The Impact of Positive School Experiences and School SES on Depressive Symptoms in Chinese Children

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Background

Childhood onset depressive symptoms have been associated with future risk for major depression and significant functional impairment. Sharply contrasted with the amount of research in the U.S., few studies on youth depressive symptoms have been conducted in China, particularly in the economically disadvantaged areas of Northwest China. Given Chinese children and adolescents spend at least half of their waking hours in school, schools present one of the most influential environments for developing youths.

Objectives

To examine school related factors associated with Chinese youth depressive symptoms, especially interested to see
a) to what extent are student-perceived teacher support, student-perceived school connectedness, and school SES each associated with youth depressive symptoms?
b) to what extent does the association between school SES and youth depressive symptoms vary by student-perceived teacher support?
c) do the effects of school SES on youth depressive symptoms depend on student-perceived school connectedness?

Data Collection Method

A stratified three-stage and random cluster sampling was used to recruit youth participants from 10 primary schools in a mid-sized city and surrounding area located in Northwest China. Three-dimension stratification:

a) Region (urban districts, rural districts)

b) School type (key schools, ordinary schools)

c) Class (two classes from Grade 6 in each school were randomly selected).

A total of 881 students participated in this study (Mean age = 11. 49; 400 girls and 481 boys);

51% from urban vs. 49% from rural districts; 34% in key vs. 66% in ordinary schools.

Analytic Approach

2-level hierarchical linear model (HLM) was employed to model individual and contextual characteristics simultaneously (i.e., students were nested within schools);

Proc Mixed in SAS® v9.4 with Maximum Likelihood estimation and a Between-Within degrees of freedom approximation was used.

$$DEPRESSsymptoms_{ij} = \gamma_{00} + \gamma_{10}SPTS_{ij} + \gamma_{20}SPSC_{ij} + \gamma_{30}Age_{ij} + \gamma_{40}Gender_{ij} + \gamma_{50}Fcohesion_{ij} + \gamma_{60}Fsructure_{ij} + \gamma_{70}Csingle_{ij} + \gamma_{80}FSES_{ij} + \gamma_{01}SSES_j + \gamma_{02}Stype_j + \gamma_{03}Surban_j + \gamma_{11}SPTS_{ij} * SSES_j + \gamma_{21}SPSC_{ij} * SSES_j + \mu_j + e_{ij}$$

- **Intraclass Correlation (ICC):** 18.6% of the total variance in youth depressive symptoms was residing between schools, and 81.4% within schools.
- **Model Fit:** the -2 Log Likelihood (-2LL) and applied chi-squared likelihood ratio testes were examined to determine if changes in model fit were significant.
- All continuous predictors without a meaningful interpretation of zero were **Grand-mean centered**.
- **Assumptions check:** MIXED_DX macro in SAS® was used to examine residuals for violations of distributional assumptions at both of Level-1 and Level-2, and no violations were detected.

Results

Table 1. Parameter Estimates for Main Effect Model

Fixed effects	Main Effect Model
Teacher support	-.19* (.24)
School connectedness	-.16* (.18)
School SES	-.35* (.20)

Table 2. Parameter Estimates for Models with Interactions

Fixed effects	Models with interactions
Teacher support*school SES	-.08* (.02)
School connectedness*school SES	-.06* (.02)

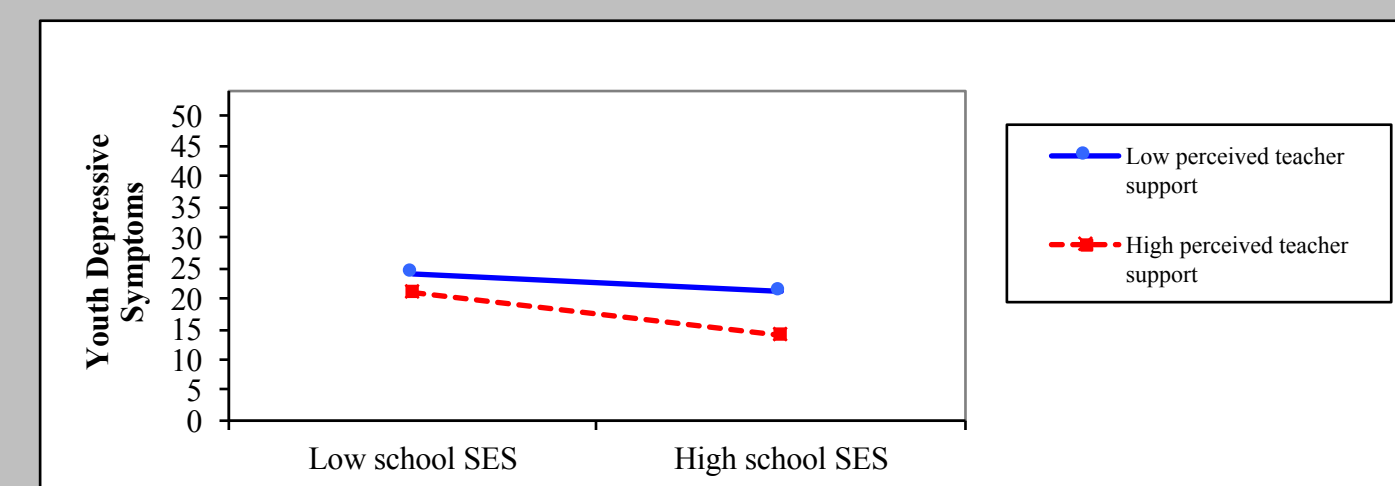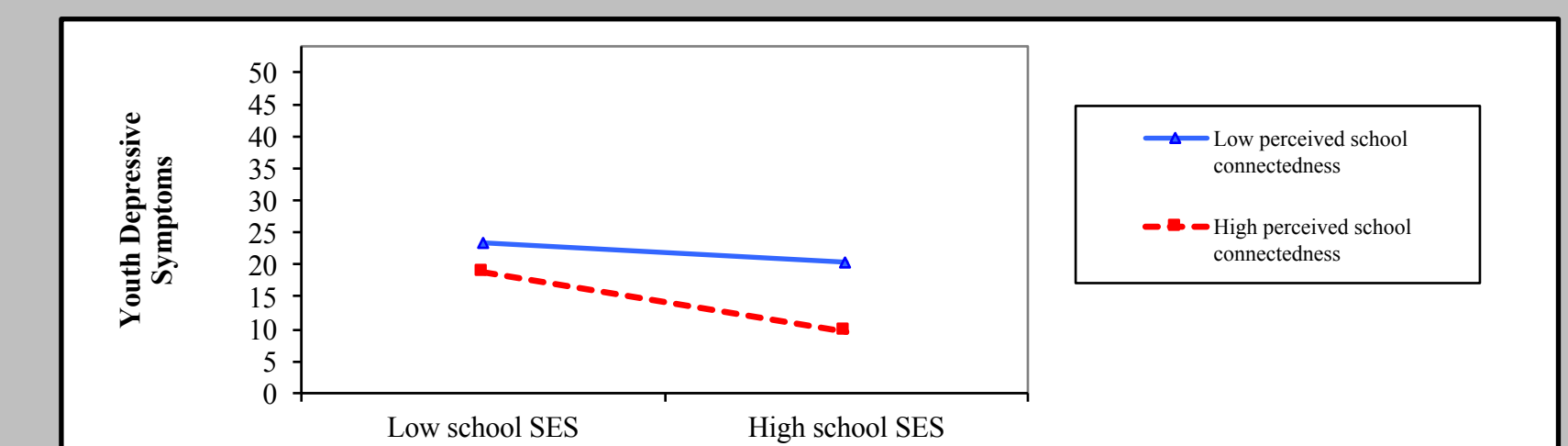Figure 1. The effect of perceived teacher support on the association between school SES and youth depressive symptoms

Figure 2. The effect of perceived school connectedness on the association between school SES and youth depressive symptoms

Conclusion

☐ Individual-level perceived teacher support, school connectedness, and school-level SES was negatively associated with youth depressive symptoms, respectively, suggesting that high teacher support and school connectedness are protective factors, and low school SES is a significant risk factor for youth psychological adjustment.

☐ The significant cross-level interaction between perceived teacher support and school SES indicates that the relationship between school-level SES and youth psychological outcome varied by individual-level teacher support.

☐ The significant cross-level interaction between perceived school connectedness and school SES indicates that the effects of school SES on psychological outcome depend on student-level school connectedness.

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