

Portland State University

PDXScholar

Student Research Symposium

Student Research Symposium 2024

May 8th, 11:00 AM - 1:00 PM

Differences In Ninth Graders' Attitudes Towards Math Depending On Immigrant-Generation Status

Karla V. Santana Martinez
Portland State University

Dara Shifrer
Portland State University

Follow this and additional works at: <https://pdxscholar.library.pdx.edu/studentsymposium>

Let us know how access to this document benefits you.

Santana Martinez, Karla V. and Shifrer, Dara, "Differences In Ninth Graders' Attitudes Towards Math Depending On Immigrant-Generation Status" (2024). *Student Research Symposium*. 68.
<https://pdxscholar.library.pdx.edu/studentsymposium/2024/posters/68>

This Poster is brought to you for free and open access. It has been accepted for inclusion in Student Research Symposium by an authorized administrator of PDXScholar. Please contact us if we can make this document more accessible: pdxscholar@pdx.edu.

DIFFERENCES IN NINTH GRADERS' ATTITUDES TOWARDS MATH DEPENDING ON IMMIGRANT-GENERATION STATUS

KARLA SANTANA MARTINEZ
PORTLAND STATE UNIVERSITY

DARA SHIFRER
PORTLAND STATE UNIVERSITY



Research Questions

How do immigrant students' immigrant-generation relate to their math efficacy? Is this relationship moderated (i.e., differentiated) by their score on their 9th grade math test?

Introduction

- Low math efficacy negatively affects students' ability to learn
- Low math efficacy is common to students in the US, especially if they have experienced low test scores
- Counter to descriptions of math as a "universal language," mathematical terminology, syntax, and teaching varies across countries - representing heightened barriers for immigrant students (Irizarry 2013)
- Theories on immigrant-optimism and segmented assimilation suggest that math anxiety may vary depending on immigrant-generation

Data & Methods

Data: This research integrates the data from the High School Longitudinal Study of 2009 on 20,000 ninth graders, a dataset administered by the National Center for Education Statistics (NCES)

Measures:

Math Efficacy Scale measure of math efficacy is an average of each students' responses to these survey items:

How much do you agree with the following statements about [math course title/math]? (1=Strongly Agree... 4=Strongly Disagree)

- [You [are/were] confident that you [can/could] do an excellent job on tests in this course./ **You are confident that you can do an excellent job on math tests.**]
- [You [are/were] certain that you [can/could] understand the most difficult material presented in the textbook used in this course./ **You are certain that you can understand the most difficult material presented in math textbooks.**]
- [You [are/were] certain that you [can/could] master the skills [being taught/that were taught] in this course./ **You are certain that you can master math skills.**]
- [You [are/were] confident that you [can/could] do an excellent job on assignments in this course./ **You are confident that you can do an excellent job on math assignments.**]

Math Quintile Score

Based on ninth grader's score on a math test administered by NCES

- Quintile 1 corresponds to the lowest-achieving one-fifth of the population, quintile 5 the highest

Results

Model A2
reg mtheffw1 i.immgenw4 sesw1 i.firstlangw1 if (mquintw1==1 | mquintw1==2)
note: 2.firstlangw1 omitted because of collinearity

Source	SS	df	MS	Number of obs	=	
Model	5.42278354	3	1.80759451	F(3, 377)	=	2.19
Residual	311.056923	377	.825084676	Prob > F	=	0.0887
				R-squared	=	0.0171
				Adj R-squared	=	0.0093
Total	316.479706	380	.832841332	Root MSE	=	.90834

mtheffw1	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
immgenw4					
2.SecGen	-.2295772	.1011283	-2.27	0.024	-.4284234 -.0307311
3.ThrdGen+	-.2416441	.1537909	-1.57	0.117	-.5440394 .0607512
sesw1	.0369856	.075118	0.49	0.623	-.1107171 .1846883
2.firstlangw1	0	(omitted)			
_cons	-.0132562	.078585	-0.17	0.866	-.1677761 .1412638

Model C2
reg mtheffw1 i.immgenw4 sesw1 i.firstlangw1 if (mquintw1==4 | mquintw1==5)
note: 2.firstlangw1 omitted because of collinearity

Source	SS	df	MS	Number of obs	=	
Model	3.57557998	3	1.19185999	F(3, 592)	=	1.34
Residual	526.263515	592	.88895864	Prob > F	=	0.2602
				R-squared	=	0.0067
				Adj R-squared	=	0.0017
Total	529.839095	595	.890485874	Root MSE	=	.94285

mtheffw1	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
immgenw4					
2.SecGen	-.0307277	.0809075	-0.38	0.704	-.1896284 .1281731
3.ThrdGen+	.3063725	.2120616	1.44	0.149	-.1101122 .7228572
sesw1	.0490705	.040265	1.22	0.223	-.0300092 .1281502
2.firstlangw1	0	(omitted)			
_cons	.3638031	.0517522	7.03	0.000	.2621628 .4654433

Findings

Among students with the lowest scores on the standardized math test, second-generation immigrants have lower math efficacy (-0.229) than first-generation immigrants (Model A2). Low-scoring third-generation-plus immigrants have even lower levels of math efficacy (-0.241) than low-scoring first-generation immigrants (Model A2).

Among students with the highest scores on the standardized math test, the math self-efficacy of third-generation-plus immigrants is 0.30 higher on average than that of first-generation immigrants (Model C2). The math self-efficacy of high-scoring second-generation immigrants is 0.03 lower on average than that of high-scoring first-generation immigrants (Model C2).

Conclusion

Across both low- and high-scoring students, **second generation immigrants experience lower levels of math efficacy than first generation immigrants** - this is consistent with immigrant-optimism theories that describe the motivation and hope that immigrants experience when they first arrive in the US.

Low-scoring third-generation immigrants experience lower levels of math efficacy than first-generation immigrants but high-scoring third-generation immigrants experience higher levels - this supports segmented assimilation theories that describe how the experiences of immigrants differ depending on the neighborhoods and schools they experience in the US (students' test scores reflect the resources available in their neighborhoods/schools)

Acknowledgments

This research is supported by the National Institutes of Health funded Build EXITO program at Portland State University (UL1GM118964).

References

Irizarry, S. (2013). Lending Student Voice to Latino ELL Migrant Children's Perspectives on Learning. *Journal of Latinos and Education*, 12(3), 171-185. doi:10.1080/15348431.2013.765801