



UNIVERSITY *of* MARYLAND
SCHOOL OF SOCIAL WORK

Using Longitudinal Data to Assess Long-Term Outcomes Associated with Poverty in Maryland Students

Dawnsha Mushonga, PhD, Angela Henneberger, PhD, Bess Rose, PhD, & Boyoung Nam, MSW

SSWR Annual Conference

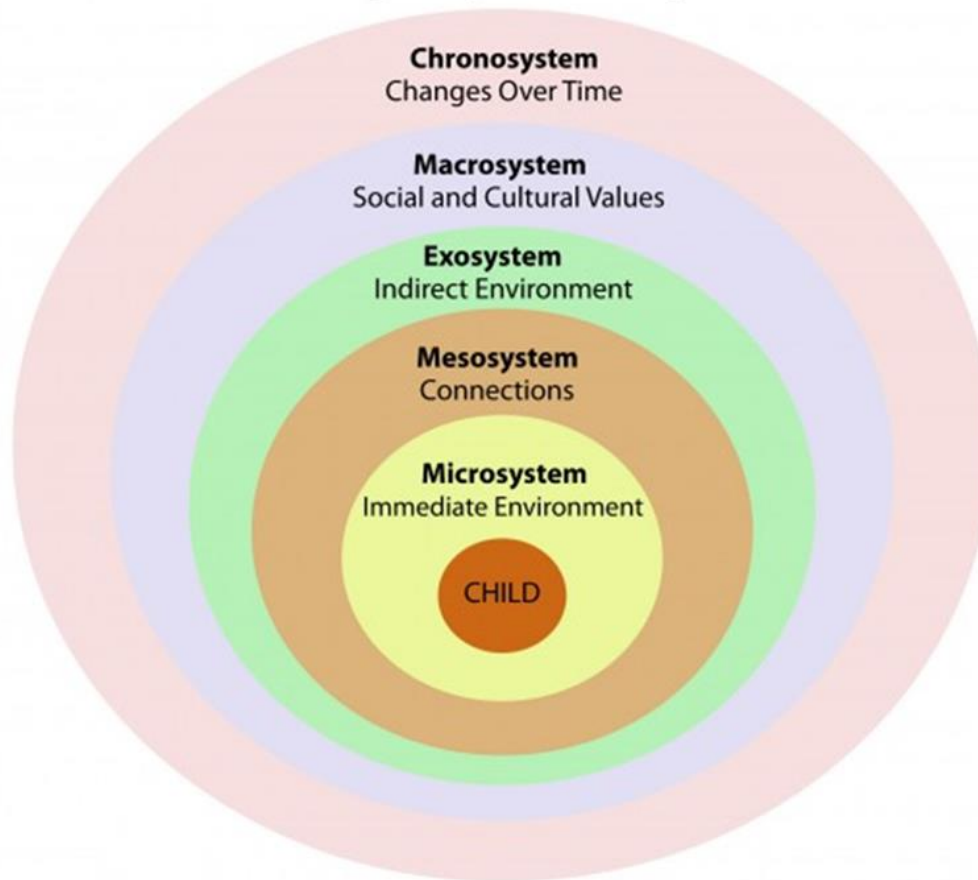
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January 19, 2019

Student and School Poverty

- Poverty has been linked to poor physical health, low academic achievement, poor social and emotional functioning, fewer completed years of education, and lower workforce earnings (Duncan, Magnuson, Kalil, & Ziol-Guest, 2012; Leventhal & Brooks-Gunn, 2000; McLoyd, 1998).
- Students' educational outcomes depend on the schools they attend because the education provided by each school reflects the available resources, curriculum, and student body composition of the school (Borman & Dowling, 2010).
- Evidence from observational studies suggests that prolonged residence in poor neighborhoods is detrimental to educational outcomes (Burdick-Will et al. 2011; Harding 2003; Sampson, Sharkey, & Raudenbush 2008; Wodtke, Harding, & Elwert 2011).

Bronfrenbrenner's Ecological Systems



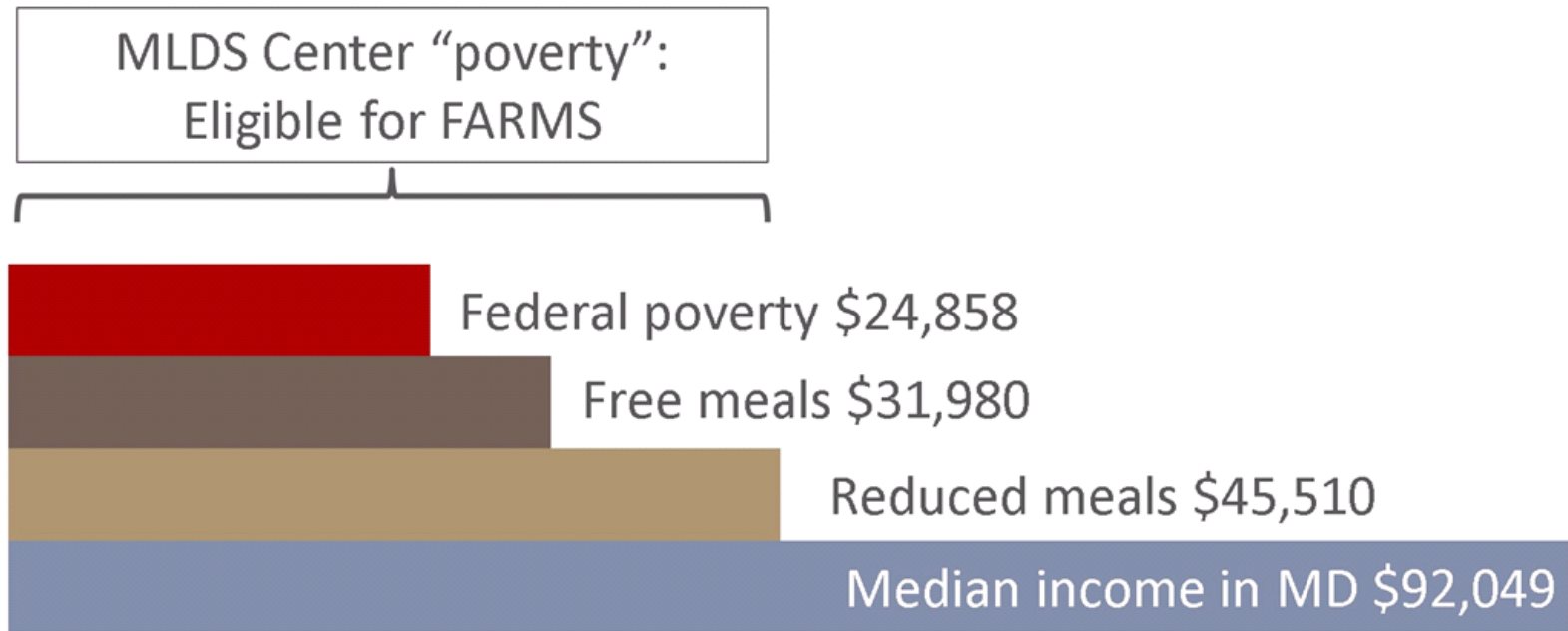
The Current Study

- **Goal:** inform state commission on school funding about role of school concentration of poverty
- Disentangle the roles of student and school factors...
 - Student household poverty
 - School concentration of poverty
 - Student race/ethnicity
 - School racial/ethnic composition
- Examined students' long-term educational and career outcomes, including:
 - Standardized test scores
 - High school graduation and dropout
 - Postsecondary enrollment
 - Wages

Method: Data

- Linked data sources for K-12, postsecondary, and workforce data
- 6 years of administrative records from MLDS
 - 63,282 students- 6th grade cohort
 - All 24 local school systems in Maryland
- Inclusion criteria
 - Did not transfer out of the MD public school system
 - Enrolled some point during 9th-12th grades
 - Complete demographic data available (gender, race/ethnicity)

Method: Measuring Poverty



Household income thresholds for a family of 4

*Student poverty duration = length of time eligible for FARMS from 6th - 12th grades

Method: Measures

- Independent Variables
 - Level One- student characteristics
 - Student poverty- duration of time FARMS eligible
 - Student race/ethnicity
 - Level Two- school characteristics
 - School poverty- mean poverty duration of all students in the school
 - School racial/ethnic composition
- Outcome Variables
 - High school graduation (on-time)
 - High School Assessment (HSA) Algebra scores
 - College enrollment (within one year of HS graduation)
 - Workforce wages (within first year after HS graduation)

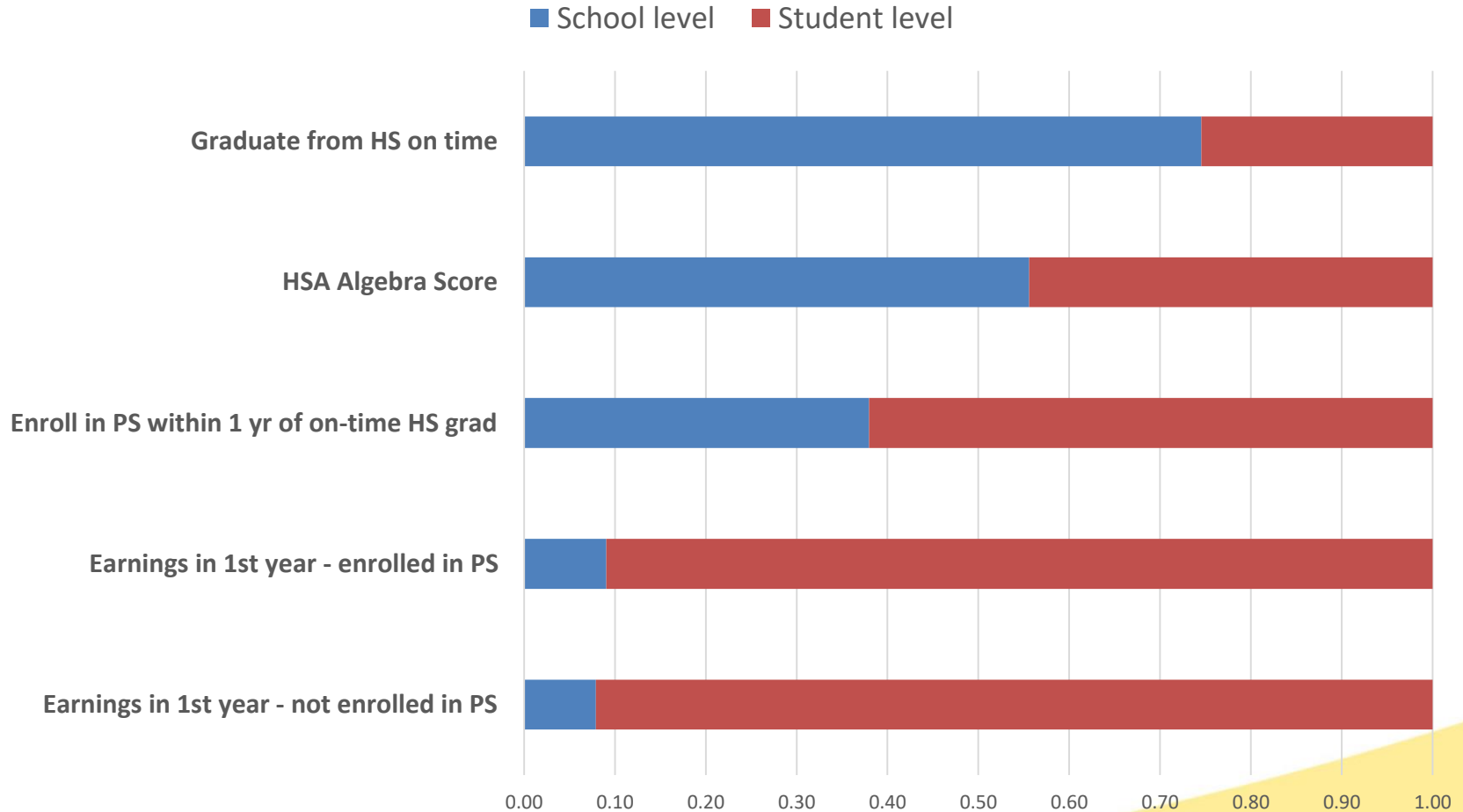
Method: Analyses

- Multiple Membership Multilevel Modeling
 - Two-level model (Students nested within schools)
- Random effects to model the intercepts
- Fixed effects for the independent variables
- Student poverty, school poverty, school racial composition were standardized ($M = 0$; $SD = 1$)
- Student race variables were grand mean centered

Descriptive Statistics

Variable	Category	%
Race/Ethnicity	Asian	5
	Black	35
	Hispanic	10
	White	45
	Other	4
Gender	Male	50
Experiences between 6th and 12th Grades	Ever in English Language Learner	3
	Ever in Special Education	14
	Ever Homeless	4
	Ever Eligible for FARMS	49

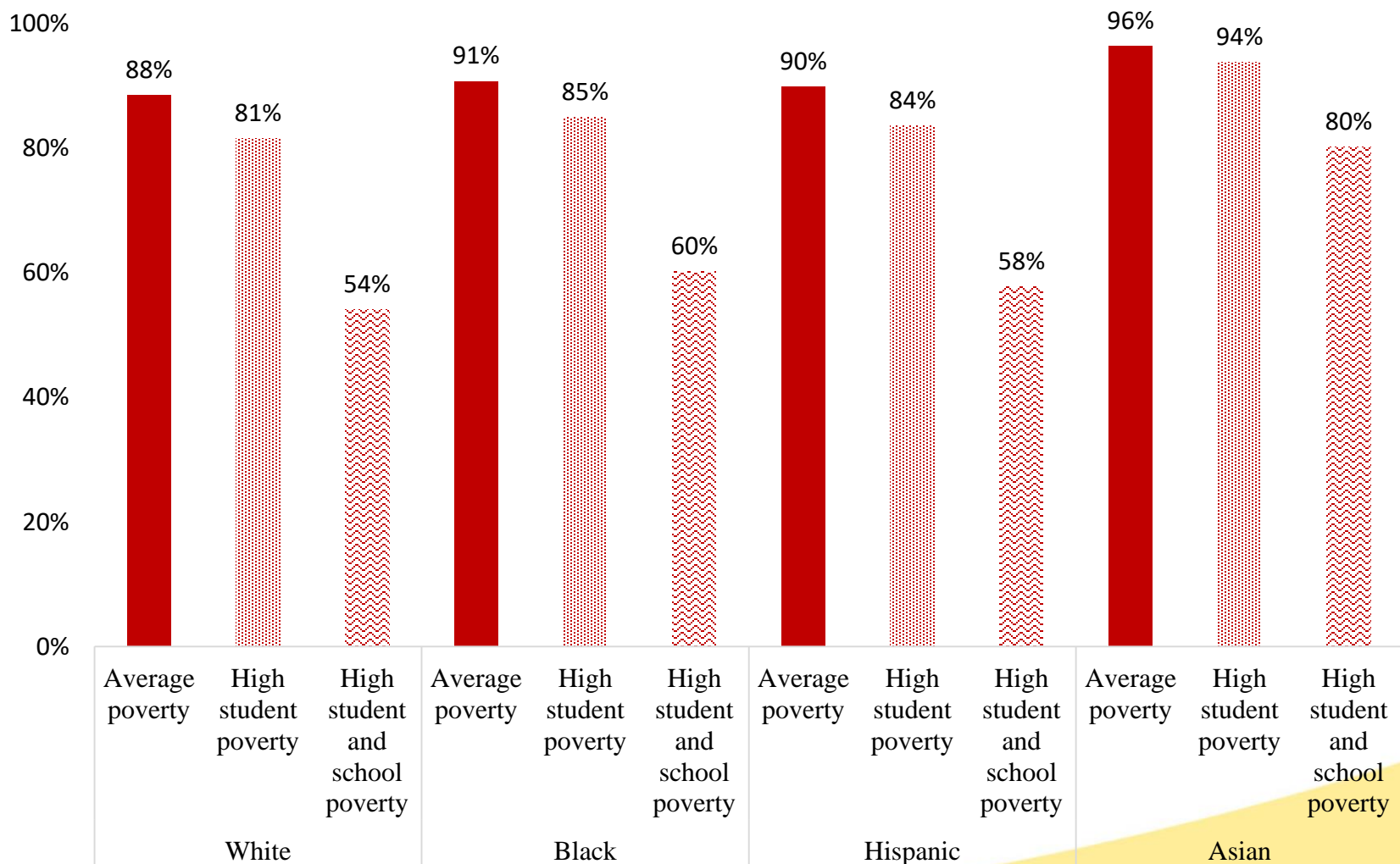
Proportion of variance at school and student levels



Results: High School Graduation

On-Time High School Graduation	Model 2: Poverty Main Effects (n=54465)				Model 3: Poverty and Race (n=54465)			
	β	SE	OR	Cohen's d	β	SE	OR	Cohen's d
Intercept	1.99***	0.13	7.32		2.03***	0.15	7.65	
Level 1								
Student poverty duration	-0.54***	0.02	0.58	-0.20	-0.55***	0.02	0.57	-0.20
Hispanic					0.15*	0.06	1.16	0.04
Black					0.23***	0.05	1.28	0.07
Asian					1.23***	0.12	3.43	0.22
Other					0.34***	0.09	1.40	0.09
Level 2								
School mean poverty duration	-0.86***	0.10	0.42	-0.35	-1.31***	0.12	0.27	-0.60
School % Hispanic					0.28***	0.08	1.32	0.07
School % Black					0.53***	0.11	1.70	0.13
School % Asian					-0.13	0.11	0.88	-0.04
School % Other					0.03	0.07	1.03	0.01

Results: Predicted Likelihood HS Graduation (On-time)



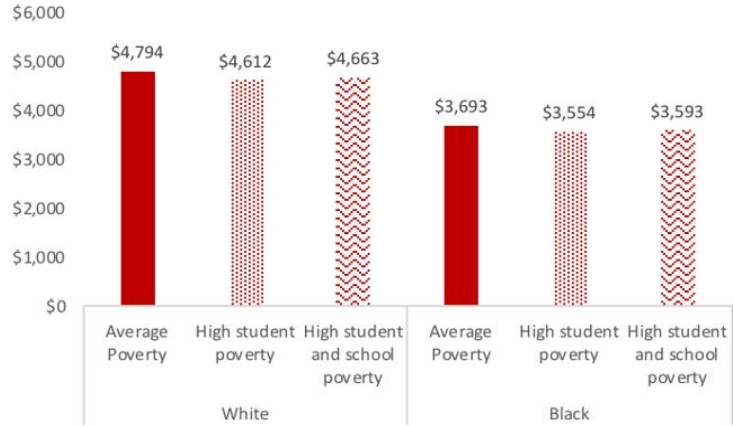
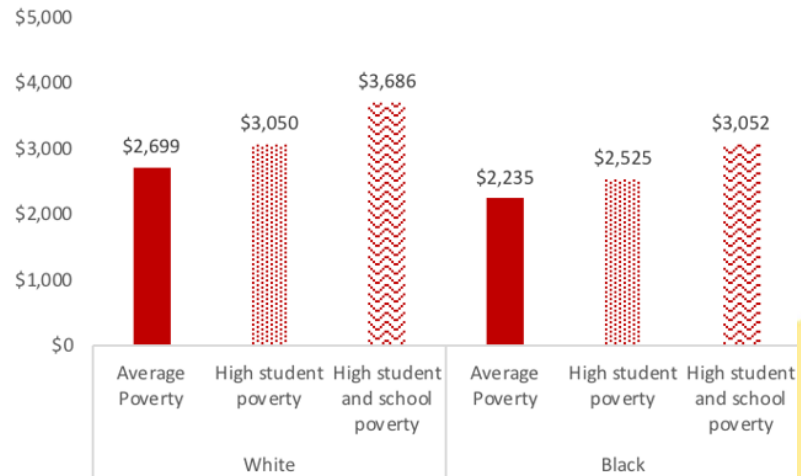
Note: Average student poverty = 0.36; Average school poverty = 0.37
Predictions are for students in schools with average racial/ethnic composition

Academic Outcomes

Outcome	Model 2 Results (Poverty Only)	Model 3 Predicted Outcomes (Poverty and Race/Ethnicity)												
HSA Algebra (Proficient = 412; Advanced = 450)	<p>A 1 SD increase in student poverty duration was associated with a 6 point decrease in HSA Algebra score ($d = .20$)</p> <p>A 1 SD increase in school mean poverty duration was associated with a 12 point decrease in HSA Algebra score ($d = .39$)</p>	<table border="1"> <caption>HSA Algebra Scores by Race and Poverty Condition</caption> <thead> <tr> <th>Race</th> <th>Average Poverty</th> <th>High student poverty</th> <th>High student and school poverty</th> </tr> </thead> <tbody> <tr> <td>White</td> <td>433</td> <td>428</td> <td>419</td> </tr> <tr> <td>Black</td> <td>421</td> <td>416</td> <td>407</td> </tr> </tbody> </table>	Race	Average Poverty	High student poverty	High student and school poverty	White	433	428	419	Black	421	416	407
Race	Average Poverty	High student poverty	High student and school poverty											
White	433	428	419											
Black	421	416	407											
College Enrollment (Within one year following on-time HS graduation)	<p>A 1 SD increase in student poverty is associated with a .41 decrease in the log odds of enrolling in college ($d = .20$)</p> <p>A 1 SD increase in student poverty is associated with a .46 decrease in the log odds of enrolling in college ($d = .23$)</p>	<table border="1"> <caption>College Enrollment Rates by Race and Poverty Condition</caption> <thead> <tr> <th>Race</th> <th>Average Poverty</th> <th>High student poverty</th> <th>High student and school poverty</th> </tr> </thead> <tbody> <tr> <td>White</td> <td>74%</td> <td>64%</td> <td>52%</td> </tr> <tr> <td>Black</td> <td>78%</td> <td>69%</td> <td>58%</td> </tr> </tbody> </table>	Race	Average Poverty	High student poverty	High student and school poverty	White	74%	64%	52%	Black	78%	69%	58%
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Note: Model 3 results control for student race/ethnicity and school racial composition

Annual Wages

Outcome	Model 2 Results (Poverty Only)	Model 3 Predicted Outcomes (Poverty and Race/Ethnicity)												
Annual Wages (Non-Postsecondary)	A 1 SD increase in student poverty is associated with a .05 decrease in annual log wages ($d = .04$)	 <table border="1"> <caption>Model 3 Predicted Outcomes (Poverty and Race/Ethnicity) - Non-Postsecondary</caption> <thead> <tr> <th>Race</th> <th>Average Poverty</th> <th>High student poverty</th> <th>High student and school poverty</th> </tr> </thead> <tbody> <tr> <td>White</td> <td>\$4,794</td> <td>\$4,612</td> <td>\$4,663</td> </tr> <tr> <td>Black</td> <td>\$3,693</td> <td>\$3,554</td> <td>\$3,593</td> </tr> </tbody> </table>	Race	Average Poverty	High student poverty	High student and school poverty	White	\$4,794	\$4,612	\$4,663	Black	\$3,693	\$3,554	\$3,593
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White	\$4,794	\$4,612	\$4,663											
Black	\$3,693	\$3,554	\$3,593											
A 1 SD increase in school poverty is associated with a .07 decrease in annual log wages ($d = .06$)														
Annual Wages (Postsecondary)	A 1 SD increase in student poverty is associated with a .12 increase in annual log wages ($d = .09$)	 <table border="1"> <caption>Model 3 Predicted Outcomes (Poverty and Race/Ethnicity) - Postsecondary</caption> <thead> <tr> <th>Race</th> <th>Average Poverty</th> <th>High student poverty</th> <th>High student and school poverty</th> </tr> </thead> <tbody> <tr> <td>White</td> <td>\$2,699</td> <td>\$3,050</td> <td>\$3,686</td> </tr> <tr> <td>Black</td> <td>\$2,235</td> <td>\$2,525</td> <td>\$3,052</td> </tr> </tbody> </table>	Race	Average Poverty	High student poverty	High student and school poverty	White	\$2,699	\$3,050	\$3,686	Black	\$2,235	\$2,525	\$3,052
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White	\$2,699	\$3,050	\$3,686											
Black	\$2,235	\$2,525	\$3,052											
A 1 SD increase in school poverty is associated with a .04 increase in annual log wages ($d = .03$)														

Note: Model 3 results control for student race/ethnicity and school racial composition

Summary of Results

- Both student and school-level poverty were related to long-term academic outcomes, even after controlling for individual student race and school racial/ethnic composition.
- School concentration of poverty, regardless of individual poverty experience and race, usually predicts worse educational outcomes.
- Poverty related to lower annual wages for students not enrolled in college and higher annual wages for those enrolled in college.
- Racial and ethnic gaps in standardized test scores persist regardless of student and school-level poverty.
- Racial and ethnic gaps in high school graduation and postsecondary enrollment disappear or are reversed when controlling for student and school-level poverty and school's racial/ethnic composition.

Discussion

- Prior research reports that income-related achievement gaps are established before kindergarten and persist throughout K-12 education (Reardon, 2011; Reardon, 2013)
- May be due to a number of factors, including:
 - Insufficient resources (Jencks & Mayer, 1990)
 - Lower quality teachers (Lankford, Loeb, & Wyckoff, 2002)
 - Unequal access to social capital (Putnam, 2000)
- Racial/ethnic gaps in most outcomes disappear after controlling for poverty, which may be consistent with cultural differences in achievement motivation (Trumbull & Rothstein-Fisch, 2011)
- The persistence of racial/ethnic gaps in test scores even after controlling for poverty is consistent with literature on stereotype threat (Alter, Aronson, Darley, Rodriguez, & Ruble, 2010)

Discussion

- In this study, poverty was related to lower annual wages for students not enrolled in college and higher annual wages for those enrolled in college
- Education promotes economic success and social mobility and serves a protective effect against the detrimental role of poverty (Engle; 2007; Ruzojcic et al., 2018)
 - May help to explain why poverty is related to lower annual wages for students not enrolled in college
- Even after receiving financial aid for college, a considerable portion of need typically remains unmet, especially for students from low-income backgrounds (Pike et al., 2008; Long & Riley, 2007)
 - May help to explain why poverty is related to higher annual wages for students who were enrolled in college

Limitations

- Data only available starting 2007-08 academic year
- Excluded Maryland students not attending public schools
- Poverty indicator (FARMS eligibility) may not accurately capture true student and school poverty
- Workforce data excluded federal employees, private contractors, or self-employed individuals
- Additional variables at the student and school level were not included
- Excluded student's employment status (full or part-time)

Future Research

- Examine the protective role of additional student and school level characteristics
- Include elementary levels to assess effects of poverty during the entire K-12 experience
- Examine additional college and career outcomes (e.g. college persistence and degree attainment, workforce trajectories)
- Compare measures of poverty (FARMS vs Census data vs Title I)

Implications

- Implementation of additional programs and policies for students living in poverty and schools with high concentrations of poverty.
- Focus on strengths within high-poverty schools to better support students.
- Establish partnerships within the surrounding community to increase academic and career success.

For More Information




MLDS CENTER
Maryland Longitudinal
Data System

Better Data • Informed Choices • Improved Results

**Poverty and Student Outcomes:
Disentangling the Effects of Student and School Poverty**

Bess A. Rose, Dawnsia R. Muzhonga, and
Angela K. Hennisberger
May 3, 2018
University of Maryland, School of Social Work

DRAFT



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The Role of Concentrated Poverty and Race in Long-Term Academic Outcomes

Commission on Innovation and Excellence in Education
July 13, 2018

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**Poverty and Long-Term Educational Outcomes:
Variation by Level of School Poverty, Student Poverty, and Local School System**

Commission on Innovation and Excellence in Education
August 15, 2018

<https://mldscenter.maryland.gov>

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Thank You

Dawnsha Mushonga, PhD, LCPC, NCC, ACS
Postdoctoral Fellow

University of Maryland School of Social Work
525 West Redwood Street
Baltimore, Maryland 21201
410-706-7610

dmushonga@ssw.umaryland.edu

Questions?

