

# Tools of the Mind

*Discussion*

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# Thank You

- Vanderbilt Team
- Tools Team



# Goal

- How to create classroom experiences for high-poverty children that can increase school readiness skills and help close the achievement gap.



# Tools of the Mind





# Research on Tools

	Executive Function	Academic
Diamond, et al (2007)	yes	no
Barnett, et al (2008)	yes	no
Lonigan & Phillips (2012)	no	no
Wilson, et al (2012)	no	no
Clements, et al (2012)	no	no
Farran, Fuhs, et al (2012)	no	no

## Other Unexpected Results

### Preschool Curriculum Evaluation Research (PCER)

- 10 curricula showed no statistically significant impacts on any of the student-level measures while 5 showed significant impacts on some measures.
- 2 of the 14 curricula had positive impacts on preschooler on reading, phonological awareness, and language.

# Opportunities

- To examine why these consistent findings have occurred.
- To unpack program components and the underlying theoretical constructs.
- To use the data to make changes in practices in order to impact outcomes.



# Tools of the Mind



# Unpacking Components & Constructs

## Three Questions

- Is Tools so multi-dimensional that it is too complicated to implement?
- Are the executive function activities aligned with the academic activities (e.g., literacy)?
- How is the construct of EF defined, implemented & measured?



# **IS TOOLS OF THE MIND TOO COMPLICATED TO IMPLEMENT?**

# Complexity of Tools

- Multiple components
  - Literacy
  - Math
  - Play
  - Executive Function
- 67 page fidelity measure
- Story lab- 8 parts



# Story Lab

- Active Listening
- Connections
- Visualization
- Learning Facts
- Story Extensions
- Grammar
- Predictions & Inferences
- Vocabulary



TeacherID & Name:

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[Go to Narrative](#)

Date:

Large Group   Make Believe Play Center   Math Science   Literacy   Across the Day   Story Lab

SLAL   SLC   SLVis   SLLF   SLSE   SLSG   SLPI   SLV

- Story Lab: Active Listening**  
Read book without stopping and discuss at least one of the following: What I liked. My favorite Part. And/or what was interesting
- Story Lab: Connections**  
Stopped and compared text to text, text to world, and/or text to me during the reading
- Story Lab: Visualization**  
Discussed during reading-how to see pictures in our mind to be part of the story
- Story Lab: Learning Facts**  
Read non-fiction book, discuss what was interesting and write (draw) about it
- Story Lab: Story Extensions**  
Use predictable, short book with stem, children write end to stem
- Story Lab: Story Grammar**  
Read book with beginning, middle, and end without stopping. Discuss order and what happened in story, puppet makes mistakes about story
- Story Lab: Predictions and Inferences**  
During reading predict/discuss what happens next in and or infer what character might do next
- Story Lab: Vocabulary**

### Story Lab: Active Listening

- T. shows and describes a mediator card: What I liked about the book, My favorite Part, or What I thought was interesting.
- T. reads title, author, illustrator if book is new, or just title if read before.
- T. reads book without stopping.
- After reading T. points to mediator card and ask c. to turn to friend and discuss what is on the mediator card.
- T. uses question from mediator card but does not use actual mediator card
- T. recaps discussion.

### Mediators

- Book/pictures
- Math/Sci Book/pictures
- "What did you like?" card
- "What was interesting?" card
- "What was your favorite part?" card
- Raise Your Hand Card (optional for this activity)

### Should not:

- Use more than one mediator card
- Stop and discuss story during reading
- Call on individual children
- Post Mediator Card on the wall (bring out for each use)

# Teacher

- Demands on the teacher
- Nature of teacher-child interaction



# Teacher Implementation

- In general, very difficult to get teachers to implement programs with fidelity
- Even with 4 days of training per year for 2 years plus coaching
- Behavioral changes are very detailed and specific
- Maintenance





# What are the active ingredients?

- Can Tools identify the most important aspects of each component?
- Can the data help identify the active ingredients?





# **ARE EXECUTIVE FUNCTION AND ACADEMIC PRACTICES ALIGNED?**

# Alignment of Practices: Language Development and EF

## Language Development

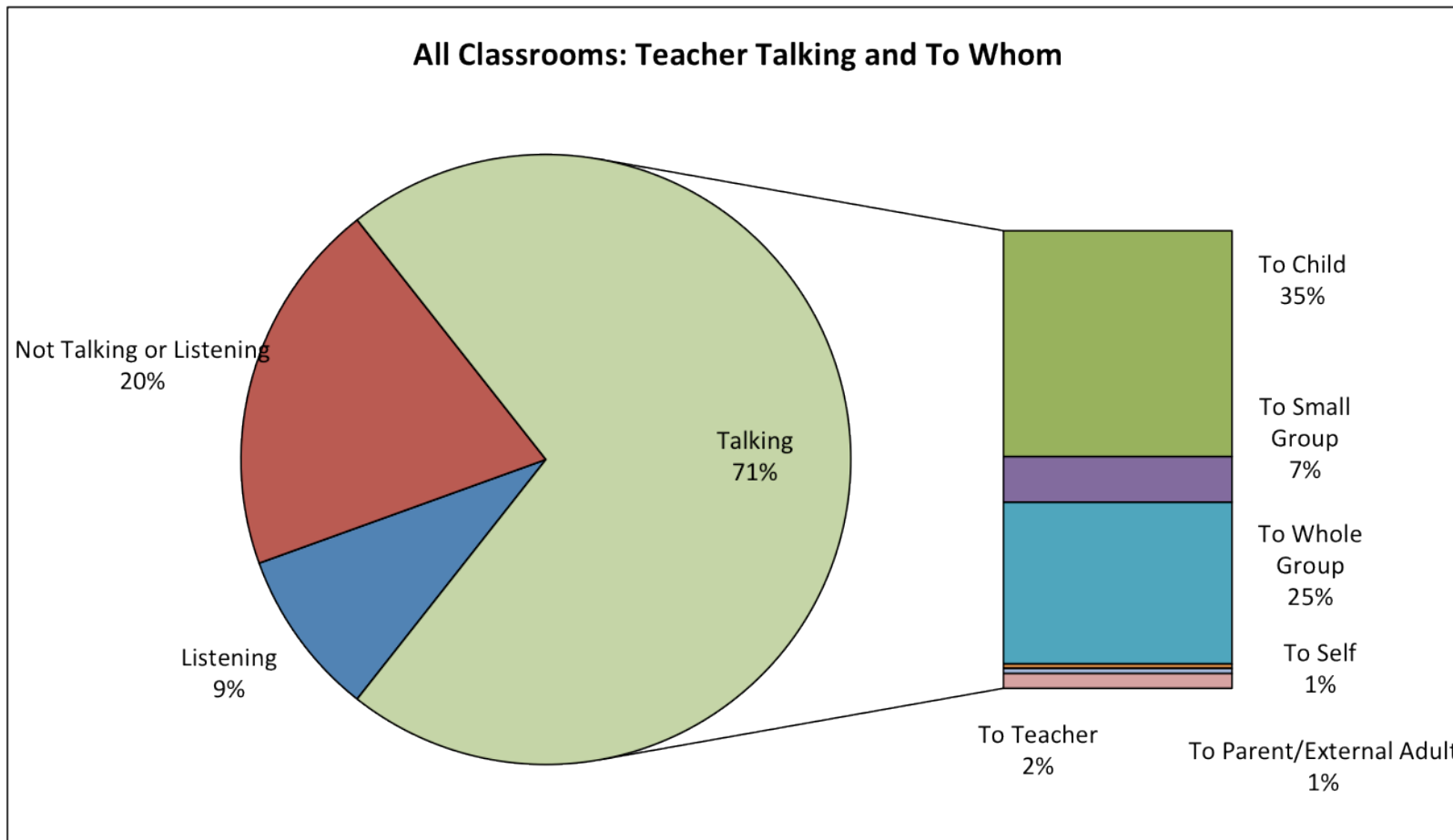
- Talking
- Engaged in dialogue to scaffold language
- Exposure and use of vocabulary

## Executive Function

- Attention
- Listening
- Engagement

# Teacher Verbal Behavior

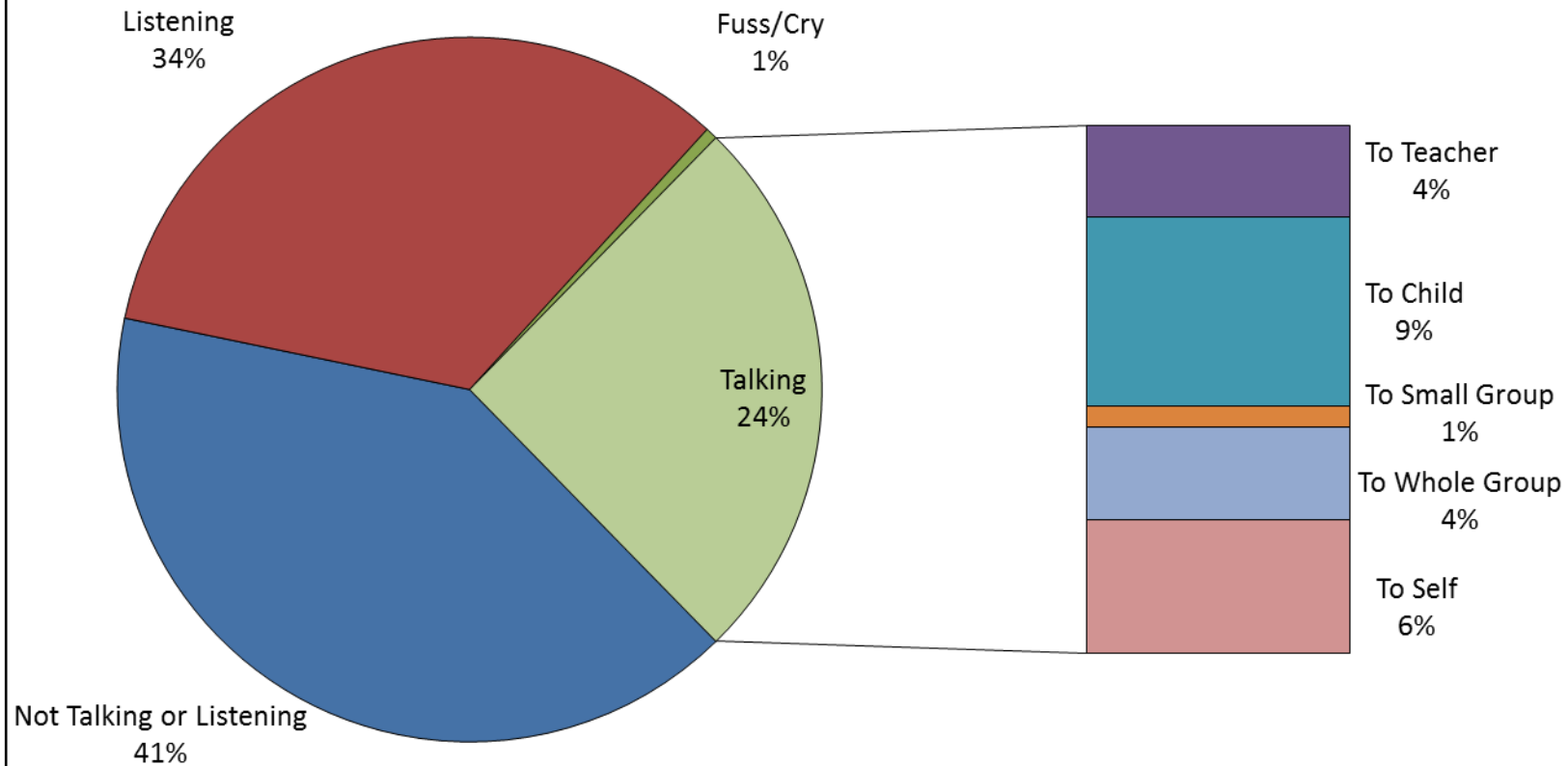
(Talk by teacher during the 3.25 hour learning opportunity)



# Child Verbal Behavior

(Talk by children during the 3.25 hour learning opportunity)

All Classrooms: Children Talking and To Whom



# Classroom Predictors of Self-Regulation Gains: COP and TOP

Variable	Standardized Estimate	t-ratio	<i>p</i>
<b>Emotional Climate (TOP)</b>			
Behavior Approving	0.06	2.05	0.05
Behavior Disapproving	-0.05	-1.70	0.09
Emotional Tone	0.06	1.88	0.07
<b>Quantity of Instruction</b>			
<i>Instruction as Delivered (from TOP)</i>			
Math Focus	0.05	1.65	0.11
Literacy Focus	0.10	2.88	0.01
Language Arts Focus	0.03	0.75	0.46
Reading Focus	0.03	0.95	0.35
Instruction and Assessment	0.07	2.25	0.03
Transition	-0.04	-1.19	0.24
<i>Instruction as Received (from COP)</i>			
Math Focus	0.08	2.79	0.01
Literacy Focus	0.11	2.83	0.01
Language Arts Focus	0.07	2.09	0.04
Reading Focus	0.05	1.57	0.12
<b>Level of Instruction (TOP)</b>			
Overall Level of Instruction	0.06	2.00	0.05
<b>Teacher and Child Talk/Listen (COP and TOP)</b>			
Teacher Talk to Child	-0.02	-0.72	.48
Teacher Listening to Children	-0.03	-1.03	0.31
Children Listening to Teacher	.11	3.39	0.001
Children Talking to Self	-0.06	-1.99	.05

# Unpacking critical aspects Tools of the Mind

- Are the practices teachers implemented with fidelity **going to positively impact EF?**
- Are the practices teachers implemented with fidelity **going to positively impact math and reading achievement?**
- Are EF practices and academic practices cancelling each other out?



**HOW IS THE CONSTRUCT OF EXECUTIVE FUNCTION  
DEFINED, IMPLEMENTED & MEASURED?**



# Executive Function

- Multiple meanings of EF, self –regulation, & approaches to learning
- ECLS- K (Approach to Learning) shows significant relationship to achievement

# Assessing Executive Function

	Teacher and/or Parent Assessment	Child Direct Assessment	Results
ECLS-K	Teacher and Parent Questionnaire about children's approaches to learning	no	Significant relationship to achievement
Barnett, et al (2008)	Problem Behaviors Scale of the Social Skills Rating System	no	Sign. Lower scores on a problem behavior scale = EF
Farran et al (2012)	yes	Attention Inhibitory Control Working Memory	NS
Lonigan & Phillips (2012)	Children's social skills & classroom behavioral competencies	Attentiveness, Attention shifting, Inhibitory control, persistence, & working memory	NS on teacher or direct child assessment

# Executive Function

- What does EF mean both conceptually and practically in Tools.
- Will different measures tap different behaviors/ attributes?
- Is there alignment with the construct-> practice-> measurement

# Goal

- How to create classroom experiences for high-poverty children that can increase school readiness skills and help close the achievement gap.





Thank you

Questions?