

Predicting Preschoolers' Academic Skills: The Case for Direct Assessment Behavioral Measures in Larger Scale Research

Christine P. Li-Grining, Radiah Smith-Donald,
& C. Cybele Raver

Survey- vs. lab-based approaches to measurement

- Divergent findings re: children's socioemotional skills as significant predictors of academic achievement (Duncan et al., 2007)
- To what extent can we attribute this discrepancy to differences in measurement?
 - Teacher- & parent-reports vs. direct assessments
- To what extent can we attribute this discrepancy to differences in measurement?

Research questions

- Do direct assessments of children's self-regulation predict their school readiness, net of teacher reports of behavior problems and social competence?
- Do assessor reports of children's self-regulation predict their school readiness, net of teacher reports of behavior problems and social competence?

Data & Measures

- CSRP data from Fall and Spring of the Head Start year
- PSRA
 - Direct assessment of executive functioning and effortful control
 - Assessor report of attention/impulsivity and positive emotionality
- Teacher reports
 - Externalizing behavior problems (BPI)
 - Internalizing behavior problems (BPI)
 - Social competence (SCBE)
- Academic skills
 - PPVT
 - Early math skills
 - Letter naming

Covariates

- Child & family characteristics
 - Child
 - Age
 - Gender
 - Race/ethnicity
 - Family
 - Less than a HS education
 - Less than 10 hours of work per week
 - Income-to-needs ratio below the poverty line
 - Family structure
- Classroom characteristics
 - Positive & negative climate
 - Teacher sensitivity
 - Behavior management
 - Overall quality
 - Numbers of adults and children
 - Teachers' work & personal stressors
- Site characteristics
 - Family support worker on staff?
 - Percentage of teachers with a BA
 - Percentage of TAs with any college education

3-Level HLM Models

- HLM Models
 - Level 1 – Children
 - Level 2 – Classrooms
 - Level 3 – Sites
- Model 1 – Cross-sectional model using Fall data (n = 445)
- Model 2 – Lagged model predicting Spring outcomes, control group only (n = 183)
- Model 3 – Longitudinal model predicting Spring outcomes, net of Fall outcomes, control group only (n = 182)
- SRCD results – No assessor report
- AR results – Assessor report included

SRCD Results – Model 1

Table 1

Indicators of Children's Socioemotional Development in the Fall as Predictors of

Their Academic Skills in the Fall (n = 445)

	Vocabulary		Math		Letter Naming	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	0.445 ***	0.006	0.390 ***	0.007	0.212 ***	0.012
Fall Teacher-Reported Measures						
Externalizing Behavior Problems	0.003 +	0.002	0.003	0.002	0.002	0.003
Internalizing Behavior Problems	-0.005	0.004	-0.006	0.004	0.010	0.008
Social Competence	0.023 ***	0.009	0.030 **	0.010	0.075 ***	0.018
Fall Direct Assessments						
Executive Functioning	0.038 ***	0.009	0.090 ***	0.009	0.098 ***	0.017
Effortful Control	0.036 **	0.011	0.049 ***	0.011	0.024	0.021

Note. *** $p < .001$, ** $p < .01$, * $p < .05$, + $p < .10$

Models control for children's age, gender, and race/ethnicity, parents' education level and employment hours, family structure, and the households' income-to-needs ratio at level 1; classrooms' positive climate, negative climate, teacher sensitivity, behavior management, and overall quality ratings, number of adults and children, and teachers' work and personal stressors at level 2; and sites' percentage of teachers with a BA, percentage of teacher assistants with some college education, and whether sites had a family support worker on staff at level 3.

AR Results – Model 1

	PPVT		EMS		LN
BPI Ext	0.00		0.00		0.00
BPI Int	0.00		0.00		0.01
SCBE Soc Comp	0.02 +		0.02 *		0.07 ***
PSRA Ex Func	0.03 **		0.08 ***		0.09 ***
PSRA Eff Cont	0.01		0.03 *		0.01
AR Att/Imp	0.06 **		0.04 *		0.02
AR PosEmo	0.04 **		0.06 ***		0.05 *

SRCD Results – Model 2

Table 2

Indicators of Children's Socioemotional Development in the Fall as Predictors of

Their Academic Skills in the Spring (n = 183)

	Vocabulary		Math		Letter Naming	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	0.557 ***	0.010	0.544 ***	0.012	0.433 ***	0.020
Fall Teacher-Reported Measures						
Externalizing Behavior Problems	-0.007 +	0.003	-0.007 +	0.004	-0.011 +	0.006
Internalizing Behavior Problems	-0.002	0.008	-0.001	0.008	0.019	0.013
Social Competence	0.017	0.018	0.060 **	0.020	0.126 **	0.034
Fall Direct Assessments						
Executive Functioning	0.054 ***	0.014	0.039 *	0.015	0.080 **	0.026
Effortful Control	0.039 *	0.017	0.051 *	0.019	-0.020	0.033

Note. *** $p < .001$, ** $p < .01$, * $p < .05$, + $p < .10$

Models control for children's age, gender, and race/ethnicity, parents' education level and employment hours, family structure, and the households' income-to-needs ratio at level 1; classrooms' positive climate, negative climate, teacher sensitivity, behavior management, and overall quality ratings, number of adults and children, and teachers' work and personal stressors at level 2; and sites' percentage of teachers with a BA, percentage of teacher assistants with some college education, and whether sites had a family support worker on staff at level 3.

AR Results – Model 2

	PPVT		EMS		LN
BPI Ext	-0.01 *		-0.01 *		-0.01 +
BPI Int	0.00		0.00		0.02
SCBE Soc Comp	0.01		0.05 *		0.12 **
PSRA Ex Func	0.05 **		0.02		0.07 *
PSRA Eff Cont	0.05 *		0.02		-0.04
AR Att/Imp	-0.01		0.07 *		0.05
AR PosEmo	0.06 **		0.05 *		0.03

SRCD Results – Model 3

	PPVT	EMS	LN
BPI Ext	-.01*	-.01*	-.01*
BPI Int	ns	ns	-.02+
SCBE Social Comp	ns	.04*	.08*
PSRA Exec Func	.03*	ns	ns
PSRA Eff Cont	.03+	ns	ns

AR Results – Model 3

	PPVT		EMS		LN	
BPI Ext	-0.01	*	-0.01	**	-0.01	*
BPI Int	0.00		0.00		0.02	*
SCBE Soc Comp	-0.01		0.04	*	0.07	*
PSRA Ex Func	0.03	*	-0.01		0.03	
PSRA Eff Cont	0.04	*	0.00		-0.04	
AR Att/Imp	-0.02		0.05	*	0.05	
AR PosEmo	0.03	+	0.02		-0.01	