Dallas Preschool Readiness Project

Self regulation abilities in low income ethnic minority preschoolers: Disparities in school readiness

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Center for Children and Families
Self-Control

• Self-control is critical to success at home, at school, and with peers

• Involves the ability to integrate attention, working memory, and inhibitory control
  – to suppress a dominant behavior and to perform instead a subdominant behavior.
    • Delay of gratification - don’t touch!
    • Slowing down a gross motor activity
    • Lowering the voice
    • Effortful attention
• 10-fold increase in research 2000-2011
• Self regulation is positively associated with better academic performance & behavioral adjustment in kindergarten and early elementary school.
  – a foundation for academic achievement
• Development of interventions targeting self regulation to impact early achievement.
Achievement disparities: Focus on school readiness

• Race/ethnic disparities in school readiness
  – 42% of Hispanic kindergarteners are in the lowest quartile of reading skills.
  – Disparities persist
  – Disparities increase for children from poorest homes

• Self regulation skills may be particularly important for low-income ethnic minority preschoolers’ school readiness:
  – Source of risk and of resilience
Self control & self reliance set the stage for learning

– listening
– sitting still
– following directions
– paying attention to an authority figure
– repressing impulses
– focusing attention
– asking for help in an appropriate fashion
Self Regulation → Better Academic Achievement

• Emotion regulation predicted academic success in kindergarten (Graziano et al., 2000)
  – Even after adjusting for the effects of IQ, behavior problems, and teacher-child relationship quality

• Behavioral regulation predicted literacy and math skills (Blair & Razza, 2007; McClelland et al., 2007)
  – After controlling for effects of cognitive ability
What do we know about the development of self regulation skills?

• Essentially no longitudinal data on self regulation development in low-income ethnic-minority children

• 3 questions addressed:

  1. What levels of self regulation are observed across two ages in early preschool?
  2. Do the observed measures of self regulation represent a single or multidimensional construct in this population?, and
  3. Do measurement properties differ by child ethnicity or gender?
Can good self regulation skills help close the achievement gap for poor children?

- Data from NICHD Study of Early Child Care and Youth Development
- Academic achievement measured from 54m through Grade 5 for 3 groups
  - Chronic poverty in early childhood
  - Transient poverty
  - Never poor
- Child self regulation abilities measured at 36m & 54m
Self-control predicted higher achievement for all groups, but greatest growth in achievement seen for chronically poor children with good self-control.

---closing the gap with good self regulation skills
Dallas Preschool Readiness Project
DPReP

• To study development of self regulation and school readiness among low-income ethnic minority children

• To identify how self regulation abilities are shaped by family context & culture
  – Parenting qualities
  – Family cultural context
Dallas Preschool Readiness Project
Funded by the Eunice Kennedy Shriver National Institute of Child Health and Development

- 407 children recruited at age 2½ years
  - 208 Latino, 190 African American

- Multiple measures of self regulation
  - Ages 2 ½ and 3 ½

- Other measures
  - Mother-child and Father-child interactions
  - Racial socialization practices
  - Standardized School Readiness
### Sample characteristics

<table>
<thead>
<tr>
<th></th>
<th>Hispanic (N = 224)</th>
<th>African Am (N = 183)</th>
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</thead>
<tbody>
<tr>
<td><strong>Father in home</strong>*</td>
<td>90%</td>
<td>60%</td>
</tr>
<tr>
<td><strong>Family income</strong>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 50% poverty</td>
<td>19%</td>
<td>61%</td>
</tr>
<tr>
<td>50-99% poverty</td>
<td>41%</td>
<td>17%</td>
</tr>
<tr>
<td>100-149% poverty</td>
<td>27%</td>
<td>14%</td>
</tr>
<tr>
<td>149+% poverty</td>
<td>12%</td>
<td>8%</td>
</tr>
<tr>
<td><strong>Maternal education</strong>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>43%</td>
<td>15%</td>
</tr>
<tr>
<td>High school</td>
<td>35%</td>
<td>45%</td>
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<tr>
<td>More than high school</td>
<td>22%</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Maternal race/ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White, non-Latina</td>
<td>0%</td>
<td>4%</td>
</tr>
<tr>
<td>Latina</td>
<td>92%</td>
<td>0%</td>
</tr>
<tr>
<td>African American</td>
<td>0%</td>
<td>93%</td>
</tr>
<tr>
<td>Multiracial</td>
<td>8%</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Child gender = Boy</strong></td>
<td>52%</td>
<td>55%</td>
</tr>
<tr>
<td>Foreign born (Mexico)</td>
<td>73%</td>
<td>---</td>
</tr>
<tr>
<td>Spanish preferred language-child</td>
<td>79%</td>
<td>---</td>
</tr>
<tr>
<td>Spanish preferred language-parent</td>
<td>75%</td>
<td>---</td>
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</table>

***p < .001
# Self Regulation & Executive Function Tasks at 2 Ages

<table>
<thead>
<tr>
<th>Time 1 – 30 months</th>
<th>Time 2 – 42 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snack Delay</td>
<td>Snack Delay</td>
</tr>
<tr>
<td>Wrapped Gift</td>
<td>Wrapped Gift</td>
</tr>
<tr>
<td>Forbidden Toy</td>
<td>Mommy &amp; Me</td>
</tr>
<tr>
<td>Mommy &amp; Me</td>
<td>Heads &amp; Toes</td>
</tr>
<tr>
<td>Shape Stroop</td>
<td>Dimensional Change Card Sort</td>
</tr>
<tr>
<td>Walk-a-line Slowly</td>
<td>Memory Task</td>
</tr>
</tbody>
</table>
HOT EXECUTIVE CONTROL TASKS:

INHIBITORY CONTROL TASKS

Snack Delay (30m & 42m)
Wrapped Gift (30m & 42m)
Forbidden Toy (30m)
Snack Delay
Snack Delay: across trials, 30 months

- **Never waits**: 38%
- **Improves across trials**: 12%
- **Always waits**: 12%
- **Mixed behavior**: 34%
Wrapped Gift
Gift Wrap Task at 30 months

Kochanska, Murray, & Harlan, 2000
Forbidden Toy
Forbidden Toy: only 12% waited at 30m

<table>
<thead>
<tr>
<th>% of sample</th>
<th>Never touched</th>
<th>Touched, but didn't play</th>
<th>Touched, then played</th>
<th>Played, no waiting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latino</td>
<td>10%</td>
<td>15%</td>
<td>20%</td>
<td>55%</td>
</tr>
<tr>
<td>African American</td>
<td>2%</td>
<td>5%</td>
<td>15%</td>
<td>80%</td>
</tr>
</tbody>
</table>
Cognitive Flexibility

Tasks/Complex response inhibition

Ability to suppress a prepotent response

Shape stroop (30m), Heads & Toes (42m),
Effortful attention tasks:
Mommy & Me (30m & 42m)
Effortful attention tasks: Fruit Stroop

“Show me the baby grapes”
Effortful attention tasks:
Heads & Toes, 42 mos.

• A “silly game”
• When I say touch your head, I want you to touch your toes.
• When I say touch your toes, I want you to touch your head.
Heads & Toes

• [www.dropbox.com](http://www.dropbox.com)

1086_42_HT.mpg
Comparisons between low-income DPReP at 30 mos. and middle-income samples

Figure 2. Probability of success on three self-regulation tasks in two samples
Memory Chocolates (working memory)
Memory Chocolates

TESTING 1

Remove all the lids and tell the child: “THIS TIME I WANT YOU TO FIND 2 ANIMALS.”
Cover the chocolates and say: “FOR EXAMPLE IF I SAY FIND CAT AND ZEBRA, YOU FIND THEM LIKE THIS.” Demonstrate Cat and Horse.

<table>
<thead>
<tr>
<th>Read prompt slowly:</th>
<th>Response</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find the...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rabbit and Lion</td>
<td>Cat</td>
<td>Elephant</td>
</tr>
<tr>
<td>Elephant and Fish</td>
<td>Cat</td>
<td>Elephant</td>
</tr>
<tr>
<td>Horse and Rabbit</td>
<td>Cat</td>
<td>Elephant</td>
</tr>
</tbody>
</table>

Stop if total < 4 | TOTAL:
A Component of School Achievement Disparities

• Self regulation skills lag in these poor ethnic-minority children.
• An additional source of school readiness achievement disparities
Risk Factors for Self-Regulation Problems

• Environmental risks
  – Poverty
  – Sleep disruption
    • Self control often impaired the next day
  – Exposure to alcohol or drugs prenatally
  – Maltreatment and neglect
Domains of Emerging Self Regulation in DPReP

• 4 factor model across ages 2 ½ and 3 ½ years
  – “Hot” executive (or inhibitory) control
  – Complex response inhibition (only at age 3 ½)
  – Working memory
  – Set shifting
Differences by child demographic characteristics

- Girls > Boys
  - Snack delay (inhibitory control)
- African American > Latino
  - Cognitive flexibility skills
- Latino > African American
  - Inhibitory control
  - Working memory
Individual Differences in Self-Regulation

- Environment, temperament, & genes influence development of self regulation
  - Home environment and caregiver relationships
    - Positive guidance from mothers
    - Positive guidance from fathers
      - Important for greater effortful-attention abilities
      - Associations found with African American, but not Latino fathering qualities
Mother-child interaction
Helping Children Develop Self-Control

• Self-control is an important ingredient for success of at-risk children
  – Associated with fewer behavior problems, better school achievement

• Interventions can provide experiences needed for developing better self-control
Tools of the Mind curriculum

• 40 activities
  – Concrete, external aids to stay on task
    • Child holds drawing of an ear to remind to listen
    • Clean up song
  – Encourage “private speech” to remember
  – Dramatic play
    • Planning skills
    • Impulse control to remain in character

• Improvements in attention-control tasks
  (Diamond, Barnett, Thomas, & Munro, 2007. Science)
  – The more complicated the task, the better the advantage
Juega Conmigo!

Play With Me!

Bring your children (ages 0-3 years) and have a good time playing with educational toys, listening to music and dancing. Bilingual specialists will offer ideas on how to have fun while promoting your child’s development.

Thursdays at 10:00 to 11:30 a.m. at the Bachman Lake Library: 9480 Webb Chapel Road

For more information, call 214-502-6457

With support from:
The Mike & Mary Terry Family Foundation
Dallas Preschool Readiness Project

Funded by the Eunice Kennedy Shriver National Institute of Child Health and Development

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