Counting Ability in Preschool Children
Numerical Board Games as an Intervention

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Do Numerical Board Games Add Structure to the English Counting System?

• No predictability of numbers between 11 and 19 in the English language

• The teens are often a counting "stumbling block" for English speaking children (Miller et al., 1995)

• The simplicity of Asian and Turkish number naming systems are hypothesized to benefit early numeracy skills (Dehaene, 1997)

Arabic Number	English	Turkish	Chinese
1	one	bir	yi
2	two	iki	er
3	three	üç	san
10	ten	on	shi
11	eleven	on bir	shi-yi
12	twelve	on iki	shi-er
13	thirteen	on üç	shi-san

• Due to the previous success of linear numerical board games (e.g. Ramani & Siegler, 2008), it was hypothesized that playing a row board game would improve the rote counting ability and number recognition performance of English speaking preschool children
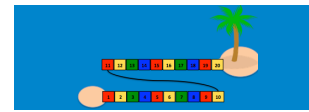
Methods

• An intervention study consisting of pre-testing, 4 weeks of 15-minutes game intervention, and post-testing
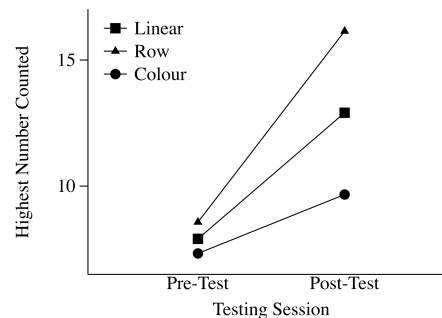
Linear Condition (*n = 11*)   **Row Condition** (*n = 8*)
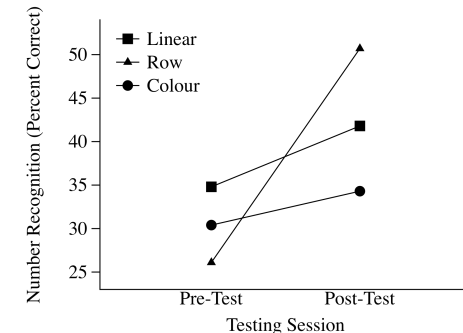

Colour Condition (*n* = 11)

Results

Rote Counting – counting as high as possible without error

• Children in the row and linear condition counted significantly higher than children in the colour condition

Number Recognition – naming an Arabic number presented on a card

• Children in the row condition showed a trend toward learning to recognize more numbers

Discussion

• Game intervention most effective for participants who could count to 12 or less

• The row condition organized the English numbers into a base-ten system, making it more similar to Chinese and Turkish

• Participants in the row condition may have benefited from this additional structure

Organizing numbers by decade is an effective way to improve numeracy skills in children with limited prior counting ability.

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