



Behavioral Regulation and Children's Early Academic Skills

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INTRODUCTION

- Behavioral regulation has long been identified as an essential area of interest in education due to the facilitative role regulation can have on achieving academic potential (Duckworth & Seligman, 2005)

- Recent research provides further evidence that developing behavioral regulation skills can even contribute to children's early academic outcomes (Sektan, McClelland, Acock, & Morrison, 2010)

- With this focus on behavioral regulation, a number of studies have shown basic individual characteristics, such as gender, can be associated with deficits in regulatory skills, with boys exhibiting less behavioral control than girls (Ponitz, Rimm-Kaufman, Brock, & Nathanson, 2009).

-The goal of the current project is to assess the degree to which task orientation, behavioral control and gender relate to the development of children's early academic skills in preschool.

Individualized Classroom Assessment Scoring System



- inCLASS is a system for observing and assessing children's interactions with teachers, peers, and tasks in the classroom. It describes multiple dimensions of a child's behavior and within-classroom interactions.

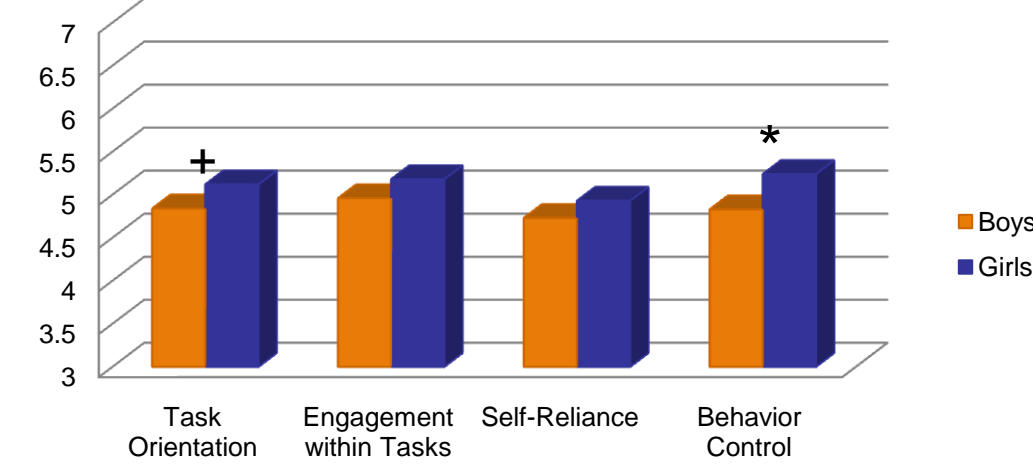
- Observations using inCLASS cover 3 major domains (Teacher Interactions, Peer Interactions and Task Orientation) and each domain contains 3 to 4 indicators.

- In our study, observed Task Orientation was used as our direct measure of behavioral regulation.



Teacher Interactions	Peer Interactions	Task Orientation
Positive Engagement with Teacher	Peer Sociability	Engagement within Task
Teacher Communication	Peer Communication	Self-Reliance
Teacher Conflict	Peer Assertiveness	Behavior Control
	Peer Conflict	

Gender Comparisons of Task Orientation from Fall Observations



Note. + $p < .10$. * $p < .05$.

- Girls consistently received higher ratings than boys in all indicators of Task Orientation. In addition, boys were observed as exhibiting significantly less Behavior Control compared to girls $t(297) = 2.24, p < .05$. Despite this, boys' domain scores were only marginally lower than girls' scores $t(297) = 1.82, p < .10$.

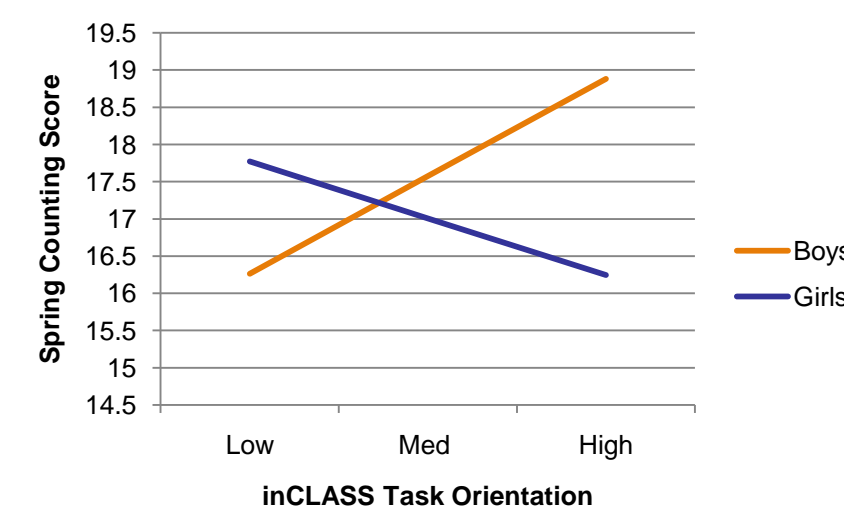
inCLASS Observer-Rated Task Orientation and Gender Interaction on Spring Academic Outcomes

Fixed Effects	Counting		Language and Literacy		PPVT	
	β	SE	β	SE	β	SE
Fall Counting	.83**	.05				
Fall Language and Literacy			.69**	.06		
Fall PPVT					.95**	.04
Gender	.56	1.26	-.16*	.07	-2.86*	1.64
inCLASS Task Orientation	-1.62*	1.61	-.11	.11	2.08	2.34
Task x Gender	4.40*	2.21	.04	.17	-1.41	3.33

Note. + $p < .10$. * $p < .05$. ** $p < .001$.

- Hierarchical linear modeling showed that the gender of students was significantly related to children's Language and Literacy gains as well as vocabulary (PPVT) gains. In addition, inCLASS Task Orientation was significantly related to children's gains in counting skills.

inCLASS Observer-Rated Task Orientation and Gender Interaction Predicting Growth in Children's Counting Ability



- The interaction between inCLASS Task Orientation, and gender significantly predicted gains in counting abilities. Boys tended to experience higher gains in counting when higher levels of task orientation were observed.

Teacher-Rated Task Orientation and Gender Interaction on Spring Academic Outcomes

Fixed Effects	Counting		Language and Literacy		PPVT	
	β	SE	β	SE	β	SE
Fall Counting	.81**	.05				
Fall Language and Literacy			.46**	.08		
Fall PPVT					.95**	.04
Gender	.86	1.25	-.09	.06	-2.88*	1.61
Teacher Task Orientation	2.76	1.51	.30**	.09	-.81	1.47
Task x Gender	1.74	.71	.09	.07	2.39	1.84

Note. + $p < .10$. * $p < .05$. ** $p < .001$.

- Teacher-rated Task Orientation was significantly related to children's gains in Language and Literacy. Gender was significantly related to children's vocabulary (PPVT) gains.

CONCLUSION

- Consistent with previous findings, boys tended to exhibit less behavioral control than girls. Boys had lower Task Orientation scores than girls, though this difference was only marginally significant. Gender was also significantly related to children's vocabulary gains in both HLM models.

- Observer-rated inCLASS Task Orientation was significantly related to children's gains in counting skills. In addition, there was a significant interaction between Observer-rated Task Orientation and Gender in relation to children's counting gains. Boys with higher task orientation exhibited the greatest gains in counting.

- Teacher-rated Task Orientation was significantly related to children's gains in language and literacy.

- These findings affirm the need for multiple, varied measures of task orientation in future research.

- Furthermore, since it has been documented that aspects of classroom environments, like organization, can influence behavioral regulation and academic outcomes (Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009), gathering measures of classroom quality in future research may help identify and increase our understanding of these relations and interactions.

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METHODS

Participants

	<i>n</i>	%	<i>M</i>	<i>SD</i>
Child Characteristics				
Gender				
Boy	191	51		
Girl	187	49		
Race				
White/Caucasian	57	15		
African American	11	3		
Asian	22	6		
Hispanic/Latino	266	70		
Other	22	6		
Age (Years)			4	
Family Characteristics				
Family Income			\$36883	\$30465
Maternal Education (Years)			12.92	3.13

Procedure

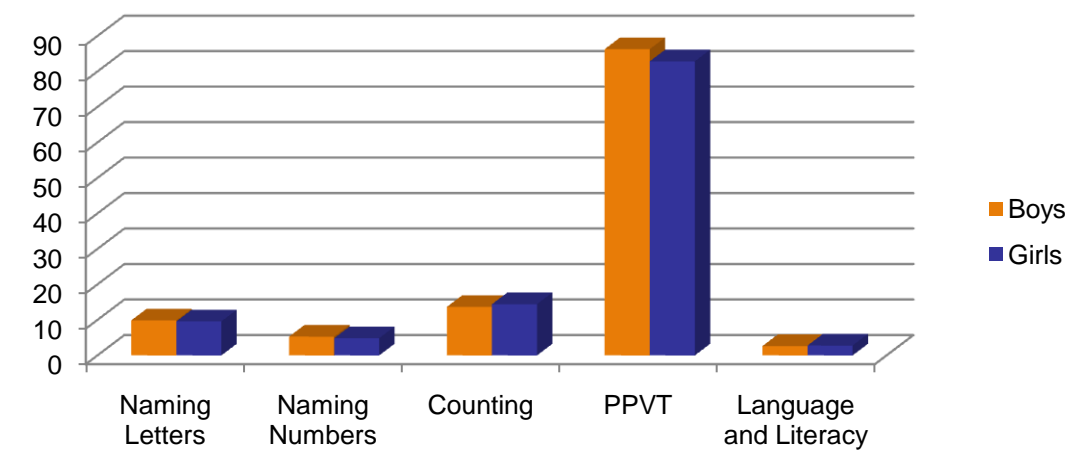
- Participants were observed in the Fall and Spring of preschool using inCLASS. Direct assessments of math and verbal competency were also gathered to measure children's academic growth. These included:

- Peabody Picture Vocabulary Test (PPVT; Dunn & Dunn, 1997)
- Naming Letters; children were asked to name as many letters as they could nominate
- Naming Numbers; children were asked to name as many numbers as they could nominate
- Counting; children were asked to count numbered bears, up to the fortieth bear

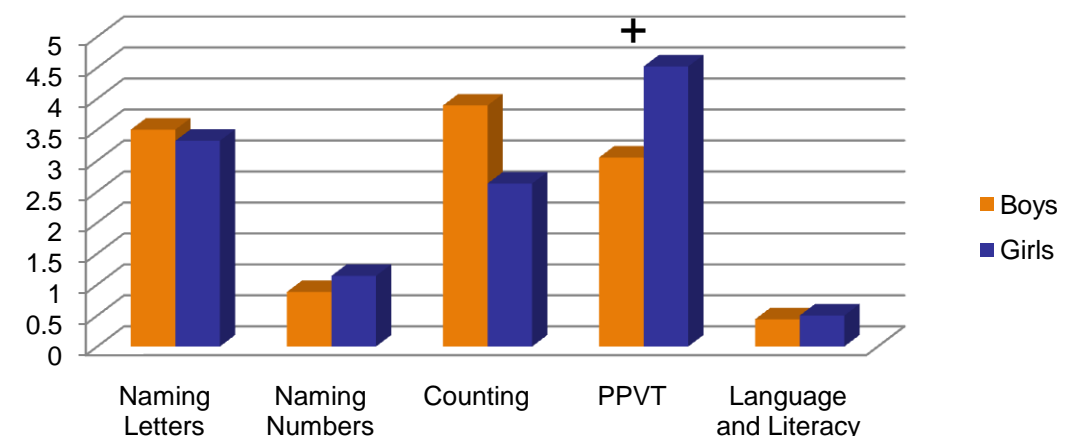
- Teachers reported classroom characteristics, their assessments of their students' task oriented competence in addition to feedback on children's language and literacy skills.

RESULTS

Baseline Academic Skills from Fall Assessments



Growth in Academic Skills from Fall to Spring by Gender



Note. + $p < .10$.

- While initial skills were relatively equal, boys and girls exhibited different gains over the year in a number of assessments. Girls had higher growth in vocabulary (PPVT) scores than boys, but this difference was significant only at a marginal level $t(175) = 1.71, p < .10$.