Making Math Count More for Young Latino Children

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Executive Summary

National and international data paint a discouraging picture of math proficiency in the United States.[1] The 21st century economy will increasingly be one in which those proficient in STEM (science, technology, engineering, and math) skills will have an advantage with employers, as well as in navigating the technology-related tasks of everyday life.[2] Children's ability in mathematics, which builds on what young children have learned in their early years, is critical to their success in school, and to their future economic success.

One in four U.S. kindergarteners today is Latino.[a,3] In California and New Mexico, Latino children are already in the majority.[4] How this group fares in school, and how well prepared they are for the needs of an economy that is increasingly technology-based, will have far-reaching implications for our country. For that reason alone, notwithstanding concerns about equity, their math skills deserve a special focus. Achievement gaps (in math as well as in reading) between Latino children and their white counterparts emerge early in life, and can have negative effects that extend over the school years and beyond.[5]

For this report, we reviewed existing research and conducted an original analysis of data from a large, nationally representative sample of Latino kindergartners, with the aim of understanding what factors are associated with math achievement prior to and during the kindergarten year.

Here is what we found to be the case at the start of kindergarten:

- Latino children's math skills trail those of white children by the equivalent of 3 months' learning.
- Latino children are more than twice as likely as white children to be poor,[6] and much of the variation in Latino children's math scores can be explained by poverty. Being from a low-income family, having parents with no education beyond high school, and living in a household where English is not the primary language spoken, are all associated with lower math scores for Latino children starting kindergarten. The specific mechanisms underlying these relationships need further exploration.
- Having prior experience in center-based child care,[7] more children's books at home, and parents who frequently practice numbers with them, are all independently associated with *higher* math achievement for Latino children starting kindergarten.

Here is what we found to be the case over the kindergarten year:

- Latino children's progress in math achievement is helped by their attending a full-day kindergarten, and—as we found at kindergarten entry—by having more children's books at home.
- After accounting for poverty, Latino and white children learn math at the same rate during kindergarten. But because, as a group, Latino children start behind their white peers, they remain behind in math by the spring of the kindergarten year.
- Among Latino children who started the year with relatively weak math skills, those with strong executive functioning made the greatest progress. Executive functioning skills, such as paying attention and self-control, underlie multiple areas of academic achievement and social-emotional development. executive functioning made the greatest progress. Executive functioning skills, such as paying attention and self-control, underlie multiple areas of academic achievement and social-emotional development.

[a] In this report, we use *Latino* to refer to the group that is also termed *Hispanic*.

Expanding on our own findings, the broader research literature identifies some systemic barriers to improving children's math skills, including those of Latino children. For example, the research literature points to widespread, but faulty, beliefs that math ability is largely innate,[8] to anxieties associated with math performance,[9] and to bias against minority students[10]—all of which can impede children's progress. Classroom instruction in math is often inadequate or not focused so as to be most effective.[11]

Our recommendations stem from our study findings, as well as our literature review, which identified opportunities for multiple stakeholder groups. We provide more detail on the basis for our recommendations in the full report. They include:

Policymakers

- Broaden access to high-quality early care and education, and make it more responsive to the needs of Latino families with young children.
- Make full-day kindergarten available to all families, regardless of where they live.
- Adopt common standards for early math achievement.

Organizations engaged in education and advocacy

- Use multiple forms of communication (e.g., videos, social media, personal contact) to help correct prevalent misunderstandings and anxieties about math, and to offer practical help to parents, teachers, and others on encouraging children's early math skills.
- Expand the reach of programs that make children's books freely available.

The education community

- Increase the supply and strengthen the preparation of teachers who can provide high-quality early math learning experiences.
- Give greater attention to the special needs and strengths of dual language learners and their families.
- Improve the quantity and quality of developmentally appropriate mathematics instruction, including using a structured curriculum.
- Incorporate activities that promote children's social-emotional learning and executive function.
- Adapt instruction, linguistically and in other ways, so it is congruent with students' cultural backgrounds.
- Examine both explicit and implicit biases that may restrict children's math learning.
- Help sustain the engagement of parents and other family members in children's learning, at school and at home.

Parents

- Talk about math-related questions or tasks with children—using the language you are most comfortable with.
- Make math fun by capitalizing on, or creating, opportunities to bring number concepts and related language into children's play.
- Play games with children that may reinforce their emerging executive function skills.
- Introduce a variety of activities that are rich in language and content about the wider world.
- Build a collection of children's books, including those freely available or borrowed from a library.

Researchers

- Further investigate the development of early math skills, particularly through studies that delve deeply into the diverse Latino experience (e.g., differences in primary language used; country of origin).
- Develop valid assessments of early skills (both academic and non-academic) for Latino children, and for others from non-dominant cultural backgrounds.
- Further investigate the potential role of bias in teachers' ratings of children's skills, their expectations for children's behavior, and their interactions with students.

Endnotes

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