

The Relation Between Socioeconomic Status, Anxiety, and Math Achievement in Early Elementary Students



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Introduction

- Children from lower socioeconomic backgrounds often face academic challenges
- Emotional factors that contribute to these struggles are less understood
- Anxiety, both general and math-specific, may be one way that family background affects early learning

Research Question

- How does socioeconomic status, measured through qualifying for free or reduced-price lunch, parent education, and occupational prestige, relate to general and math-specific anxiety and math achievement in young children?

Methods

Participants

- 3,018 students in 242 classrooms from 29 public elementary schools in four counties
- Data were collected with two cohorts, each contributing two waves of data collection

Measures

Socioeconomic Status

- Parents reported qualification for free or reduced-price lunch, parent education level and parent occupation.
- Occupational prestige scores were assigned using the Standard International Occupational Prestige Scale (SIOPS)

Student Measures

- **Math Anxiety:** Students completed a math anxiety measure (Ganley & McGraw, 2016)
- **Math Achievement:** Elementary Mathematics Student Assessment (Schoen et al., 2021)
- **General Anxiety:** The 642 second graders completed a general anxiety measure (NIH Toolbox)

Results

- Correlations are in Table 1. Regression results are in Table 2.

General Anxiety

- Socioeconomic status showed weaker and inconsistent relationships with anxiety
- Free/reduced lunch price predicted higher general anxiety ($\beta = .149$, $p = .014$)
- Parent education ($\beta = -.028$, $p = .658$) and occupational prestige ($\beta = .051$, $p = .412$) were not significant predictors

Math Anxiety

- Free/reduced lunch significantly predicted higher math anxiety ($\beta = .067$, $p = .023$)
- Higher parent education significantly predicted lower math anxiety ($\beta = -.095$, $p = .003$)
- Occupational prestige was not significant ($\beta = .002$, $p = .958$)

Math Achievement

- Socioeconomic status strongly predicted math achievement
- Students qualifying for free/reduced lunch had lower math achievement ($\beta = -.190$, $p < .001$)
- Higher parent education ($\beta = .128$, $p < .001$) and occupational prestige ($\beta = .133$, $p < .001$) predicted better math performance

Table 1. Correlations

Predictor	Free/Reduced Lunch	Parent Educ	Occup Prestige	General Anxiety	Math Anxiety (W1)	Math Achieve (W1)
Free/Reduced Lunch	1					
Parent Education	-.539**	1				
Occupational Prestige	-.437**	.574**	1			
General Anxiety	.177**	-.101*	-.06	1		
Math Anxiety (W1)	.116**	-.120**	-.071**	.561**	1	
Math Achievement (W1)	-.324**	.321**	.271**	-.216**	-.277**	1

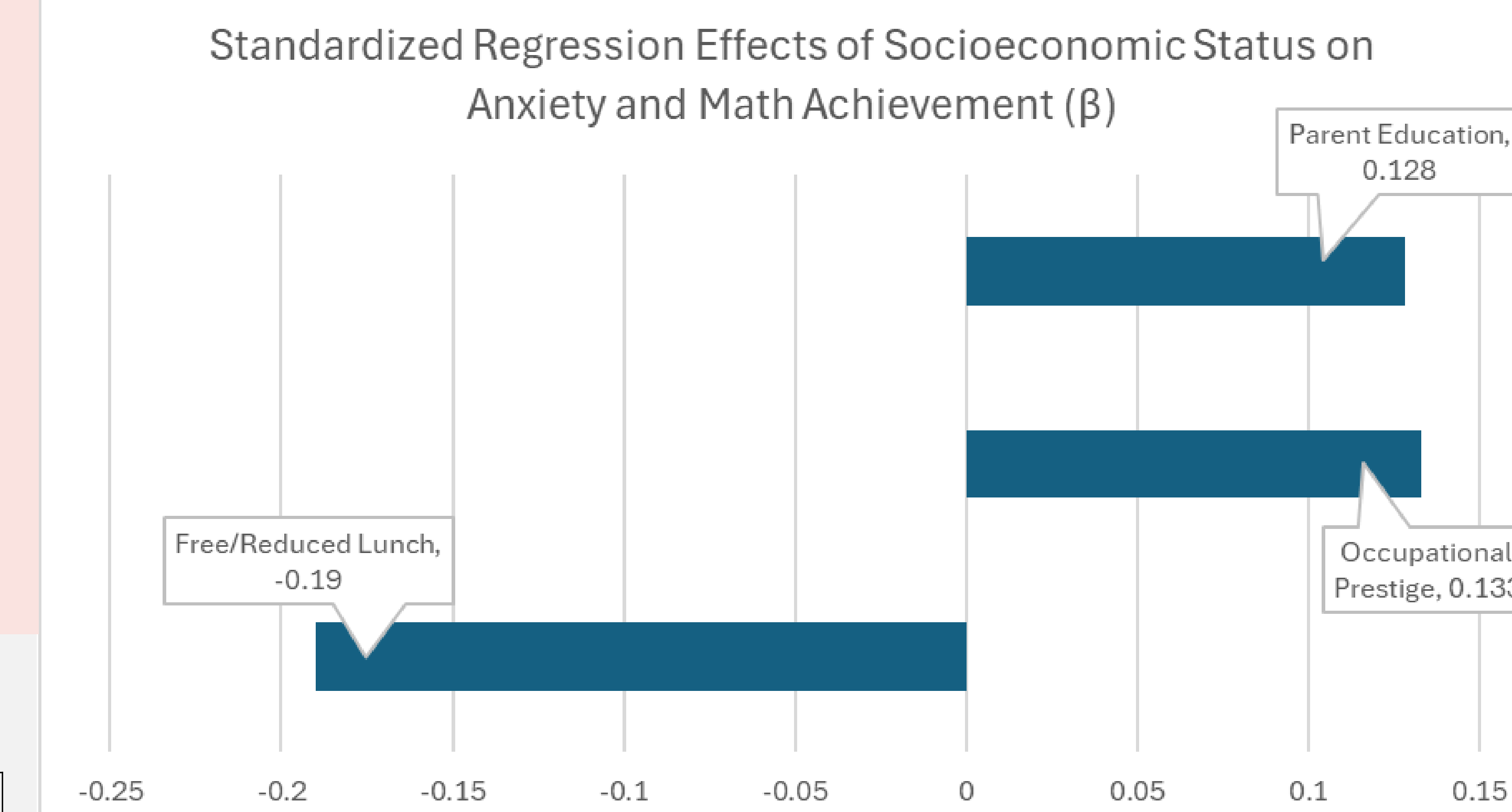
* $p < .05$, ** $p < .01$, *** $p < .001$

Table 2. Standardized Regression Results

Predictor	General Anxiety	Math Anxiety (W1)	Math Achievement (W1)
Free/Reduced Lunch	.149*	.067*	-.190***
Parent Education	-.028	-.095**	.128***
Occupational Prestige	.051	.002	.133***
Age	.049	-.052	.104***
Grade 1		-.089**	.022
Grade 2		-.182***	.051
Grade 3		-.196***	.103***

* $p < .05$, ** $p < .01$, *** $p < .001$

Figure 1.



Discussion

- All measures of socioeconomic status uniquely predicted math performance, but only free or reduced priced lunch predicted general anxiety
- SES had a small relation with math anxiety, primarily for parent education.
- SES indicators were more strongly related to math achievement than to anxiety outcomes
- These results suggest all socioeconomic status indicators matter for math performance, but results are less consistent for general and math-specific anxiety.