The Impact of Cognitive Executive Function on Self-Correction and Verbal Fluency in Preschoolers

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Abstract

Few studies explore language self-corrections as a form of self-regulation in children. The current study expands on existing research by examining the relationship between executive functioning and self-corrective behaviors in narrative storytelling. Children were cued by picture stimuli to retell a previously heard story. Children’s narratives were transcribed and coded for self-corrective behaviors. Executive function was assessed using the Behavior Rating Inventory of Executive Function—Preschool Version and verbal tasks were measured on the Fluharty Verbal Fluency Scale. The results found that children with higher executive functioning skills self-correct more frequently than children with lower executive function.

Introduction

• Goal oriented self-regulation is an important skill that impacts learning, development, and academic success for young children (Garner, 2009).
• Executive function (EF) is comprised of cognitive abilities and processes that are necessary for planning and carrying out specific behaviors and is a crucial element of self-regulation (Diamond, 2014).
• Early childhood is an important period of development during which EF and language skills grow rapidly (Shaull & Schwartz, 2013).
• Self-corrective language (repairing initial erroneous speech) is recognized as an important sign of progression in language development (Forbes, Poparad, & McBride, 2004).
• There are few studies that explore language self-correction as a form of EF self-regulation (Hooper, Swartz, Wakely, Krui, & Montgomery, 2002).

Hypotheses

1. Children with higher executive function skills (lower scores of executive dysfunction) will engage in fewer misses (overlooking mistakes while reciting their stories) and more correct self-corrections.
2. Repetitive language and executive functioning would not be related.
3. Self-corrections would be related to increased language fluency.

Methods

Participants
• 35 preschoolers from 3 classrooms serving lower-income children in the capital region of New York State
• Age Range: 48-61 months, 
  \( M \text{ (age)} = 55.41 \text{ months} \)
• Sex: 43% Males, 57% Females

Measures
• Preschoolers completed a retelling of the illustration-only book, Frog, Where are You? (Mayer, 1969).
• Narratives were audiorecorded, double transcribed, and coded for self-corrections, mistakes, and repetitive language.
• Executive Function: Behavior Rating Inventory of Executive Function—Preschool Version (Gioia, Espy, & Isquith, 2001).
• Verbal Fluency: Fluharty Preschool Speech and Language Screening Test (Fluharty, 1978).

Results (cont.)

• The data was analyzed using SPSS
• Increased self-corrective behavior when controlling for phrase count was correlated with lower levels of executive dysfunction, specifically Emergent Metacognition (\( r = -.33, p < .05 \)).
• There were no significant correlations between repetitive language behaviors and any of the executive function subcategories.
• Children who engaged in more self-corrective behavior scored higher on the general language fluency scale (\( r = .34, p < .05 \)).

Conclusions

• The results support the hypothesis that children with higher executive function skills self-correct more frequently than children with lower executive function skills (higher scores of executive dysfunction), but only for the Emergent Metacognition category.
• As hypothesized, repetitive language was not related to executive function.
• Furthermore, engaging in increased accurate self-corrections is related to increased language fluency.

Results

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std Dev</th>
</tr>
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<tbody>
<tr>
<td>Corrections</td>
<td>0.05</td>
<td>0.06</td>
</tr>
<tr>
<td>Misses</td>
<td>0.37</td>
<td>0.14</td>
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<tr>
<td>Wrongs</td>
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<td>0.02</td>
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<td>Repeats</td>
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<td>0.14</td>
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<tr>
<td>BRIEF Inhibitory Self-Control</td>
<td>52.94</td>
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<td>BRIEF Flexibility</td>
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<td>BRIEF Emergent Metacognition</td>
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<td>12.05</td>
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<tr>
<td>BRIEF Composite</td>
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<td>Fluharty General Language Quotient</td>
<td>96.56</td>
<td>8.74</td>
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References