The Long- Term Effects of Family Emotional Climate on Academic Achievement in the Elementary School

For several decades scholars from different disciplines have examined possible links between various family characteristics (such as family structure, parental education, income, parental psychological well- being and parenting styles), and children's academic success. However, the emotional dimension of family life was somewhat understudied. In the present study, we focus on the determinants of family emotional climate and on its consequences for children's achievement at the end of the elementary school. We measured family emotional climate on three dimensions: parental depression, parental warmth, and use of physical punishment.

Although numerous studies have examined the association among family socioeconomic background, parental psychological well-being, parenting practices, and child outcomes, most have focused on specific groups, such as single low-income mothers, immigrant or minority urban communities, or have been conducted on relatively small samples (Conger et al., 1993; Elder et al., 1995; Feng, Shaw, Skuban, & Lane, 2007; Halgunseth, Ispa, Csizmadia, & Thornburg, 2005; Jackson et al., 1998; Jennings & Abrew, 2004; Kalil & Eccles, 1998; Menaghan et al., 1997; McLeod & Shanahan, 1996). Further, the majority of the studies have focused on either outcomes in the early childhood- infants and toddlers- (Caughy, Huang, & Lima, 2009; Coyne, Low, Miller, Seifer, & Dickstein, 2007; Dietz, Jennings, Kelley, & Marshal, 2009; Gross, Shaw, Burwell, & Nagin, 2009; Meadows, McLanahan, & Brooks-Gunn, 2007), or adolescents' wellbeing (Champion et al., 2009; Cortes, Fleming, Mason, & Catalano, 2009; Goosby, 2007; Manongdo & Garcia, 2007; Rice, Lifford, Thomas, & Thapar, 2007). As such, these studies have examined emotional adjustment and behavior problems among younger children, or adolescents' depression,

social and emotional adjustment and delinquent behavior. Very few studies have focused on academic achievement of elementary school students.

We build our investigation upon previous research that suggests the existing relationships between family demographic characteristics, parental psychological well- being, parenting strategies and children's outcomes. Our study makes a unique contribution to the literature because we use a nationally representative sample of elementary school students; we examine the long- term effects of three dimensions of family emotional climate (parental depression, parental warmth and physical discipline); and we assess these effects on children's academic achievement at the end of 5th grade. An investigation of student achievement at the end of the 5th grade is important because it serves as a key to placement of students in courses in middle school, which in turn set students on track for certain course sequences in high school, in particularly for math.

Data

The data for this study come from the Early Childhood Longitudinal Study – Kindergarten Cohort (ECLS–K). The ECLS-K, sponsored by the U.S. Department of Education, National Center for Educational Statistics, selected a nationally representative sample of kindergartners in fall 1998 and is following these children through the end of the 8th grade. The ECLS-K data included children of all ethnicities, including appropriate representation of African Americans, Hispanics, Asians, American Indians, and other groups. We included in our analyses only students with completed data on 5th-grade reading and math test scores. The final analytical sample consisted of 9,648 students.

Outcome Variables

The dependent variables for 5th-grade achievement are students' *mathematics and reading* scores in the spring of 5th grade. The original scores were measured using Item Response Theory (IRT).

Emotional Climate

Three measures were used to assess family emotional climate. *Parental depression* is a measurement model based on three questions from a parental interview: how often does the respondent felt depressed, can't shake blues, and felt sad. (ECLS-K data contain eleven questions regarding parental psychological well- being; we employed three questions that showed the highest loadings in the factor analysis). *Parental warmth* is a measurement model based on parent's evaluation of the relationship with the child: the respondent has warm, close time together, child likes me, and always shows child love (these three variables showed the highest loadings in the factor analysis). Finally, *physical discipline* was an indicator of parental use of physical punishment, measured by parental response to two questions: a) whether the parent hits back or spanks if the child hits a parent; and b) frequency of spanking in last week. We created a dichotomous variable of physical discipline in which the respondent received a 1 if they positively answered any of these questions. The measures for emotional climate were taken from the kindergarten year wave in order to assess their long- term effects on children's school experience.

Data Analysis

The general structural equation model (SEM) was used to evaluate the relationship among the constructs. While controlling for background characteristics (family SES, race/ethnicity, family structure, number of siblings, age, and gender), we have examined the effects of parental depression, physical discipline, and parental warmth on the end- of- the- 5th-grade math and reading achievement.

Preliminary Findings

Low SES, Black and single parents were more likely to report depressive symptoms. Black parents were more likely to use physical discipline, but they also reported greater parental warmth. Asian parents were less likely to use physical discipline, but also were less likely to express parental warmth. Parental depression, measured in kindergarten, was associated with lower reading and math achievement in 5th grade, and use of physical discipline in kindergarten was associated with lower math achievement in 5th grade.

Table 1. Descriptive Statistics of the Variables Included in the Models

	Means	**SD**
N	9,648	
SES	.02	.80
Black	.14	.35
Hispanic	.17	.38
Asian	.06	.24
Other	.06	.23
Female	.49	.50
Age (in months)	67.31	4.36
Number of Siblings	1.49	1.19
Single parent	.18	.38
Other parent	.10	.29
Physical discipline (kindergarten wave)	.36	.48
Depression (kindergarten wave)		
Felt sad	1.47	.68
Felt depressed	1.37	.68
Can't shake blues	1.28	.63
Parental warmth (kindergarten wave)		
Warm & Close time together	3.70	.56
Child likes me	3.78	.48
Show love to Child	3.43	.77
Reading score, end of 5th grade	139.03	24.34
Math score, end of 5th grade	113.72	21.93

Table 2. Parameter Estimates Predicting the Relationship between Student Background Characteristics and Emotional Climate Measures

	Emotional Climate		
	Depression	Parental warmth	Physical discipline
SES	-.104(.007)**	.017(.005)**	-.055(.005)**
Female	-.006(.010)	.023(.008)**	-.034(.007)**
Single parent	.110(.014)**	.037(.011)**	.015(.010)
Other parent	.034(.017)*	.024(.013)	.021(.012)
No. Sibling	.053(.015)**	-.067(.012)	-.021(.011)
Black	.075(.015)**	.077(.012)**	.175(.011) **
Asian	.001(.021)*	-.069(.016)**	-.105(.015) **
Hispanic	.019(.014)	.057(.011)**	-.010(.010)
Other	.023(.022)	.016(.017)	.009(.016)
Age	.001(.001)	.001(.001)	.001(.001)
Depression		-.092(.008)**	.082(.007) **

Note: The fit indexes: NFI=.914, CFI=.912, RMSEA=.047
*p<.05; **p<.01

Table 3. Measurement Equations of the Latent-factor Covariance Structure model

|			Estimate	S.E.
Depressed	<---	Depression	1.000	
Can't shake blues	<---	Depression	.784**	.010
Sad	<---	Depression	.823**	.010
Warm & Close time together	<---	Parental warmth	1.000	
Child likes me	<---	Parental warmth	.786**	.024
Show love to Child	<---	Parental warmth	.771**	.025

Notes: Unstandardized coefficients. Loading without corresponding Standard errors are fixed to the values shown
*p<.05   **p<.01

Table 4. Parameter Estimates of Predicting the Relationship between Student Background Characteristics, Emotional Climate and Student's 5th grade Reading and Math Achievement

	Achievement	
	Reading	Math
Depression	-1.787(.414)**	-.905(.377)*
Parental warmth	.291(.709)	-.060(.645)
Physical discipline	-.344(.435)	-1.220(.396)**
SES	10.634 (.283)**	8.68 (.257)**
Female	3.628 (.403)**	-3.92 (.367)**
Single parent	-2.473 (.558)**	-2.393 (.507)**
Other parent	-2.552 (.689)*	-3.700 (.627)**
No. Sibling	-6.320 (.618)**	-3.576 (.562)**
Black	-11.330 (.620)**	-13.230 (.563)**
Asian	-3.193 (.833)**	1.774 (.757)*
Hispanic	-6.999 (.562)**	-4.894 (.511)**
Other	-8.498 (.889)**	-6.768 (.808)**
Age	.007 (.002)**	.005 (.001) **

Note: The fit indexes: NFI=.914, CFI=.912, RMSEA=.047
*p<.05; **p<.01

Figure 1. Structural and Measurement Model for 5th grade Math and Reading Achievement Predicted by Family Emotional Climate
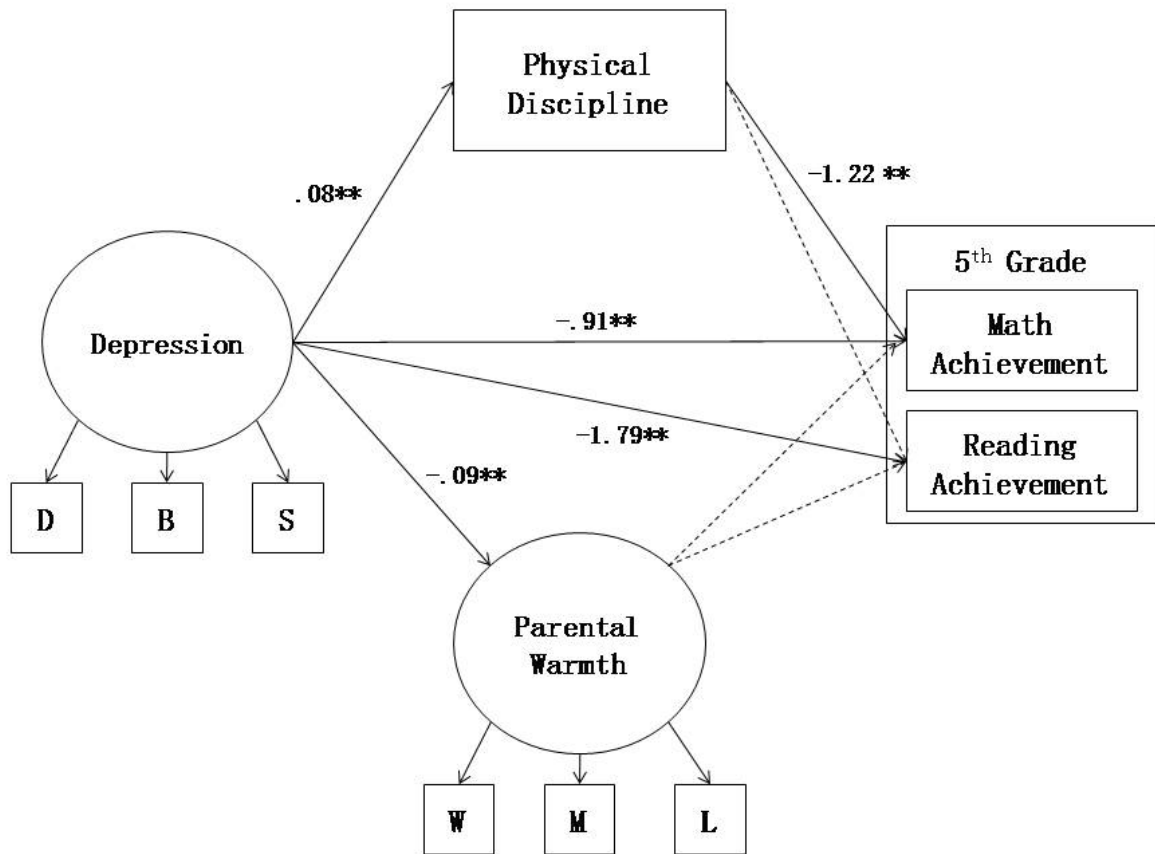
Note: Student's background characteristics, such as SES, race/ethnicity, family structure, age, and gender were included in the model. Dotted lines designate statistically insignificant relationships.
Model fit: CFI: .912, NFI: .914, RMSEA: .047
Depression (D), Depressed, (B), Can't shake blues Sad , (S), Sad. Parental Warmth: (W), Warm & Close time together, (M), Child Likes Me, (L), Show Love to Child.
*p<.05; **p<.01