Disparities in School Readiness: The Dallas Preschool Readiness Project

Margaret O’Brien Caughy, Sc.D.
University of Texas School of Public Health
Dallas Preschool Readiness Project
Funded by the Eunice Kennedy Shriver National Institute of Child Health and Development

• 407 preschoolers enrolled at age 2½ years
  – 183 African American, 224 Latino
  – Average family income: 82% FPL (54.5% of African American and 14.8% of Latino families < 50% FPL)
  – 14.8% of African American and 42.8% of Latino caregivers had less than a high school education
  – 73% of Latino caregivers foreign-born; 75% Spanish-speaking

• 366 followed up at age 3½ years (90% follow up rate)

• ~333 followed up at kindergarten (91% follow-up of those seen at Time 2; 82% of those enrolled in the study)
Dallas Preschool Readiness Project

Measures

• Self regulation/executive function
• Parent-child interaction (mother-child and father-child)
• Family/household characteristics
• School readiness (T1-T2)
  – Child behavior problems (T1 and T2)
  – Child language (T2)
  – Pre-academic skills (T2)
• School achievement (T3-T4)
  – Woodcock-Johnson
  – Receptive One-Word Picture Vocabulary test
  – Teacher report
Inhibition

The ability to ignore distraction and stay focused, and to resist making one response and instead make another

Working memory

The ability to hold information in mind and manipulate it

Cognitive flexibility

The ability to flexibility switch perspectives or focus of attention

EF

# Self Regulation & Executive Function Tasks at 4 Ages

<table>
<thead>
<tr>
<th>2½ years</th>
<th>3½ years</th>
<th>Kindergarten</th>
<th>1st Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snack Delay</td>
<td>Snack Delay</td>
<td>DOG</td>
<td>HTKS</td>
</tr>
<tr>
<td>Wrapped Gift/Wait for Bow</td>
<td>Wrapped Gift/Wait for Bow</td>
<td>Wrapped Gift/Disappointing Gift</td>
<td>DCCS</td>
</tr>
<tr>
<td>Forbidden Toy</td>
<td>Mommy &amp; Me</td>
<td>HTKS</td>
<td>Hearts &amp; Flowers</td>
</tr>
<tr>
<td>Mommy &amp; Me</td>
<td>Heads &amp; Toes</td>
<td>DCCS</td>
<td>Self-ordered pointing</td>
</tr>
<tr>
<td>Shape Stroop</td>
<td>DCCS</td>
<td>Operation Span</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Memory Chocolates</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Snack Delay

- Child told not to touch M&M until bell rings
- 4 trials (10s, 20s, 30s, 15s)
- Latency to touch/eat coded
Wrapped Gift/Wait for Bow

- Package wrapped with child’s back turned
  - Latency to peek coded
- Child left with package while researcher retrieves bow
  - Latency to touch, lift, and open coded
Forbidden Toy

- Mutual play with Shake ‘n Go racer
- Child left with toy while researcher leaves room
- Latency to touch coded
"Show me the baby grapes"
Heads, Toes, Knees & Shoulders


Child must do opposite of what researcher does

Photo credit: https://my.vanderbilt.edu/toolsofthemindevaluation/files/2012/01/HTKS-adapted-for-web.pdf
Memory Chocolates (working memory)
Delay of Gratification

- Child shown small and large amounts of a treat
- Told if they can wait entire time (7 minutes), they will get larger amount
- They can ring bell if they can’t wait, and they will get smaller amount
Disappointing Gift

• Wrapped gift is something child wouldn’t like (chip of wood)
• Child’s emotional regulation in response to disappointing gift is recorded and coded
Hearts & Flowers

HEARTS & FLOWERS

Congruent

Push Left

Push Right

Incongruent

Push Right

Push Left

HEARTS - CONGRUENT

Each time you see a HEART, press with the thumb or forefinger on the SAME side as the stimulus.

For example, if the heart appears on the left, press with your left hand.

Remember:

PRESS ON THE SAME SIDE AS THE HEART

FLOWERS - INCONGRUENT

Now you’ll see a flower. Press on the side OPPOSITE the flower.

For example, if a flower appears on the left, press with your right hand.

(Here, you’ll need to inhibit on every trial the natural tendency to respond on the same side as the stimulus)

Remember:

PRESS ON THE SIDE OPPOSITE THE FLOWER
Self-Ordered Pointing

Now you try. Here is a page with a dog and a flower again. Touch one of these pictures.

[Wait two seconds. If the child does not touch a picture, prompt him or her to do so.]

Now touch a picture that is *not* the same as the one you touched before, so that all the pictures get a turn.

[Praise child if he or she chooses the other picture correctly, or correct the child as needed.]

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DPReP Findings Overview:
Patterns of Self Regulation Development

Proportion of Time Waited

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Time 1</th>
<th>Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snack Delay</td>
<td>0.30</td>
<td>0.70</td>
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<tr>
<td>Wrapped Gift</td>
<td>0.10</td>
<td>0.30</td>
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<tr>
<td>Wait for Bow</td>
<td>0.60</td>
<td>0.80</td>
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<tr>
<td>Forbidden Toy</td>
<td>0.20</td>
<td>0.40</td>
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</tbody>
</table>
Cross-sample comparison

“Touch” score

Waits until end of trial

Touch after bell lift

Touch before bell lift

Eats after bell lift

Eats before bell lift

Snack Delay

DPReP (T1)  DPReP (T2)  Kochanska

2.87  2.98

Kochanska et al., (1996). Age: 26-41m (mean 32m)
Cross-sample comparison

Carlson, Mandell, & Williams, 2004
Age: 24m

Shape stroop

Correct

Incorrect

Self Correct

Average score

0.76

91%

31%

1.53

DPReP
Carlson
Self Regulation Factor Model

• Inhibitory control (T1 and T2)
  – Snack Delay
  – Wrapped Gift/Wait For Bow
  – Forbidden Toy
• Complex response inhibition (T2 only)
  – Mommy & Me
  – Heads & Toes
• Set Shifting (T2 only)
  – DCCS
• Working Memory (T2 only)
  – Memory Span

Caughy, Mills, Owen, & Hurst (2013).
## DPReP Findings Overview: Self Regulation and School Readiness

<table>
<thead>
<tr>
<th></th>
<th>IC1</th>
<th>IC2</th>
<th>CRI</th>
<th>SS</th>
<th>WM</th>
<th>BR</th>
<th>PPVT</th>
<th>CBCL</th>
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<tbody>
<tr>
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<td>1.00</td>
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<td>Inhibitory control (T2)</td>
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<td>.11</td>
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<tr>
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<td>.08</td>
<td>.10</td>
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<td></td>
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<td>Working memory</td>
<td>.11</td>
<td>.18</td>
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<td>.00</td>
<td>.00</td>
<td>1.00</td>
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<td>Bracken</td>
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<td>.22</td>
<td>.15</td>
<td>.16</td>
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<tr>
<td>PPVT/TVIP</td>
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<td>.29</td>
<td>.03</td>
<td>.07</td>
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<tr>
<td>CBCL</td>
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<td>-.16</td>
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<td>-.09</td>
<td>-.11</td>
<td>-.16</td>
<td>-.09</td>
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*Bold font indicates p < .05*
DPReP Findings Overview: Determinants of Self Regulation

- *p < .05; **p < .01
DPReP Findings Overview: Determinants of Self Regulation

Boys vs. Girls

- Inh Ctrl (1)
- Inh Ctrl (2)
- CRI
- Set shifting
- Working memory

+ p < .10
DPReP Findings Overview:
Determinants of Self Regulation

Household risk factors: PCG < HS education; below 50% FPL, single parent, child:adult ratio 3+; change in PCG; change in PCG partner; household move; neighborhood/household safety concerns; PCG depression; PCG harsh during interaction

**p< .01
## DPReP Findings Overview:
### Determinants of Self Regulation

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<tr>
<th></th>
<th>Parent Sensitive Supportiveness</th>
<th>Parent Harsh Intrusiveness</th>
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<tbody>
<tr>
<td>Inhibitory control (T1)</td>
<td>(+)***</td>
<td>(-)**</td>
</tr>
<tr>
<td>Inhibitory control (T2)</td>
<td>(+)***</td>
<td>(-)*</td>
</tr>
<tr>
<td>Complex response inhibition</td>
<td>n.s.</td>
<td>n.s.</td>
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<tr>
<td>Set shifting</td>
<td>n.s</td>
<td>(-)*</td>
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Dallas Preschool Readiness Project

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Principal Investigators
Margaret O’Brien Caughey, ScD and Margaret Tresch Owen, PhD

Phase 1 Project Staff
Jerry Roberson, DrPH, Project Director
Jamie Hurst, PhD, Lab Manager
Melissa Amos
Plaststilla Arnold
Adriana Villa Baird
Nazly Dyer
Carmen Gonzalez
Ana Maria Mata-Otero, PhD
Bunnoi McDaniel
Caroline Mejias
Junie Shrestha
Clare Stevens

Phase 2 Project Staff
Dawn Brinkley, Ph.D., Project Director
Suzy Armstrong
Plaststilla Arnold
Erica Ball
Laura Dirkse
Nazly Dyer
Carmen Gonzalez
Gabriella Jairala
Maria Maese
Dulce Martinez
June N’ganga
Daniel Pacheco
Tatiana Peredo
Cynthia Williams