19%
3.4	<b><u>4.3</u></b>	0.89	26%
3.2	<b><u>4.6</u></b>	1.39	44%
4.1	4.4	0.35	9%
<b><u>5.3</u></b>	4.8	<u>-0.43</u>	-8%
3.9	<b><u>6.0</u></b>	2.15	56%
3.5	3.8	0.28	8%
3.1	<b><u>4.6</u></b>	1.46	47%
3.7	<b><u>4.6</u></b>	0.96	26%
3.5	<b><u>4.7</u></b>	1.14	33%
2.3	<b><u>3.8</u></b>	1.43	62%
3.9	<b><u>6.8</u></b>	2.91	74%
4.2	<b><u>5.4</u></b>	1.13	27%
4.0	5.8	1.73	43%
3.4	<b><u>6.0</u></b>	2.62	77%
3.7	4.6	0.96	26%
3.2	<b><u>4.8</u></b>	1.67	52%
3.4	<b><u>4.2</u></b>	0.82	24%
4.2	5.0	0.83	20%

Number of  
Total Words  
Child/Teacher  
ratio  
systematic  
differences  
top vs bottom  
6 indicator

<u>NTW C/T percentage change</u>			6 indicator
<u>nSST to</u>	<u>nSST to</u>	<u>SST to</u>	<u>average</u>
<u>SST</u>	<u>SST start</u>	<u>SST start</u>	<u>Zscore</u>
<b>-55%</b>	<b>-84%</b>	<b>-65%</b>	1.17
7%	59%	48%	1.06
<b>-30%</b>	<b>-51%</b>	<b>-31%</b>	0.94
<b>-30%</b>	<b>-30%</b>	0%	0.83
<b>-33%</b>	<b>-28%</b>	8%	0.67
<b>-17%</b>	<b>-31%</b>	<b>-17%</b>	0.54
<b>-57%</b>	<b>-59%</b>	<b>-4%</b>	0.40
<b>-37%</b>	<b>-53%</b>	<b>-26%</b>	0.33
<b>-64%</b>	<b>-54%</b>	28%	0.31
<b>-16%</b>	<b>-34%</b>	<b>-22%</b>	0.20
14%	<b>-56%</b>	<b>-61%</b>	0.12
<b>-56%</b>	<b>-43%</b>	30%	-0.06
<b>-17%</b>	8%	31%	-0.10
<b>-19%</b>	<b>-46%</b>	<b>-34%</b>	-0.20
<b>-4%</b>	1%	6%	-0.28
33%	6%	<b>-20%</b>	-0.32
1%	<b>-18%</b>	<b>-18%</b>	-0.35
9%	2%	<b>-7%</b>	-0.37
21%	<b>-16%</b>	<b>-31%</b>	-0.59
12%	76%	57%	-0.59
17%	6%	<b>-9%</b>	-0.91
<b>-43%</b>	15%	101%	-0.93
<b>-17%</b>	<b>-20%</b>	<b>-2%</b>	
<b>7, 14, 1</b>	<b>7, 14, 1</b>	<b>8, 13, 1</b>	

Teacher  
MLU  
systematic  
differences  
top vs  
bottom

MLU nSST average of 7 cuts	MLU SST 150 word cut	Change nSST av to SST	% Change nSST av to SST	% Change top - bottom average
5.0	4.7	-0.34	-7%	top 10
5.0	5.4	0.31	6%	
6.5	<u>5.1</u>	-1.31	-20%	
5.4	5.5	0.09	2%	
6.1	<u>4.7</u>	-1.38	-23%	
4.9	4.8	-0.10	-2%	
5.8	<b>6.5</b>	0.70	12%	
7.0	<u>5.5</u>	-1.48	-21%	3 up
7.4	<u>5.8</u>	-1.63	-22%	7 down
5.4	5.4	-0.07	-1%	Av -8 %
6.2	7.5	1.34	22%	natural break
4.9	5.4	0.47	10%	
6.0	5.5	-0.50	-8%	
4.4	5.0	0.59	13%	
7.8	7.9	0.13	2%	
5.9	5.7	-0.21	-4%	
5.5	5.2	-0.32	-6%	
6.4	5.7	-0.73	-11%	
8.0	8.7	0.72	9%	bottom 12
5.0	5.3	0.34	7%	8 up
4.9	5.2	0.31	6%	4 down
6.2	6.4	0.16	3%	Av 4%
5.9	5.8	-0.1	-1.6%	
	<u>1, 4</u>	<u>11, 11, 0</u>		

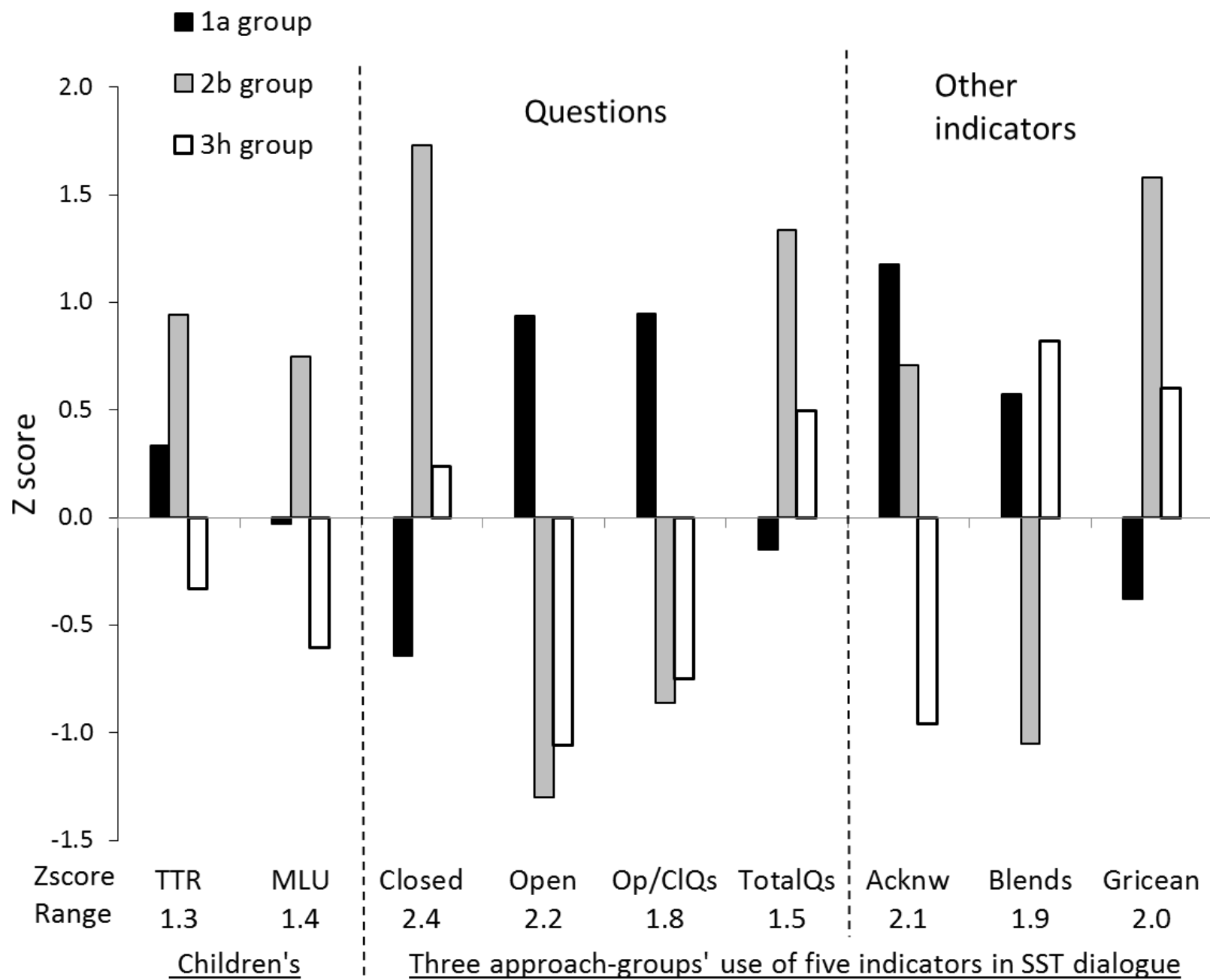
## Differences nSST – SST: (b) Type Token Ratio (TTR)?

- Children's TTR increased in 16 rooms (av +8%)
- Change in 1a & 2b, by 41% and 23%
- Teachers' TTR decreased in 15 rooms (av -4%)
- Comparing children's TTR and MLU with Teachers use of Quality Indicators found:
  - Three distinct teacher patterns emerged:
    - 1a (&6), high use of open questions and Blends
    - 2a (2) high use closed questions and Gricean maxims
    - 3h (2), low use of acknowledgments, but high in blends & maxims, midway between 1a &2b on others
  - Remove 2b, 3h from previous analysis, Open Qs sig



## Three Approaches

- 1a group open questions and blends: “Expansive” opening up dialogic space for broadening and extending conceptual understanding
- 2b group closed questions and Gricean maxims: “Focusing” narrowing focus to details of utterance construction for clarity of thinking at detailed level
- 3h group, high in blends & maxims, 3h only high child MLU and TTR and high in 6 indicators
- 3h the most: “Flexible”; exemplifying the “*dynamic aspect*” of Mercer’s (2008) unplanned spontaneous emergence of shared understanding.



children in SST only

teachers' rank order on 5 indicators rates/utterance or ratios in SST dialogue

Children TTR	Children MLU	Cl.Qs /Ut	Op.Qs /Ut	O/C.Q ratio	T.Qs /Ut	Ackn /Ut	Blends	Grice /Ut
15 Q	15 Q	2 b	4 d	8 g	12 R	2 b	1 a	2 b
2 b	9 k	12 R		19 T	<del>4 d</del>	1 a	6 j	
1 a			19 T	4 d		4 d	3 h	
7 f			8 g		2 b	7 f	8 g	3 h
9 k			9 k	9 k		6 j	5 c	15 Q
19 T	1 a		6 j		15 Q	15 Q		
		21 U	1 a	1 a	6 j	9 k		5 c
	2 b	3 h		6 j	3 h		9 k	6 j
3 h		7 f						21 U
	3 h	5 c	7 f	7 f			21 U	8 g
6 j	8 g	6 j					4 d	
12 R		1 a		15 Q			7 f	9 k
	12 R	<del>15 Q</del>			1 a	12 R	19 T	19 T
21 U	19 T	4 d	15 Q		9 k	<del>8 g</del>		7 f
4 d	6 j		5 c	5 c	7 f			4 d
8 g					19 T		15 Q	1 a
	7 f		3 h		8 g	5 c		
	4 d	9 k		3 h	<del>21 U</del>	3 h		
	5 c	19 T	12 R				12 R	
5 c	21 U		21 U	21 U	<del>5 c</del>		2 b	
				12 R		21 U		
		8 g	2 b	2 b		<del>19 T</del>		<del>12 R</del>

## Three Approaches

- 1a group, open questions and blends: **“Expansive”** opening-up the dialogic space for broadening and extending conceptual understanding
- 2b group, closed questions and Gricean maxims: **“Focusing”**: narrowing focus to details of utterance construction for clarity of thinking at detailed level
- 3h group, high in blends & maxims, 3h only had high child MLU and TTR and high in 6 indicators
- **“Flexible”** exemplifying the *“dynamic aspect”* of Mercer’s (2008) unplanned spontaneous emergence of shared understanding.

## Implications

- training teachers to better orchestrate extended dialogue with children to learn both “Expansive” open questioning routines to explore concepts, as well as a “Focusing” precise utterance construction to communicate their thinking clearly
- more efficient and precise teacher assessment leading to better targeted professional development,
- refining a web-based system of professional development using the Classroom Assessment Scoring System (CLASS) subscales (Pianta et al).
- Within YLP only, teacher interviews, Question: Purposefulness of teachers at the top of 6 indicators

# Gricean Maxims

- **Quantity.** Quantity of information in two specific maxims:
  - 1. Make your contribution as informative as required.
  - 2. Do not make your contribution more informative than is required.
- **Quality.** Super-maxim: “try to make your contribution one that is true”.
  - 3. Specific maxim: Do not say what you believe to be false.
  - 4. Specific maxim: Do not say that for which you lack adequate evidence.
- **Relation.** A single maxim: “Be relevant.”
  - 5. Although this maxim “be relevant” is “terse”, there are complex questions: what different kinds and focuses of relevance operate, how this shifts and how subjects of conversation are legitimately changed.
- **Manner.** How it is said as one super-maxim: “be perspicuous”, divided into:
  - 6. Avoid obscurity of expression.
  - 7. Avoid ambiguity.
  - 8. Be brief (avoid unnecessary prolixity).
  - 9. Be orderly.
- **Antecedent.** Or “referent”:
  - 10. For each bit of information, have one clear antecedent known to the listener, or one referent in the current environment. This maxim was added by Clark and Haviland (1977), being the core of their “given new contract”. It could be construed as part of the Relation maxim of “be relevant”, but perhaps expanding in a specific area of relevance.

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