



The Role of Latinx Parents in Elementary Students' STEM Motivation and Competence

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BACKGROUND

Latinx students, a large and growing population in U.S. public schools (Fry & López, 2012), have low representation in courses that prepare for postsecondary academic success, e.g., advanced math courses (Riegle-Crumb, 2006).



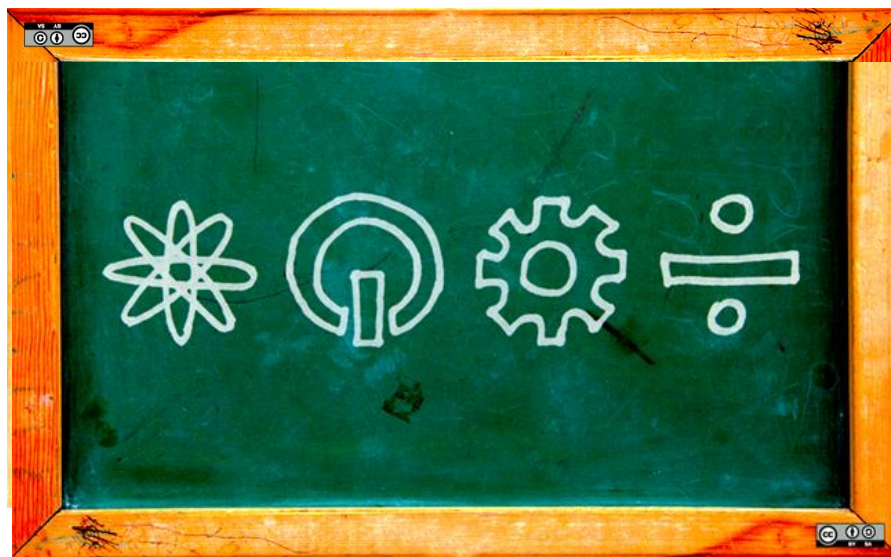
The number of science, technology, engineering, and mathematics (STEM) education degrees awarded to Latinxs has remained remarkably low; for instance, physical science B.A. or Ph.D. degrees awarded to Latinxs increased only slightly from 4% in 1985 to 6% in 2005 (National Science Board, 2008).

It is essential to understand factors that may maximize Latinx youth's interest and achievement in STEM subjects.



It has been argued that early experiences are foundational for later attitudes about, interests, and achievement in STEM subjects (National Research Council, 2007), so investigating parental influence on children's STEM interest, perceived competency in and importance of STEM subjects is relevant.

Expectancy-value theory (Wigfield & Eccles, 2000) guided our examination of the role of parents in the early formation of Latinx boys' and girls' interests and motivations related to STEM subjects.



RESEARCH GOALS

Aims:

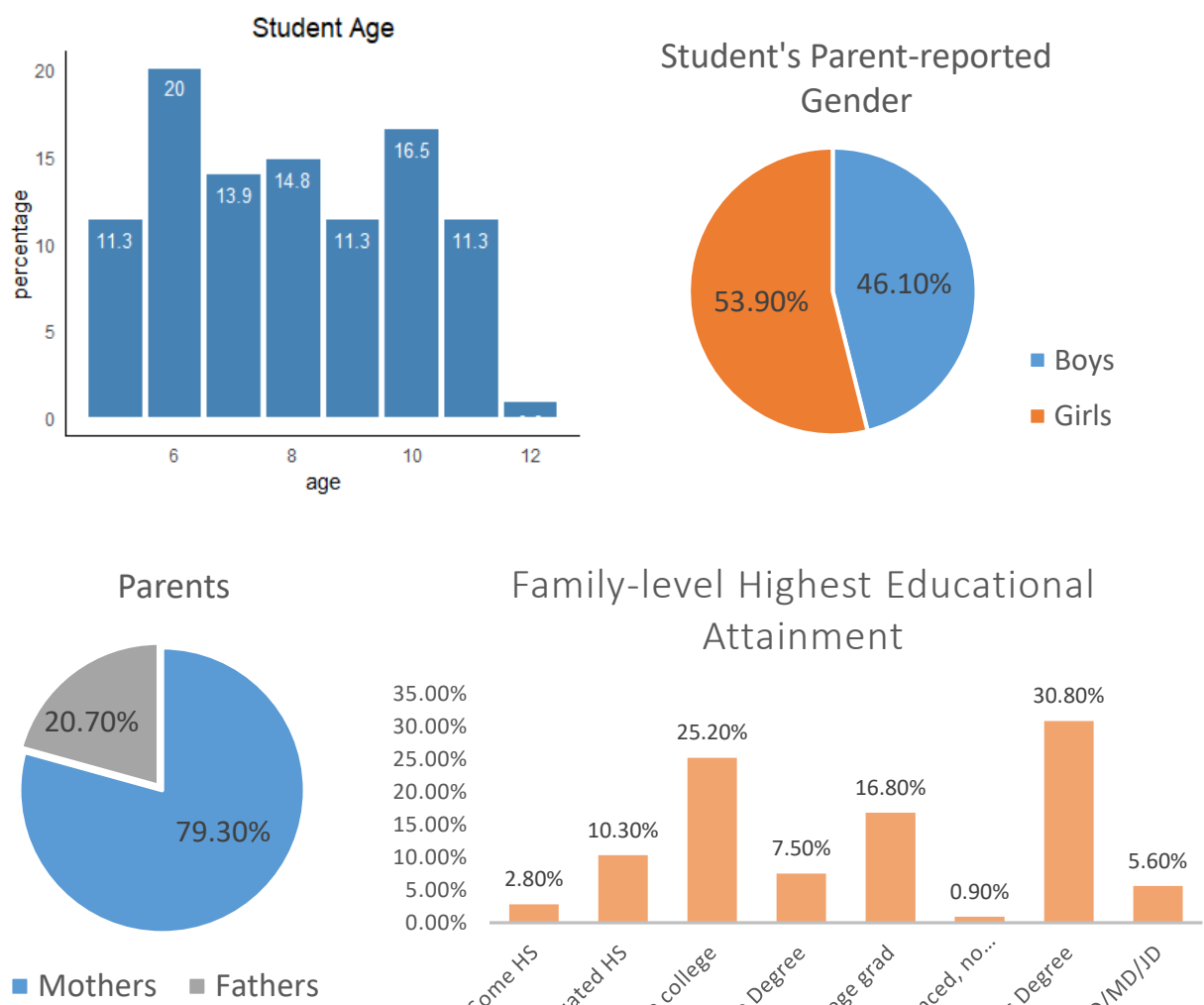
- 1) To examine whether Latinx parents' STEM self-efficacy and importance; perceptions of children's competencies in STEM subjects; educational attainment; and expectations for their child's educational attainment would predict children's self-reported competencies, interest, and importance in relation to STEM and their preference for STEM careers.
- 2) To explore how parents' gender may influence the relationship between the parent and child variables above.
- 3) To examine the role of youth's gender, based on literature indicating STEM field disparities for females as compared to males (Alegria & Branch, 2015).
- 4) To investigate whether parents' educational attainment influence the relationship between the parent and child variables above.

Hypotheses:

- 1) Latinx parents' STEM self-efficacy and importance; perceptions of children's competencies in STEM subjects; educational attainment and expectations for their child's educational attainment will be predictors of children's self-reported competencies, interest, and importance in relation to STEM and their preference for STEM careers.
- 2) Parents' gender will influence the relationship between the parent and child variables.
- 3) The associations between parents' STEM self-efficacy and importance; perceptions of children's competencies in STEM subjects; and expectations for their child's educational attainment and the child variables will be different for boys and girls.
- 4) Parents' educational attainment will influence the associations between parents' perceptions and expectations for the child and child variables.

METHOD

Sample: 116 Latinx elementary school students from a Southwestern city in the U.S and one of their parents. Demographics:



Youth reported on their STEM competency, interests, importance, and career aspirations (author citation) during in-class administered surveys.

Parents reported on their educational attainment and self-efficacy related to STEM; and expectations for youth's educational attainment, STEM competency, and importance value (author citation).

A multilevel regression was used to address our aims and test our hypotheses.

RESULTS

Variables	β	SE	t-value	p-value	95% CI
Par edu* Par exp ON Child comp	-.04	.01	-2.59	.0112	[-.07, -.01]
Par exp*Child gender ON Child int	.15	.07	2.21	.0300	[.02, .29]
Par imp * Child gender ON Child int	-1.06	.53	-2.00	.0487	[-2.12, -.01]
Par exp * Child gender ON Child career	0.17	.08	2.23	0.0280	[.02, .32]
Par gender * Par perceived comp ON Child career	0.65	0.29	2.22	0.0289	[.07, 1.24]

RESULTS (Cont'd)

For mothers, when perceived competence of their child increases, the child's STEM career preference decreases. However, when fathers report on their perceived child competence, child's STEM career preference does not significantly increase nor decrease.

As parent expectation increased, boys' interest in STEM and career preference also increased, but the same effect was not observed for girls.

In contrast, as parents' perceived importance of STEM increased, boys' interest in STEM decreased, while girls' interests did not significantly increase nor decrease.

A significant interaction between parents' expectation for their child's educational attainment and parents' educational attainment indicates the effect of parent expectation on child's STEM competence is conditional on parents' educational attainment.



DISCUSSION

1) All parent variables except STEM self-efficacy were moderators of at least one child outcome variable. This suggests that parents have an influential role in youth's interests and perception of STEM subjects.

2) Parents' gender only influenced children's preference for STEM careers. However, this result could have been due to the low number of participating fathers.

3) Children's gender influences their interest and preferences for STEM career/activities. It is possible that gender-specific parenting practices influence children's perceptions on the STEM field. Interventions aimed at increasing STEM interest should take gender differences into account.

4) Parents' educational attainment moderate the relationship between their expectations for their child and the child's STEM competence, so interventions targeting the expectations of parents with low educational attainment could help increase children's STEM competence.

Acknowledgements

Funding provided by the National Science Foundation, 1561424, Equity in Engineering: Understanding and Promoting All Elementary School Children's Knowledge of and Motivation to Engage in Engineering, C. Miller (P.I.), L. Wheeler (Co-P.I.), M. Reisslein (Co-P.I.). Affiliations: 1.Nebraska Center for Children, Youth, Families, and Schools, University of Nebraska-Lincoln. 2.Arizona State University.

