Mechanisms Underlying the Multi-Generational Transmission of Achievement and Educational Attainments

Introduction

- The goal of the present study is to explore students’ educational attitude and emotions as possible mediators in the relations between students’ educational attainment and two dimensions of parental socioeconomic status (i.e., education level and income).
- Previous studies have shown that parents of higher socioeconomic status tend to have higher academically achieving children (Farooq, Chaudhry, Shafiq, & Berhanu, 2011).
- Previous research has also shown positive relations between family income and child educational attainment as well as between parental education level and child educational attainment (Sirin, 2009). Specifically, students from higher income families and children of parents with higher education levels tend to be more academically competent (Dubow, Boxer, & Huesmann, 2009).
- Although familial factors that contribute to child academic success (e.g., income and parental education) have been established, the mechanisms underlying these relations, telling “why” those relationships exist, are still unclear.
- This study seeks to examine these factors through the observation of child learning related beliefs, including math anxiety, math confidence, gender stereotypes, math interest, and perceived importance of math.

Hypothesis

- Parents who are better educated and more affluent are more likely to foster and instill more positive learning attitudes, interests, and confidence in their children, which in turn will result in better achievement in their children.
- The hypothesis was tested in the domain of mathematics learning.

Methods

Participants

One parent and their child in 4th through 6th grade were invited to participate in this longitudinal study which consists of a total of 120 families.

Procedure

Each parent-child dyad where invited to the lab where both completed a series of surveys and subtests from the Woodcock Johnson Test of Achievement IV.

Measures

- **Woodcock Johnson Test of Achievement IV** (Schrank, Mather, & McGrew, 2014) was used to test the child and parent on their mathematical skills. Each child completed the Applied Problem, Calculation, and Number Matrices subtests, and each parent completed the Applied Problem subtest. In the Applied Problem subtest, participants were asked to integrate their math knowledge, calculation skills, and quantitative reasoning skills to solve the applied math problems. The Calculation subtest measures a participant’s mathematical computation ability. The Number Matrices subscore measures participants’ quantitative reasoning ability, in which participants were asked to find the numerical patterns and complete a series of number matrices.

- **Questionnaire**
  - Each parent reported his/hers highest education level and family income.
  - Student provided self-report on math anxiety (i.e., nervousness and unease towards math activities) using the Mathematics Anxiety Scale for Children (Chiu & Henry, 1990).
  - Students provided self-report on their math attitudes using the Fennema-Sherman Mathematics Attitude Scales (Fennema & Sherman 1976). This scale measures students’ math self-efficacy (the belief in one’s ability to successfully complete math tasks), math interests (the enjoyment one experiences in math activities), perceived math importance (the belief that math is useful in real life), and math gender stereotypes (the perception that males are naturally better at math than females).

Results

- Parent math achievement is positively and significantly associated with their child’s math achievement.
- Child math self-efficacy mediates the relation between parental education level and child math achievement. Specifically, there was a positive association between parental education and child’s math self-efficacy, meaning that parents with higher levels of education have children who are more confident in their math abilities. Additionally, children with higher math self-efficacy had higher math achievement.
- There was a positive association between family income and perceived math importance and between family income and math gender stereotype. Children who come from a higher income family find math skills more important and believe that girls and boys are equally good at math (less gender bias).

Conclusion

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References


Correspondence: jacob.t.evans@ttu.edu