Young Children's Social Competence: Longitudinal Evaluation of the *Tools of the Mind* Curriculum and Teacher and Child Behaviors in Prekindergarten Classrooms

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Research Questions

- Do children in *Tools of the Mind* classrooms show significantly more improvement in social competencies at the end of the preschool and first-grade year compared to children in "business as usual" control classrooms?

- Are there observable aspects of the social context in pre-kindergarten classrooms that predict children's social competencies in first-grade?

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Tools of the Mind Prekindergarten Curriculum

- Full-year Vygotsky inspired curriculum
- Core focus is developing children's self-regulation skills to promote academic and socioemotional learning
- Teachers use scaffolding techniques to give children tools to transition from regulation imposed by others to control of their own actions and reactions
- Some primary activities include
  - Play plans / socio-dramatic play
  - Learning plans
  - Cooperative peer activities
  - literacy and language learning

Tools of the Mind Implementations

Source: Google Maps
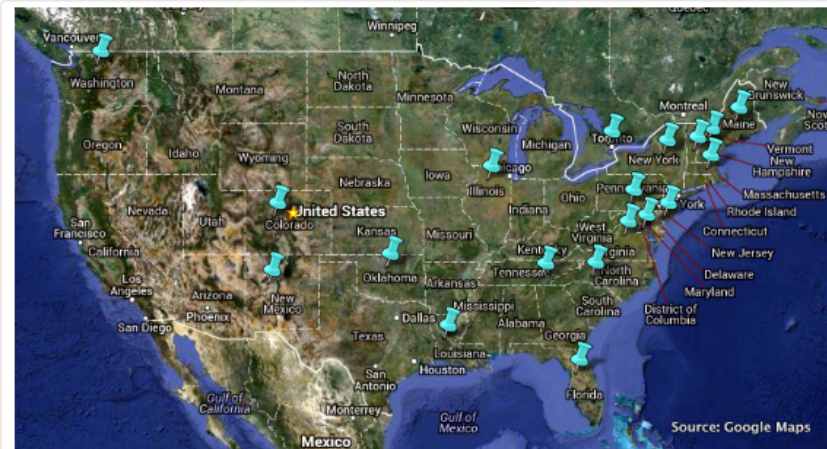
North America

Tools is currently implemented in early childhood programs around the U.S. The map shows large-scale implementation sites of *Tools*.

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Effects on Children's Social Competence in Other Experimental Evaluations of *Tools of the Mind*

- **Barnett et al. 2008** (7 *Tools* and 9 control classrooms)
  - *Tools* students had lower scores on a problem behavior scale

- **Hammer et al.** (60 pre-k classrooms assigned to *Tools* or control, sample of English Language Learners)
  - No results as of yet on impacts of *Tools* as compared to BAU on children's social skills, but this study includes measures of children's social competence

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Study Overview

- School-level randomization; blocked within district
- Tennessee & North Carolina School Districts
  - 4 small rural/suburban school districts, 1 urban school district
- 45 public pre-K programs that served large percentages of children from lower SES families
- 60 pre-K classrooms (2010-2011 school year)
  - 32 *Tools* classrooms
  - 28 Comparison classrooms
- Pre-k children followed over three years through 1st grade

Curricula Reported by Comparison Teachers	
Creative Curriculum	15
Literacy First	4
Houghton Mifflin	2
Scott Foresman	5
CSEFEL	6
Other	10

Note: Teachers could report more than one curriculum.

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Child Characteristics by Condition

	Tools Condition	Comparison Condition	Overall
Sample at entry to Pre-K	492	370	862
Mean age (months)	54.1	54.6	54.3
Gender (% female)	45.8	44.7	45.6
Ethnicity			
Black (%)	25.9	24.2	26.0
Hispanic (%)	23.8	24.9	24.2
White (%)	38.6	41.9	40.0
Other Race/Ethnicity (%)	9.0	11.1	9.6
IEP (%)	13.6	15.1	14.3
ELL (%)	28.3	30.8	29.4

- Attrition rates did not differ significantly between conditions. < 5% attrition at end of pre-k and < 11% attrition at end of 1st grade.
- Randomization checks indicated there were no significant differences between *Tools* and comparison groups on background characteristics at any time point.

Teacher Characteristics by Condition

	Tools Condition (n=32)	Comparison Condition (n=28)	Overall (n=60)
	Mean/n	Mean/n	Mean/n
Years of Experience			
Years Teaching	12.0	12.1	12.0
Years Teaching Pre-K	7.7	6.6	7.1
Education Level			
Bachelor's Degree	12	17	29
Some Graduate Coursework	11	5	16
Master's Degree	9	6	15
Licensure Area			
Early Childhood (0-Pre-K)	19	18	37
Pre-K-3rd	2	1	3
Elementary Ed.	8	8	16
Early Childhood & Special Ed.	3	1	4

Fidelity of Implementation

- Observational measure and trainer and coach ratings of fidelity of implementation indicated that virtually all of the *Tools* teachers implemented substantial portions of the curriculum.

- Teachers varied greatly in their implementation of *Tools* activities.

- Variations in fidelity of implementation across the 32 *Tools* teachers were not associated with outcomes of children's social competence.

- There were clear observable differences between *Tools* and comparison classrooms in the instructional activities observed.

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Outcome Measures of Children's Social Competence

Interpersonal Skills – measure of children's positive social behavior with peers and teacher

- Measure: Cooper-Farran Behavior Rating Scale (Interpersonal Subscale) (Cooper & Farran, 1991)
- 21 behaviorally anchored items on a 7-point scale, α = .85 - .87 across 3 time-points

Problem Behaviors – checklist of problem behaviors (e.g., physical and relational aggression)

- Measure: Academic and Classroom Behavior Record (Farran, Bilbrey, & Lipsey, 2003)
- 9-item checklist, α (KR20) = .68

Teacher-reported Measure	Beginning of Pre-k	End of Pre-k	End of 1st
Interpersonal skills	x	x	x
Problem behaviors			x

* Pre-k teachers reported on children's social competence at the beginning and end of preschool. 345 First-grade teachers reported on children's social competence at the end of 1st grade.

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Measures of Pre-k Classroom Social Context

Teacher Behavior - Teacher Observation in Preschool Subscales (Bilbrey et al., 2010), κ = .82 - .86
- **Teacher behavior approving**
  - Proportion of observations in which teacher/assistant use approving verbal comments, facial expressions, or a physical contact with children
- **Teacher positive emotional tone**
  - 5-point scale of degree to which teacher/assistant has positive interaction with children (e.g., smiling, laughing)

Classroom Children's Behaviors
- **Cooperative interactions –** Child Observation in Preschool Subscale (Farran & Son-Yarbrough, 2001), κ = .82 - .87
  - Proportion of observations in which children work together on a project/game and take formal turns
- **Positive Social Interactions –** Post Observation Rating Scale (Yun et al., 2010), κ = .71
  - 5-point scale of degree to which interactions among children in the classroom are positive and prosocial

Observations of Pre-K Classroom Level Dynamics	Pre-k fall	Pre-k midyear	Pre-k spring
Teacher positive emotional tone	x	x	x
Teacher behavior approving	x	x	x
Children's cooperative interactions	x	x	x
Children's positive social interactions	x	x	x

Analysis Plan

- Assessing impacts of *Tools* Pre-k Curriculum on children's social competencies at the end of pre-k and 1st grade
  - Multilevel models with students nested within classrooms
  - Separate models run for each outcome at the end of pre-k and 1st grade
  - Negligible amount of variance in outcomes between schools and between districts (ICC = < .01)
  - Covariates included gender, ELL status, and pretest

- Examining teacher behaviors and classroom children's behaviors as predictors of children's social competencies at the end of 1st grade
  - Multilevel models with students nested within classrooms
  - Separate models run for each outcome
  - Covariates included gender, ELL status, pretest, and experimental condition

Impacts of *Tools* on Children's Positive Social Competence at the end of Pre-k and 1st Grade

Descriptives of Outcomes

	TOOLS		CONTROL	
Outcome	Mean	SD	Mean	SD
Interpersonal skills – pre-k	5.45	1.05	5.48	1.06
Interpersonal skills – 1st grade	5.63	1.06	5.69	1.06
Problem behaviors – 1st grade	0.73	1.22	0.77	1.21

Multilevel Models with Covariates of Children's Pretest, Gender, and ELL status

	Interpersonal Skills		Problem Behavior	
	ES	SE	ES	SE
End of Pre-kindergarten	-.01	.07	Not assessed	N/A
End of First-grade	<.01	.07	<.01	.10

Note. Condition (Treatment = 1, Comparison = 0). *ES* = Covariate adjusted standardized mean difference effect size. *SE* = standard error.

Pre-K Classroom Social Dynamics as Predictors of Children's Positive Social Competencies at 1ˢᵗ Grade

Multilevel models with covariates of children's pretest, gender, and ELL status and experimental condition

	First-grade Teacher Ratings of Children's Behavior			
	Interpersonal Skill Gains		Problem Behavior	
Pre-K Social Dynamics	β	*t*-ratio	β	*t*-ratio
Teacher Behavior				
Positive Emotional Tone	.08*	2.26	-.07 ⁺	-1.74
Approving Behavior	.10**	2.81	-.07 ⁺	-1.75
Classroom Social Behavior				
Cooperative Interactions	.08**	3.28	-.08**	-3.43
Positive Interactions with Peers	.08*	2.41	-.09**	-2.57

Note. β = Standardized estimate. ⁺ $p < .10$, * $p < .05$, ** $p < .01$. Condition was not a significant predictor of outcomes.

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Summary of Results

- Do children in *Tools* classrooms show significantly more improvement in social competencies at the end of the preschool and first-grade year compared to children in "business as usual" control classrooms?

  - No significant advantage of *Tools* as compared to BAU

- Did observable aspects of the social context across all the preschool classrooms predict children's social competencies in 1st grade?

  - More positive social aspects of pre-k classrooms were generally predictive of children's longer-term social competence in 1st grade rated by many teachers all unaffiliated with pre-k program

  - Although associations were relatively small, it is notable that children who were in preschool classrooms with more positive social dynamics continued to show greater social competence two years later.

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Final Thoughts

- *Tools of the Mind* was a promising intervention for children's socioemotional learning, but these data do not support its effectiveness in this area

- Observations of a large number of pre-k classrooms suggest we can learn from what is already going on in preschool classrooms in order to improve them.

- The implication of these results is that intervention should target general interactions between teachers and children and among children to support children's social competence.

- Future work must address whether and which specific classroom processes are malleable and have casual effects on children's outcomes in different learning domains

- Potentially, investments in intervention for preschool teachers' classroom management and organization of the classroom social environment could be relatively inexpensive and may offer longer term benefits for children.

- They may, however, be harder to change!

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More Information

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