Schooling & Culture

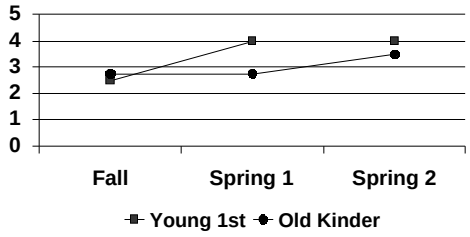
Studying Schooling Effects

- Methodological problems
  - biased samples-
    - wealth
    - child's intelligence

School Cut-Off Strategy

- Compare K and 1st graders-differ in age by a month or so
- Morrison, et al (1995)*
  Free recall 4 sets of 9 common objects (pictures)

Mean Recall by "Young" 1st Graders and "Old" Kindergartners



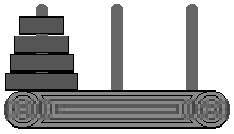
Conclusions

- Dramatic changes in children's thinking and behavior at the onset of middle childhood
- Changes reflect interaction between children's new abilities AND specific experiences

In-Class # 10

1. Name 2 changes in the brain that are related to changes in cognitive function.
2. Give 3 reasons why older children are better at recalling a list of words than younger children. (not brain-based reasons)

Tower of Hanoi



Cultural Tools

- symbol systems
- material tools

Impact on Mathematical Performance

- Cultural values & beliefs
- Language
- Classroom practices

Language

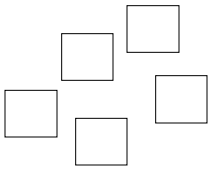
- Congruence between number names and base-10 system

	English	Chinese	Japanese
1	one	yi	ichi
2	two	er	ni
3	three	san	san
4	four	si	shi
5	five	wu	go
…			
10	ten	shi	juu
11	eleven	shi-yi	juu-ichi
12	twelve	shi-er	juu-ni

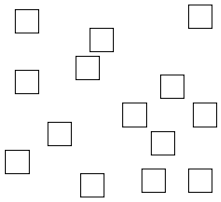
Kinds of Representations (Miura, 1993)

Show 42

10 unit blocks

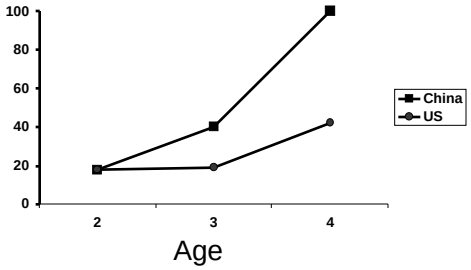


1 unit blocks



Further evidence...

Counting Performance (K. Miller, et al 1995)



Further evidence...

Asian number words
- take up less memory span
- quicker to say

Thus, some strategies easier...

STRATEGY USE
(Geary, et al, 1996)

Strategy	China	US
count fingers	11	29
verbal counting	47	12
retrieval	31	59

ERRORS
Geary, et al, 1996

Strategy	China	US
count fingers	8	3
verbal counting	5	13
retrieval	1	33

Classroom Practices

Teacher questions (Perry, et al, 1993)

- Computation/rote recall
- Rule recall
- Computing in context
- Make up a problem
- Problem solving strategies
- Conceptual knowledge

Teacher questions (Perry, et al, 1993)

	Japan	US
Computation	.61	.46
Rule recall		
Computing in context	.58	.31
Make up a problem		
Problem solving strategies	.63	.24
Conceptual knowledge	.37	.02

Lesson Structure
(Stigler, et al, 1997)

Japanese teachers ...

- place student THINKING at the core of their plans
- stress coherence with earlier and later material
- anticipate students' thinking

Japanese teachers ...

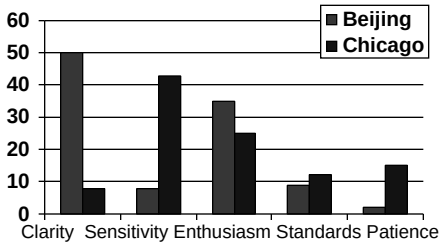
- emphasize problem solving
- allow time to think (slow pace)
- use public discussion
- ask different questions

Cultural Values

Maternal Ratings of the Importance in Children's School Performance

	US	Taiwan	Japan
Effort	3.9	4.4	5.1
Ability	3.4	2.6	2.4
Task diff	1.9	1.9	1.4
Luck	1.0	1.1	1.1

What makes a good teacher?



Cultural Beliefs/Values

- Americans emphasize ability, Japanese emphasize effort
- Americans believe their children are smarter
- Americans more satisfied with school/homework