Understanding the Relation Among Vocabulary, Short-term Memory and Children's Recall Performance

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Abstract

This study assessed the extent to which children's vocabulary level and short-term memory ability interacts with recall. One hundred children between 3 and 8 years of age (m = 5 years, 4 months) participated in an interactive science presentation and were interviewed 8-weeks later about the event. Additionally, the children's short-term memory and vocabulary abilities were assessed at a separate meeting. After accounting for the effect of children's age, verbal ability was a significant predictor of the ***amount*** of information recalled from the science presentation. In addition, verbal ability and short term memory both significantly predicted the ***accuracy*** of the information recalled. These findings suggest researchers should explore the extent to which certain interviewing or assessment styles may be differentially effective at procuring accurate recall as a function of a child's verbal and short-term memory abilities.

Introduction

There are a numerous venues in which it is important to help children recall an experienced event. For example, police interview children in forensic settings, nurses and medical professionals interview children about injuries or illness, and educators repeatedly assess children's memory for educational material. The psychological literature has determined that a number of factors are related to children's recall performance on these different types of assessments. Specifically, older children recall more information (e.g., Holliday, 2003) and are more accurate in their reports compared to their younger peers (Peterson, 1999). However, the variability in recall within a particular age group is often greater than differences across age groups (e.g., Greenhoot et al., 1999). This suggests that individual differences in addition to chronological age may account for these effects.

Two types of individual differences that have been proposed are verbal ability and short term memory capacity. Prior research has found that children's verbal ability predicts variability in recall within age groups (e.g., Chae & Ceci, 2005; Gordon et al., 1993). In addition, short-term memory capacity has been correlated with children's performance on recall tests (e.g., Schneider et al., 2004). The current study assessed the contribution of each of these variables simultaneously.

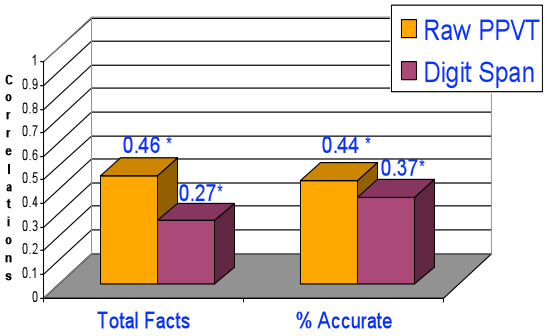
Hypotheses

- Older children's reports will contain more information and be more accurate than younger children's reports.
- Vocabulary ability and short-term memory capacity will be better predictors of the variance in quantity and quality of recall than age.

Methods

- Participants: 100 children (56% male, mean = 5 yrs 4 months) from local schools
- Digit Span was used to assess short term memory (Wechsler, 2002)
- Peabody Picture Vocabulary Test (PPVT= III, Dunn & Dunn, 1997) was used to assess vocabulary
- A 20 minute science presentation on spiders which included the following:
  Two adults presenting factual information and facilitating discussion during the spider event. During the event, children saw 2 live tarantulas, examined a tarantula molting, learned facts about spiders, and made a spider craft. In addition, each child partnered with a classmate and used their bodies to pretend they were spiders.
- Following an eight-week delay children were interviewed about the event
- These interviews were transcribed verbatim and coded for accuracy
- Two dependent measures were created:
  - Total Recall ("Quantity")
  - Proportion Accurate ("Quality")

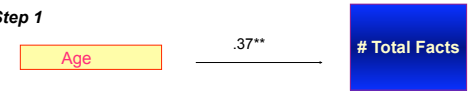
Correlations between Individual Difference Variables & Recall



*All correlations significant at the .05 level

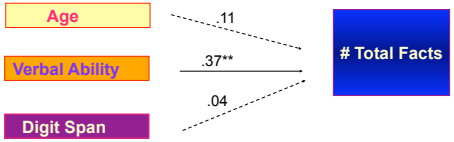
Stepwise Regressions Predicting Quantity of Information

Step 1



F (2, 98) = 15.83, p < .01, R^2 = .14

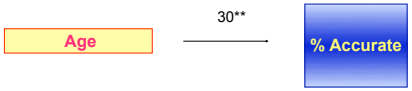
Step 2



ΔF (2, 96) = 5.07, p < .01, R^2 = .22

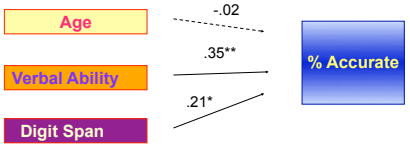
Stepwise Regressions Predicting Quality of Information

Step 1



F (1, 98) = 9.78, p = .01, R^2 = .09

Step 2



ΔF (2, 96) = 8.23, p < .01, R^2 = .22

Discussion

- As expected, verbal ability and short-term memory capacity were both related to recall. Our next step is to investigate which type of interview protocol would be best for those children high (and low) on these dimensions. The ultimate goal is to structure interviews or assessments to maximize the amount of information each child recalls. Based on these findings, if the goal is an exhaustive report from memory, it may be necessary to customize interviews based on the individual differences of the children.

In Sum:

- Verbal ability is a significant predictor of ***QUANTITY*** of recall, above and beyond the effect of age

- Verbal Ability and digit span are both significant predictors of the ***QUALITY*** of recall, above and beyond the effect of age

References

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