

Math Narrative Project: Parents Comprehensive Findings

Goodwin Simon Strategic Research,
Wonder: Strategies for Good
March 2024

BILL & MELINDA
GATES *foundation*

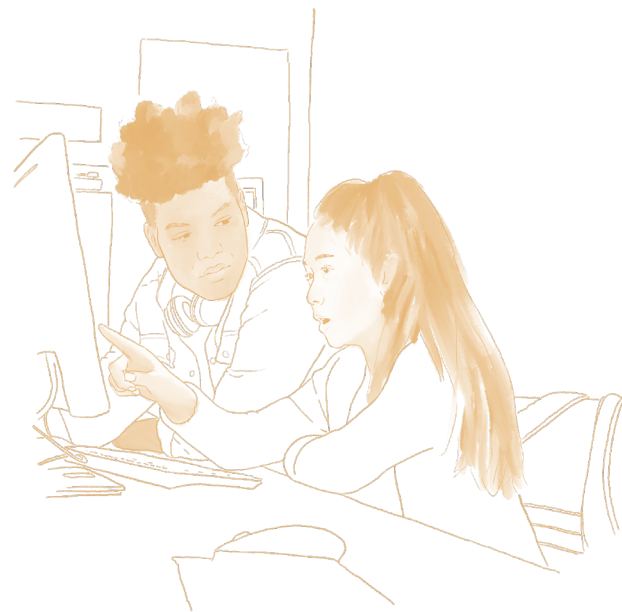




PROJECT OVERVIEW AND GOALS

The Math Narrative Project uses the Heartwired research approach (see *slide 5*) to understand the cultural narratives that inform how 6th to 10th grade public school students who are Black or Hispanic* from any income level, or Asian American Pacific Islander (AAPI) or white from lower-income households, think and feel about learning math, and to discover how and who can disrupt harmful narratives and replace them with positive ones.

To better understand the experiences of young people in this age group, Goodwin Simon Strategic Research (GSSR) and Wonder: Strategies for Good conducted research with students in 6th through 10th grades. The research team also conducted research with adults who influence students' feelings and mindsets around math: teachers and parents of 6th to 10th grade students.



*Consistent with what the research team heard in focus group discussions and in surveys, a 2022 Pew Research survey of 3,030 U.S. Hispanic adults found that 53 percent of Hispanics prefer to describe themselves as “Hispanic,” 26 percent prefer “Latino,” two percent prefer “Latinx,” and 18 percent have no preference.



TABLE OF CONTENTS

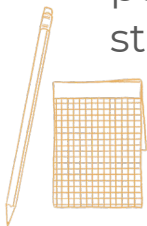
- **Research and Project Goals**
- **Heartwired Research Approach and Research Phases**
- **Methodology Overview**
- **The Power of Narrative Change**
- **Overview: Key Parent Findings**
- **Detailed Insights**
- **Detailed Messaging Recommendations**
- **Appendix: Detailed Methodology**



PROJECT & RESEARCH GOALS

The **Math Narrative Project** aims to advance an evidence-based messaging and narrative change strategy by:

- Developing an understanding of the emotions, beliefs, values, lived experiences, identities, and influences that shape the mindsets of 6th-10th grade students who are Black or Hispanic from any income level, or AAPI or white from lower-income households, around learning math. This includes conducting research with parents and teachers who influence students' mindsets around learning math.
- Developing and testing a set of messaging interventions that lead to positive math narrative shifts among Black, Hispanic, and AAPI and white students from lower-income households.

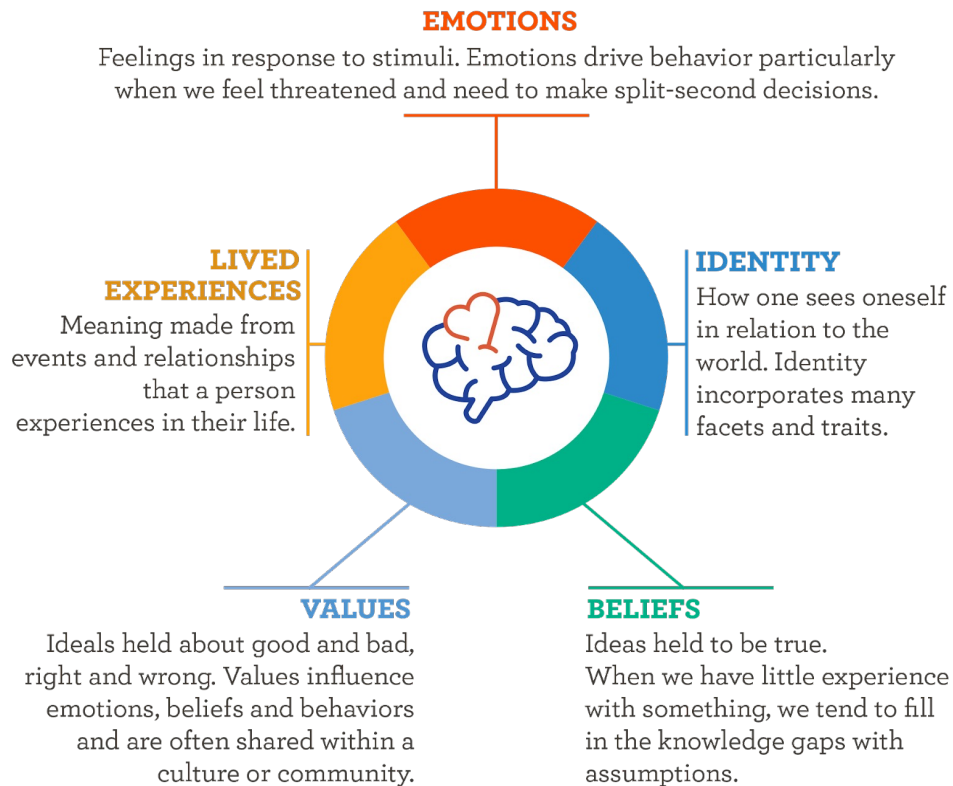




THE HEARTWIRED RESEARCH APPROACH

The Math Narrative Project deploys an approach to audience research and messaging called Heartwired. Developed by Goodwin Simon Strategic Research and Wonder: Strategies for Good, this approach focuses on the ways that emotions, identity, lived experiences, values, and beliefs combine, and often collide, to shape people's attitudes and behaviors.

Heartwired research uncovers the narratives that shape how people think and feel about a topic, such as math teaching and learning. Heartwired narrative interventions connect to people's experiences and values — shaping new narratives that help people change how they think and feel about that issue.





HEARTWIRED RESEARCH PHASES



Change

What is the specific change that we (research team and Gates Foundation advisors) want to create to support better math learning outcomes among students?



Landscape

What is already known about the narrative landscape that is shaping how students, parents, and teachers relate to math and math learning?



Mindset

What stories, beliefs, people, and lived experiences shape how students, parents, and teachers think and feel about learning math?



Persuasion

What narrative interventions help students, parents, and teachers think and feel differently about learning and teaching math?



Action*

How can the messaging recommendations and research findings be put into action by field partners?

**Action Phase is not included in this round of research*



METHODOLOGY OVERVIEW

- Research was conducted with participants across the states of California, Florida, New York, and Texas
- Participants:
 - **Students** in 6th-10th grades in public school
 - **Parents** and guardians of 6th-10th grade public school students
 - Math **Teachers** of 6th-10th grade students in public schools
- This report is focused on the findings for **parents** and guardians (throughout this deck we use 'parent' to refer to both parents and guardians)
- Note that subgroups with base sizes below 50 are not shown
- See the Appendix for the detailed methodology

For qualitative research, Students and Parents were limited to: Black and Hispanic any income, AAPI and white lower income

For qualitative research, Math Teachers were limited to: AAPI, Black, Hispanic, and white teachers primarily from schools serving lower-income students

Population	Interviews	Dyads	Focus Groups	Surveys
Students	✓	✓	✓	✓
Teachers			✓	✓
Parents			✓	✓

n 2,312



PARTICIPANT QUOTES IN THIS REPORT

- Quotes from research participants are shown throughout this report, and they come from one of two sources:
 - Qualitative research (focus groups): These quotes are taken directly from transcripts of the group, with minimal edits for readability.
 - Survey: Throughout the survey, respondents are asked to type in their responses to open-ended questions, including at the end of the survey where respondents are asked to reflect generally on anything they're thinking about differently after having viewed all the messaging in the survey. These quotes are verbatim responses that respondents typed, with minimal edits for readability.
- The source of quotes used on each slide is noted at the bottom of that slide.



THE POWER OF NARRATIVE CHANGE



WHAT IS NARRATIVE?

- A narrative is a **pattern of stories**
- Narratives are **understood subconsciously or consciously**
- Narratives are **shared by a group of people with a common identity**
- Narratives **shape our attitudes and behaviors about people, places, objects, or ideas**
- Narratives are **established, amplified, and reinforced over time** through the **careful, deliberate curation of narrative tools** like stories, language, messengers, and messages



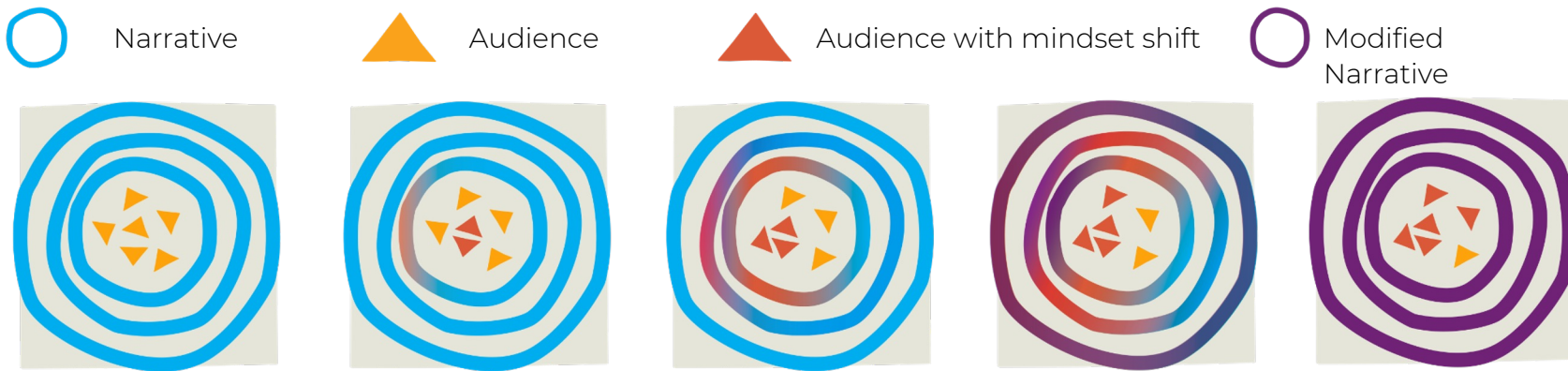
DOMINANT NARRATIVES

Dominant narratives are generated by and help to reinforce the dominant group's power; **dominant narratives** often reinforce inequities in society and uphold the status quo.

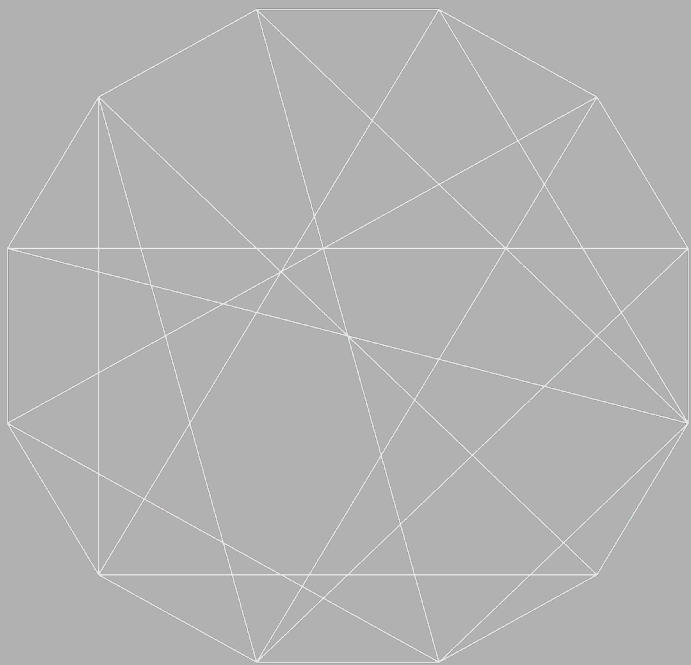


WHAT IS NARRATIVE CHANGE?

Narrative change is an effort to create a new narrative; amplify or modify an existing narrative; or counter, reframe, or replace existing narratives through deployment of different narratives.*



*Source: February 2021, ORS Impact, Measuring Narrative Change, Understanding Progress and Navigating Complexity



NARRATIVE ECOSYSTEM

An interconnected **system** of **narratives** that **informs students, teachers, and parents' attitudes and behaviors** around math learning.

- Narratives in the ecosystem can be helpful — supporting math learning — or problematic, presenting a barrier to learning math.
- Many dominant narratives about math are problematic.
- Any intervention regarding math narratives must be credible across all three audiences — students, teachers, and parents. Otherwise, a narrative shift effort may receive pushback from one of the audiences in the narrative ecosystem, undermining the ability to drive narrative change among the other audiences.



Dominant narratives about math learning:

- Some people are **good at math**, and some people are not
- If a student **struggles** while learning math, no amount of **support** will help them get better
- A **teacher's job** is to teach; a **student's job** is to learn
- Higher-level math* like algebra is **only valuable** as a **gatekeeper** subject
- Higher-level math is **only relevant** to a few **STEM careers**
- **Math learning** is rational, **not emotional**

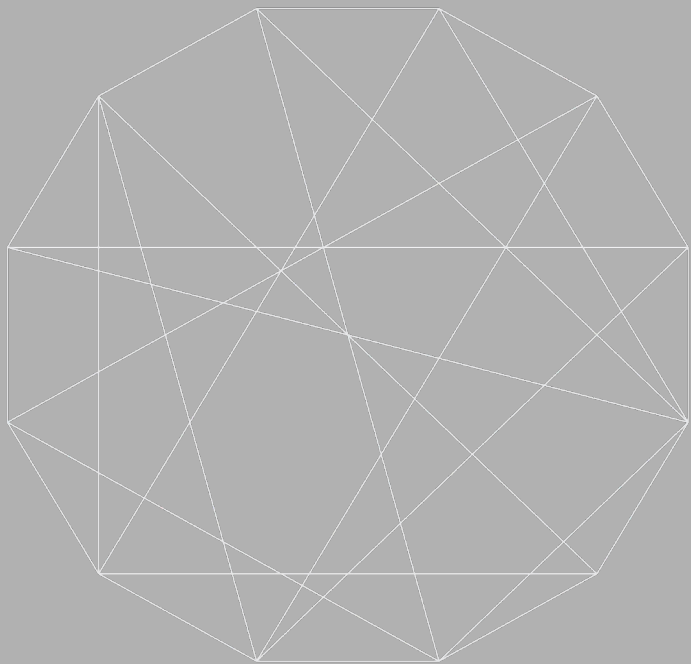
** In the survey, 'higher level math' is described for respondents as 'higher-level math like algebra,' in contrast to 'basic math like addition, subtraction, multiplication, and division.'*





WHAT IS A NARRATIVE INTERVENTION FOR MATH?

- Narrative interventions are stories, messages, language, frames, and other narrative tools that are designed to connect to people's experiences and values — and act to change dominant narratives
- Narrative interventions seed or model the beliefs necessary to help our audiences change how they think and feel about learning and teaching math
- Narrative interventions are delivered in a variety of ways including curriculum and instructional materials; classroom teaching; teacher training and professional development; online resources for teachers, youth, and parents; popular and social media; print materials like articles and trade journals; policy and budgets, and more

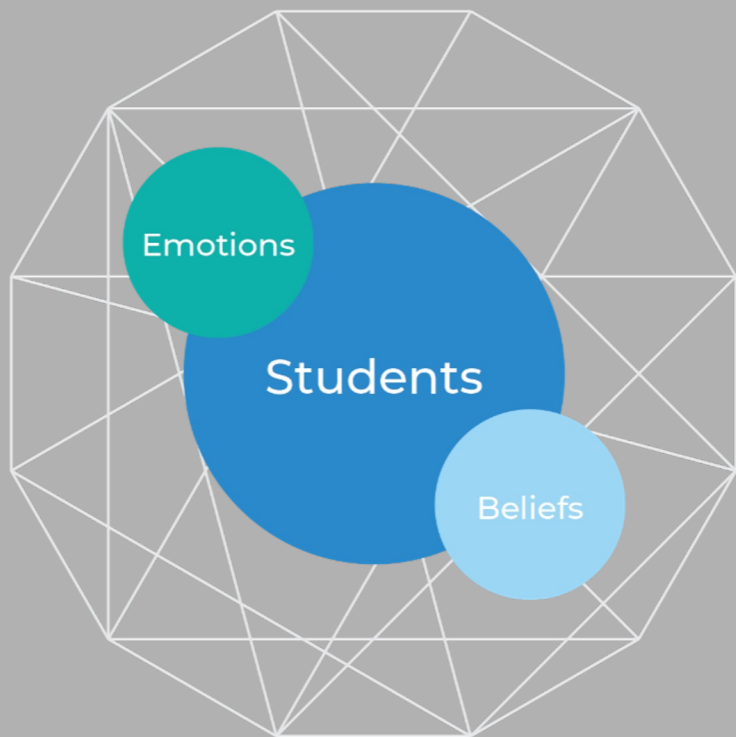


WHAT IS OUR NARRATIVE CHANGE GOAL?

- To leverage narrative change to improve math instruction and outcomes for 6th to 10th grade Black and Hispanic students, and AAPI and white students from lower-income households
- To positively influence how young people **think, feel, and experience learning math** and **motivate** them to **persist** when math learning gets hard, by positively influencing the narrative ecosystem
- To facilitate a more supportive learning math environment and create conditions that enable positive student and adult behavior change

NARRATIVE ECOSYSTEM

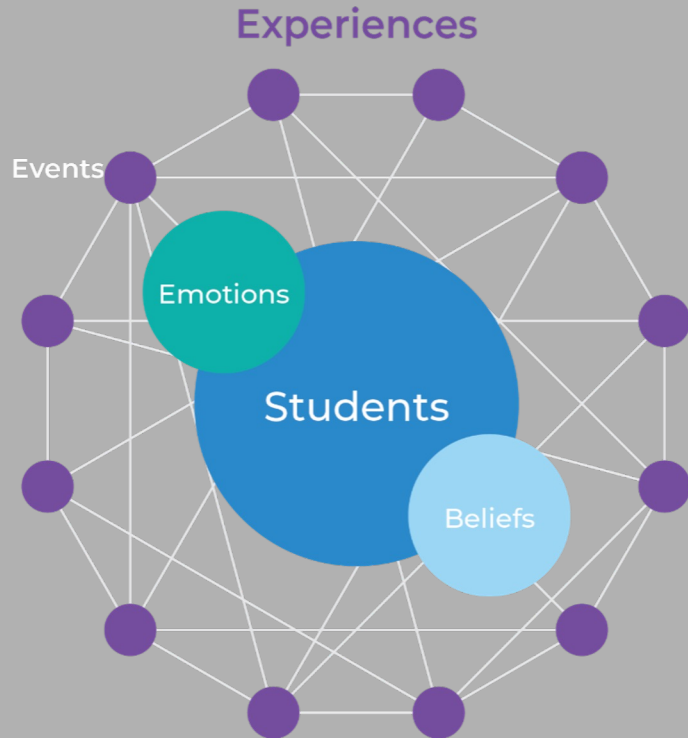
- **Beliefs** and **Emotions** are the **connective tissue** that reinforce or support narratives
- Interventions that **reinforce positive narratives and disrupt negative narratives** in the ecosystem are particularly potent when they **target emotions and beliefs**
- These narrative interventions are felt at a **visceral level, as much as or more than on an intellectual one**

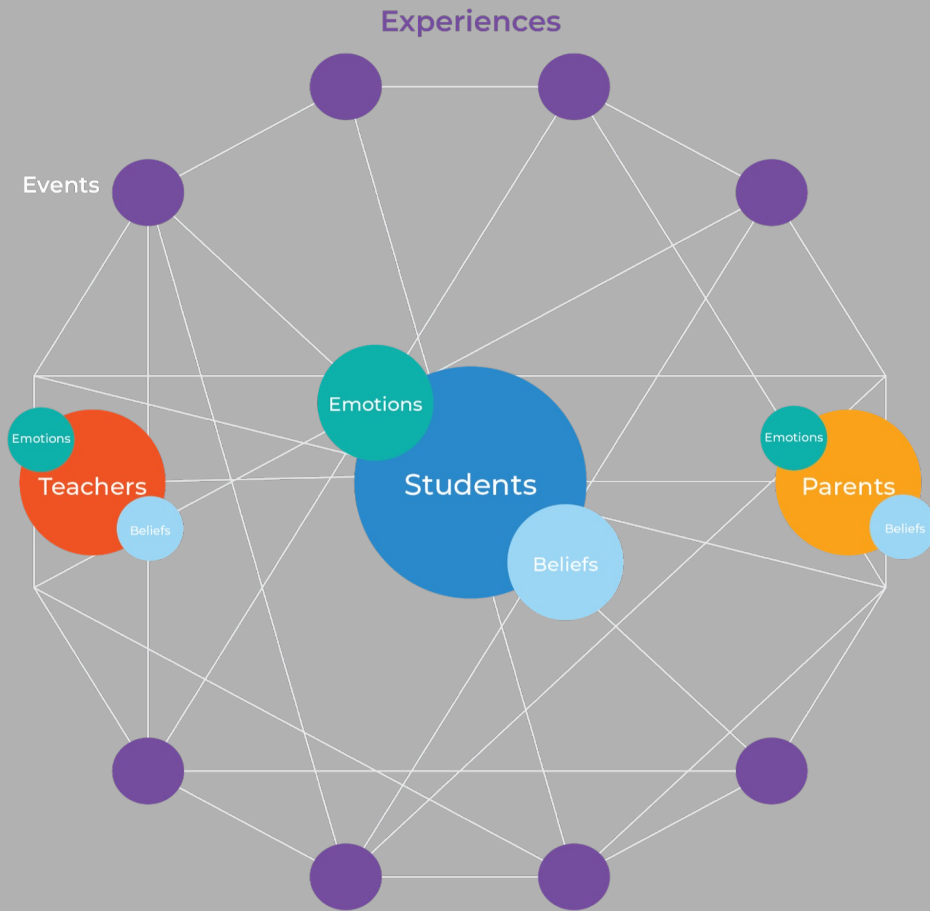


NARRATIVE ECOSYSTEM

Students' behaviors are shaped by:

- The **events** that they experience
- The meaning they make from those events (**beliefs, emotions, narratives**)





NARRATIVE ECOSYSTEM

Adults also influence the environments in which kids learn math in ways that impact their experiences with math learning:

- **Teachers** at School
- **Parents** at Home



NARRATIVE INTERVENTIONS CAN...

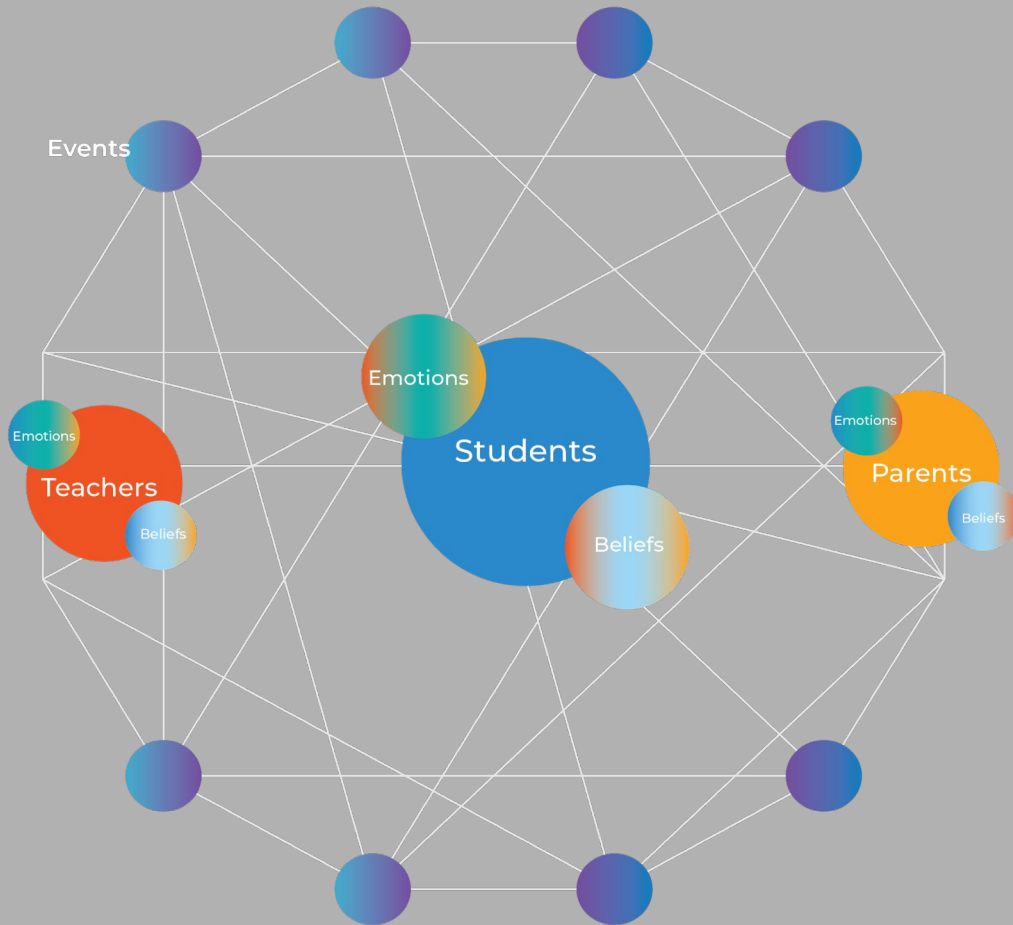
- **Students**

- ...Help to shift beliefs and reinterpret emotions and experiences, enabling students to draw new meaning from their math learning experiences, including interpreting their math learning experiences more positively
- ...Change how students see the relevance of higher-level math in their own lives

- **Adults**

- ...Help adults understand how their actions impact students' beliefs and learning experiences
- ...Help adults feel more motivated to help students persist when learning math gets hard
- ...Help equip adults with positive narratives for themselves and to share with students

Experiences



NARRATIVE CHANGE HYPOTHESIS

- When narrative interventions effectively help audiences (youth and adult) shift their beliefs and reinterpret their emotions, it can create the conditions for positive behavior change among students, teachers, and parents
- These behavior changes create the enabling conditions for a more supportive math learning environment



PARENTS IN THE NARRATIVE ECOSYSTEM

Parents are delivering a range of narratives to their children about learning math, about math's utility, and about math ability. Research participants who are parents report that they communicate to their children about math — and research participants who are students report hearing those math narratives from their parents.

- These math narratives that parents deliver to their children are rarely neutral; the parents usually talk about math and learning math in ways that are positive or negative.
- Additionally, these math narratives go well beyond merely beliefs about being or not being a “math person.” They include, but are not limited to, components about the utility of math, the relevance of math in life, what it means to be “good” at math, and their children’s math ability.
- In the instances when being (or not being) a “math person” is a component of a narrative, it is usually a gateway or transition to other narrative components (e.g., I may not be a math person, but I still have a good career and a good life).

The messaging recommendations in this report are meant to help craft messaging for parents, given their important place in the narrative ecosystem.



SUMMARY OF NARRATIVES THAT PARENTS REPORT COMMUNICATING TO THEIR CHILDREN

Not all parents communicate all of these narratives to their children — but this overview lays out the more common narratives that parents report saying and students report hearing.

Math learning positive	Math learning agnostic	Math learning negative
<ul style="list-style-type: none">✓ Basic math is important, and you'll need those skills in everyday life✓ If you are struggling learning math, I want to know and want to get you the help you need✓ Do your best; even if you don't excel, I still expect you to try✓ Higher-level math can help you develop critical thinking skills✓ Learning higher-level math can help you make more money and manage your money✓ Learning higher-level math can help you get a higher-paying job or a more interesting career✓ Math (plus English and sometimes Science) is more important than other subjects to both master and get good grades in	<ul style="list-style-type: none">✓ Pay attention in school and get good grades because that's your job as a student✓ Just do your best in all your subjects	<ul style="list-style-type: none">✓ Math is harder than other subjects✓ I struggled with math and didn't like it; it's a stressful and difficult subject✓ I rarely, if ever, have used higher-level math as an adult and I have gotten by just fine✓ Technology makes advanced math less useful because apps can do the math for you✓ If you are finding math hard, you may just not be good at it, and that is ok✓ You only need math to graduate high school or get into college✓ You only need higher-level math for certain STEM careers, otherwise you don't need it✓ When you are struggling to learn math, I will not be able to help you directly, even if I can help you in other subjects

OVERVIEW: KEY PARENT FINDINGS





MESSAGING RECOMMENDATIONS: OVERVIEW (1 OF 2)



Elevate student agency: Messaging for parents should elevate student agency; messaging for parents should center students' emotions, experiences, and choices they have in their own education



Acknowledge real-world context: Empathize with parents by acknowledging and naming the real-world challenges they face



Acknowledge emotions in math learning: Normalize the emotional nature of learning math, and help parents manage their negative emotions so that they can in turn help students reinterpret and manage their own negative emotions



Make math relevant: Deliver credible and motivational messaging to parents on the relevance, value, and utility of higher-level math (algebra and above) for their students' lives, desired careers, and futures



MESSAGING RECOMMENDATIONS: OVERVIEW (2 OF 2)



Encourage help-seeking: Build confidence among parents that they can support their students in seeking help with math by sharing a range of available resources to help their child learn math when they cannot help directly



Reframe struggle and capability: Reframe students' struggle for parents from a sign they lack capability to a sign of them needing support

Note: while these parent recommendations are listed separately, it's important to implement them together as a package — especially the relevance and utility of higher-level math (previous slide), encouraging help-seeking, and reframing struggle and capability — in order to impact a set of intertwined and self-reinforcing beliefs. Many parents see their children struggling with math as a sign that they are not (and will not ever be) good at math, and they want to protect their children from unnecessary stress and pressure. To address this, it's important to show those parents that 1) higher-level math IS important for their children to learn, 2) their children have the capability to learn it even if they are struggling now, and 3) parents have the ability to help their children either directly or through sharing other resources.



RESEARCH INSIGHTS: OVERVIEW (1 OF 3)

- **Math learning is emotional:** Learning math is an emotional experience. Parents have very distinct memories of classroom experiences learning higher-level math — especially negative ones.

Applies to every recommendation

- **Parents believe that their identity as “good” parents includes protecting their children and being able to help them** (including with math): Parents are motivated to act in alignment with these beliefs about what makes a parent a good parent, and they feel stress when they feel they are not able to fulfill their expectations of that role.



- **Many parents face barriers to supporting their child’s higher-level math learning:** Many parents report feeling ill-equipped to help their child learn math. Some feel they are not a “math person” or that they are not good enough at math to explain it. However, many parents — across race, gender, education, and income level — who do feel confident in their math skills, nonetheless report that the Common Core curriculum or “new math” is an absolute barrier, not a speedbump, to being able to directly help. Parents say that when they try to help, showing how to solve it in the ways they were taught, their children tell them that they’re supposed to be solving problems a different way. This experience is reported with frustration by parents.





RESEARCH INSIGHTS: OVERVIEW (2 OF 3)

- **Many parents are unaware of the range of resources available to help their children learn math:** When parents learn about how many different kinds of resources are available, it relieves some of their anxiety about not being able to directly help their children learn math.

- **Parents see the relevance for basic math — fewer see the relevance of higher-level math:** There is widespread belief among parents (and students) that basic math skills (e.g., addition, subtraction, multiplication, division, and for some, fractions, decimals, and percentages) are valuable and have utility in one's present and future life. However, some parents do not feel that it is important for their children to learn higher-level math — and they often communicate this to their children.

- **Many parents believe people — including their own children — are innately good, or not good, at learning math:** Many parents also believe that a learning ceiling exists for those who are just okay or not good at learning math.





RESEARCH INSIGHTS: OVERVIEW (3 OF 3)

- **Struggle is perceived as a sign of not being “good” at learning math:** When parents see their kids struggle at learning math, they often think they are not good at learning math.

- **Encouraging persistence in learning math is perceived as putting unnecessary pressure on students:** The combination of seeing their child struggle to learn higher-level math and the lack of perceived relevance of higher-level math to their child’s future life can make parents hesitant to set expectations around learning higher-level math — including encouraging their child to persist when learning math gets hard. As good parents, they want to protect their child and worry that encouraging their child to persist in the face of struggle will simply cause them more stress without increasing their math-learning ability.





KEY DIMENSIONS TO KEEP IN MIND: DEMOGRAPHIC AND EXPERIENTIAL DIFFERENCES

- The findings in this report apply to parents of 6th-10th grade public school students in the four states, and the messaging recommendations are generally effective across demographics
- However, there are a few important dimensions of parents' demographics and experiences to keep in mind when deploying the recommendations, which are outlined in this section



KEY DIMENSIONS TO KEEP IN MIND: REPORTED INCOME LEVEL AND EDUCATION

- Parents in lower-income level households*, or without college degrees, are more likely than parents in higher-income level households, or with college degrees, to report:
 - More negative emotions about math
 - Belief that higher-level math is not useful or helpful for their children to learn
 - Lack of confidence that they can help their child with higher-level math if they get stuck
 - Struggling with math is a sign that their child just isn't good at it
- The tested messaging works across demographics, but it is especially effective with parents in lower-income level households and those without college degrees
 - In the survey, self-reporting of income level (i.e., lower, middle, higher) is a slightly better predictor of how parents respond to messaging than is reported absolute household income (i.e., the dollar amount of annual household income), likely because the same income can mean a very different life experience depending on the cost of living in the area and the number of people in the household that that income is supporting

Note that education, income level, and race are all tied together. For example, the U.S. Census 2020 data on education level among those ages 25+ shows that education varies widely by race. 25% of Hispanic adults, 28% of Black adults, 37% of white adults, and 60% of AAPI adults have a 4-year college degree.

*In most cases in this report, differences are noted by income level rather than absolute income. *Income level* refers to respondents' answer to the survey question below. Question text: Thinking now about your current household — including all the people who live in your home — how would you describe your household's income level?
Lower income level households respond *very low income* or *low income*
Middle income level households respond *middle income*
Higher income level households respond *high income* or *very high income*



KEY DIMENSIONS TO KEEP IN MIND: REPORTED INCOME LEVEL AND EDUCATION – WHERE THEY DIFFER

- While reported income level and education are closely tied, they are still separate dimensions of parents' experience, and there are some notable differences:
 - Parents with college degrees are more likely to report a belief that mistakes are a normal part of learning
 - Parents from higher-income level households are more likely to report concern about stress and pressure on their children to do well in math



KEY DIMENSIONS TO KEEP IN MIND: GENDER

- Female parents are more likely than male parents to report:
 - More negative emotions about math
 - Belief that higher-level math is not useful or helpful for their children to learn
 - That they rarely, if ever, have used higher-level math as an adult
 - Lack of confidence that they can help their child with higher-level math if they get stuck
 - Lower expectations for their child to understand and master math material
- And male parents are more likely than female parents to report:
 - Struggling with math is a sign that their child just isn't good at it



KEY DIMENSIONS TO KEEP IN MIND: EXPERIENCE WITH HIGHER-LEVEL MATH

- Some parents have more experience with higher-level math, either through education or through their jobs. Those parents are more likely to believe that learning higher-level math is relevant and useful, and they try to communicate the relevance to their children.
 - However, some of what those parents are currently saying to students about the relevance of math is not credible to kids.
 - So, while these parents do not need to be convinced that higher-level math is relevant and helpful for their children to learn, they do still need to be equipped with messaging about the relevance of higher-level math that is credible to their children.



KEY DIMENSIONS TO KEEP IN MIND: VIEWS ON CAPABILITY

- Parents have a range of beliefs about both their own and their children's capability with higher-level math — and these beliefs impact other aspects of their mindset, as well as how they respond to messaging in the survey
 - Parents who believe both they* and their child^ are good at math are more likely to report:
 - That their child enjoys math, in addition to being good at it
 - A belief that higher-level math is helpful and useful for their child to learn
 - An expectation for their child to understand and master material in math class
 - Parents who believe they are good at math but their child^^ is not are more likely to report:
 - That math grades are not more important than grades in other subjects
 - Surprise — including jokingly asking “Where did my child come from,” which can reinforce the “math person” narrative
 - Parents who believe both they** and their child are not good at math are more likely to report:
 - Lack of confidence that their child can get better at math
 - Concern about stress and pressure on their child to learn math
 - A belief that higher-level math is not needed to navigate through or live a good life
 - Parents who believe they are not good at math but their child is, are more likely to report:
 - A belief that struggling to learn math is normal, and is NOT a sign of poor capability

*Respondents who report being *excellent, very good, or good* when asked, *How good would you say you are at math?*

^ Respondents who report their child being *excellent, very good, or good* when asked, *How good would you say your child is at math?*

**Respondents who report being *just ok or not that good* when asked, *How good would you say you are at math?*

^^ Respondents who report their child being *just ok or not that good* when asked, *How good would you say your child is at math?*



KEY DIMENSIONS TO KEEP IN MIND: VIEWS ON CAPABILITY AND GENDER

Parents may be unintentionally passing down narratives about who is good at math to their children. In addition to rating their own math capability lower, mothers are somewhat more likely to rate their child's math capability lower than fathers are. In addition, parents of both genders are more likely to rate the math capability of their female children (daughters) lower than their male children (sons).

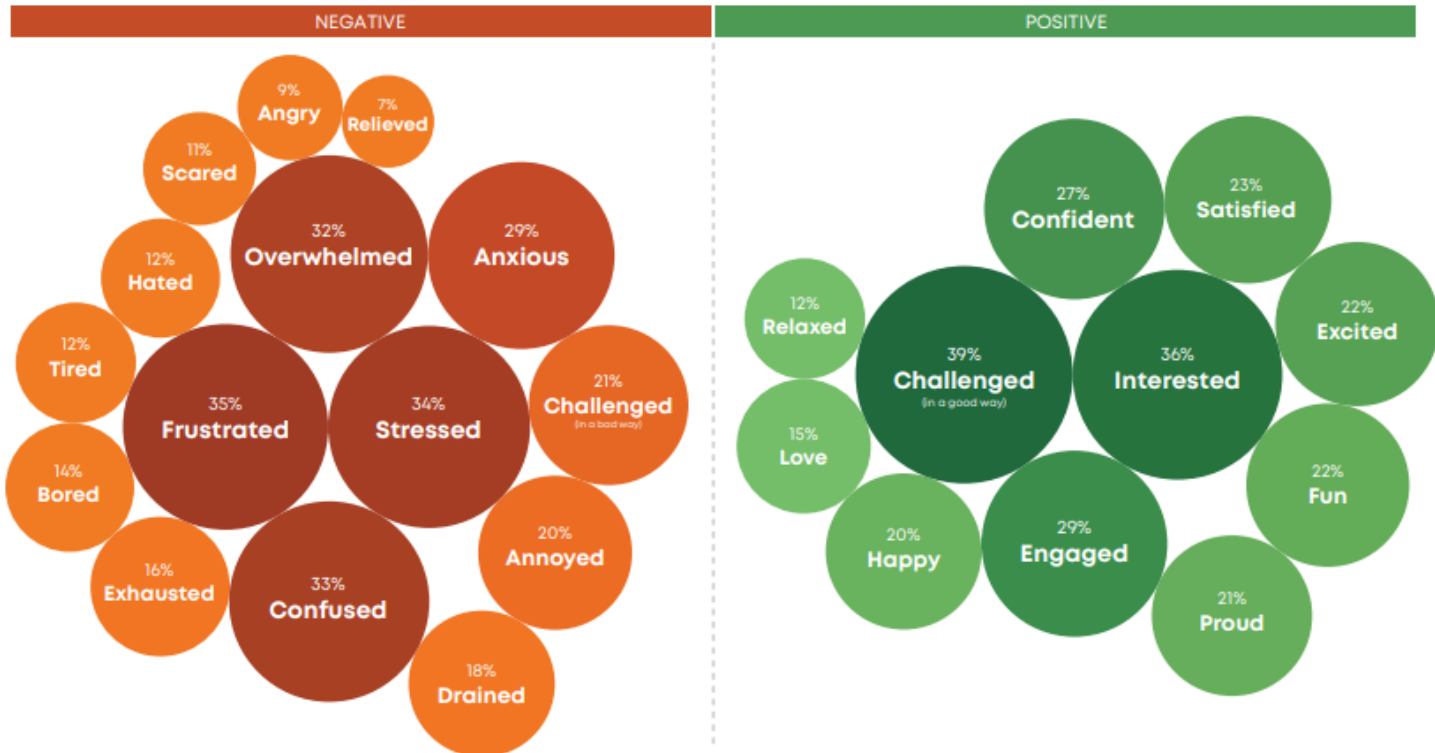
% that say their child is excellent, very good, or good at math

	Mothers	Fathers
Daughter	74%	80%
Son	78%	87%



PARENTS FEEL A RANGE OF EMOTIONS ABOUT MATH – AND MANY ARE NEGATIVE

Here is a list of words. Please check any that describe the feelings you had when you were learning math.





MATH EMOTIONS VARY BY RACE

Here is a list of words. Please check any that describe the feelings you had when you were learning math.





MATH EMOTIONS VARY BY GENDER

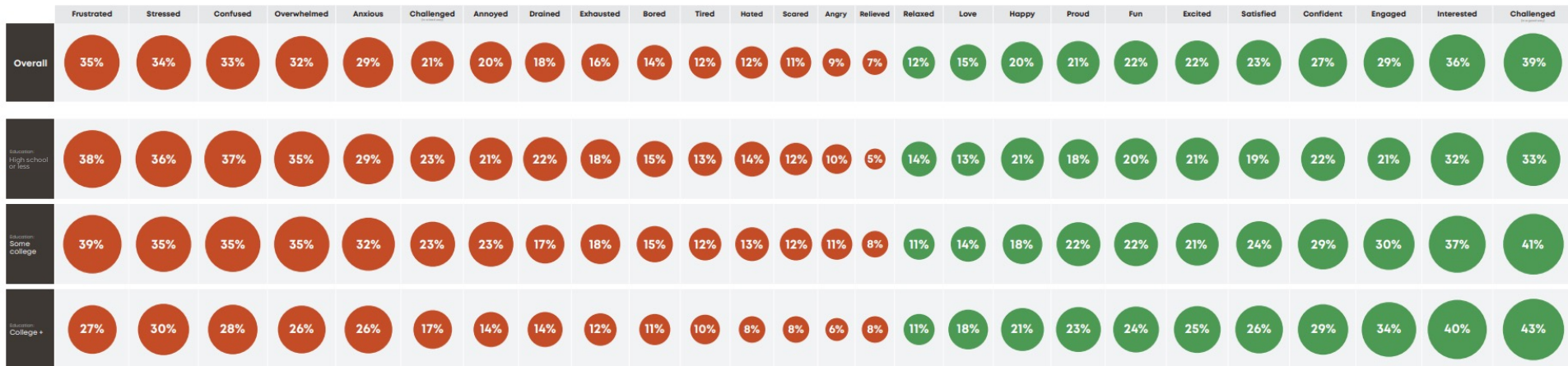
Here is a list of words. Please check any that describe the feelings you had when you were learning math.





PARENTS WITHOUT COLLEGE DEGREES HAVE MORE NEGATIVE EMOTIONS ABOUT MATH

Here is a list of words. Please check any that describe the feelings you had when you were learning math.





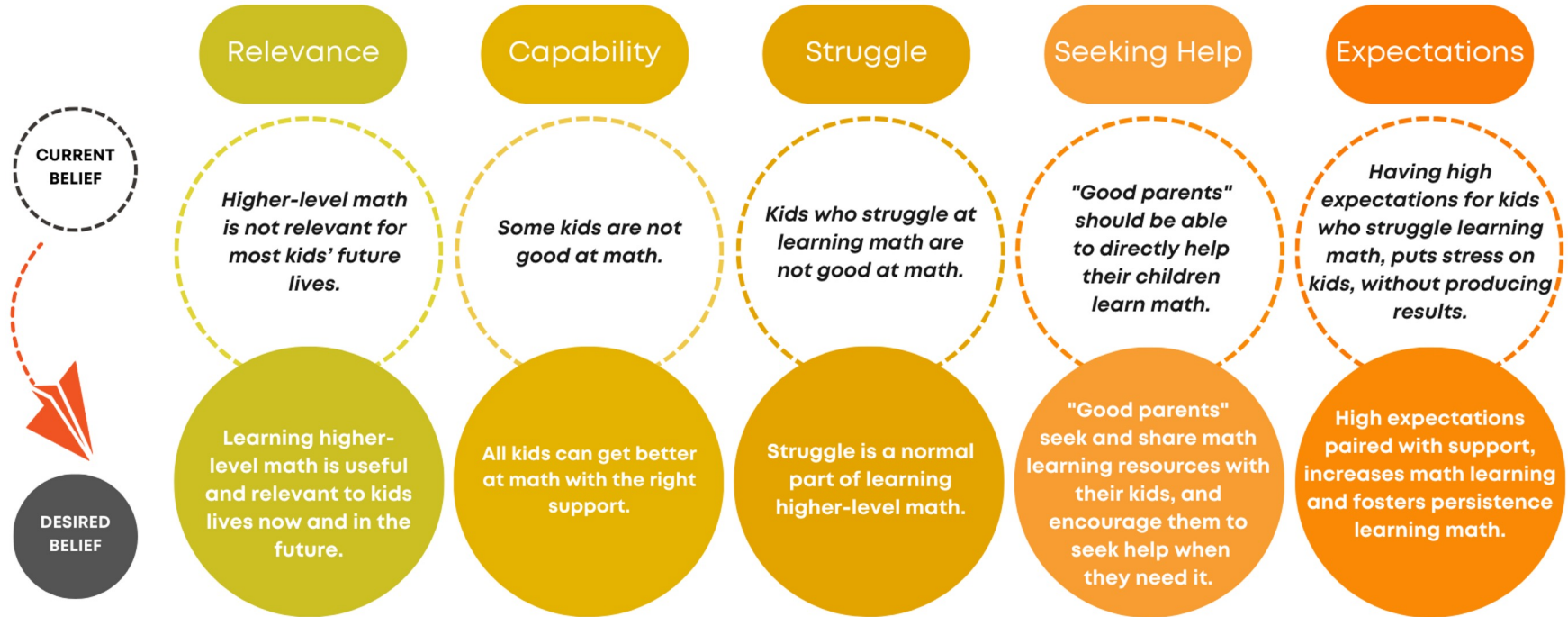
HELPING PARENTS SHIFT THEIR BELIEFS WITH NARRATIVE INTERVENTIONS

Overall, effective narrative interventions:

- Impact and shift the ways in which parents interpret their emotions, in part by disrupting problematic narratives and replacing them with more positive ones
- Can support parents to shift their beliefs from those that reinforce problematic narratives to those that support learning math

On the next slide, you'll see the 'Parent Belief Pathway.' This belief pathway depicts existing beliefs that uphold problematic narratives about math, as well as desired beliefs that will support parents' behaviors to create a more helpful narrative ecosystem around math.

Belief Pathway: Parent



Parent Emotions



Math is emotional for parents. Many parents have had negative experiences learning math.



IMPACT OF NARRATIVE INTERVENTIONS IN THE RESEARCH: MESSAGING TESTED IN THE PARENT SURVEY IS EFFECTIVE

Please tell us how much you personally agree or disagree with each of the following statements on a scale of 1 to 7, with 1 meaning you strongly **disagree**, and 7 meaning you strongly **agree**. You can use the slider below to choose any number from 1 to 7 to say how strongly you feel.

What I've seen and read in this survey is helpful for me as a parent

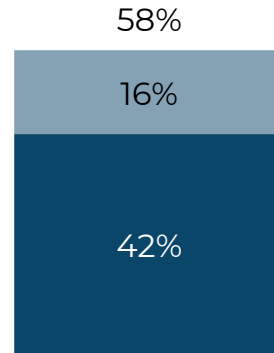
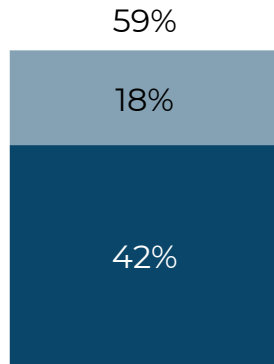
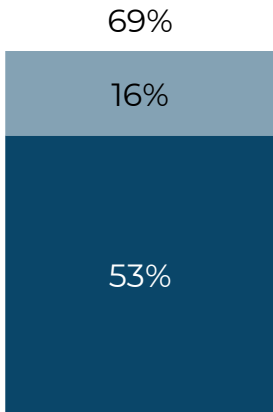
I am thinking differently about how to talk to my child about higher-level math after this survey

I am thinking differently about how to support my child in learning higher-level math after this survey

Total
Strongly
agree (6+7)

(6)

(7)





IMPACT OF NARRATIVE INTERVENTIONS IN THE RESEARCH: OPEN END RESPONSES AT SURVEY'S END SHOW PARENTS APPRECIATE THE MESSAGING

At the end of the survey after having viewed messaging, respondents are asked to write down anything they are thinking about differently.

“ I feel I could talk to my child more about how math or even higher-level math affects them everyday. It is important to keep trying [to learn math] and not give up.”

–Black Female Parent/Guardian, FL

“ This survey was very helpful and beneficial to me on how to approach my kids when they need help.”

–AAPI Male Parent/Guardian, CA

“ This survey has literally changed the entire way that I think about math with myself AND with my kids!”

–White Male Parent/Guardian, TX

“ I feel much more comfortable with talking to my children about math and the struggles I had faced [learning math].”

–Hispanic Female Parent/Guardian, CA



DETAILED INSIGHTS



MATH LEARNING IS EMOTIONAL

- Learning math is an emotional experience for parents — and participants report a wide range of positive and negative emotions about learning math
- Parents report very distinct, vivid memories of (especially negative) experiences learning math growing up that they say bring up strong emotions even now, often decades later
- Many parents pass down negative attitudes about math to their children
- Parents with more negative emotions about math are also more concerned about protecting their children from stress or pressure to do well in math — including expressing minimal math learning expectations for their children



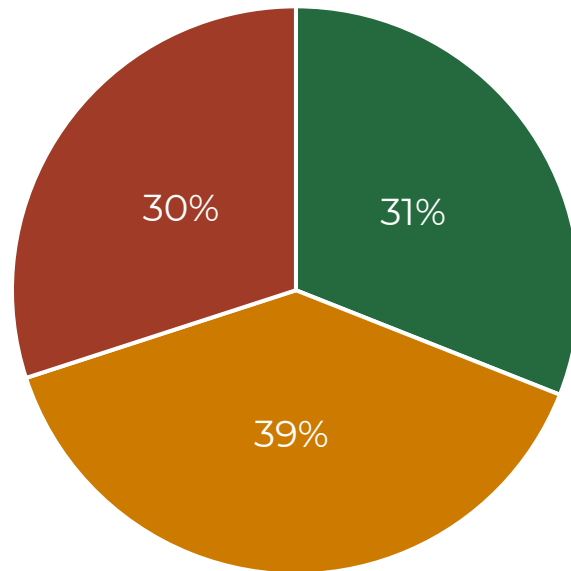
PARENTS REPORT A RANGE OF POSITIVE AND NEGATIVE EMOTIONS

“ Growing up, I felt like I needed a little bit of help with algebra, geometry. It’s just — it didn’t come as easy to me as it did to others, and it was frustrating. Math would make me cry...it was frustrating. It was stressful. But mostly I feel — I felt frustrated just thinking about math.”

–Hispanic Female Parent/Guardian,
CA

Here is a list of words. Please check any that describe the feelings you had when you were learning math.

- Positive emotions only
- Mixed emotions
- Negative emotions only

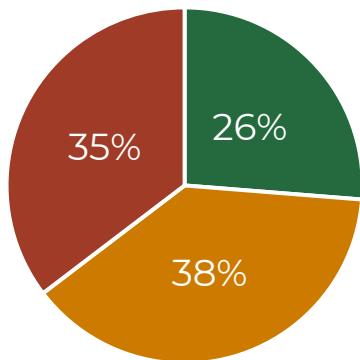




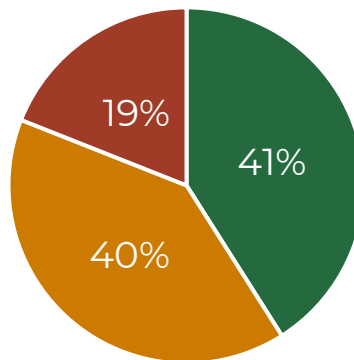
MALES ARE MUCH MORE LIKELY TO REPORT POSITIVE EMOTIONS ABOUT MATH LEARNING THAN FEMALES

Here is a list of words. Please check any that describe the feelings you had when you were learning math.

■ Positive emotions only ■ Mixed emotions ■ Negative emotions only



Females



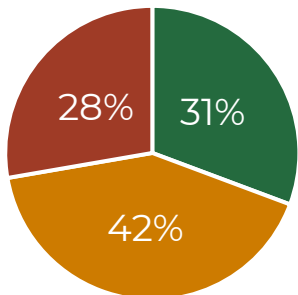
Males



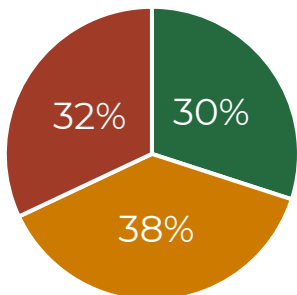
FEMALES REPORT MORE NEGATIVE EMOTIONS THAN MALES ACROSS RACE

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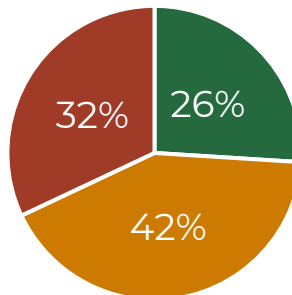
■ Positive emotions only ■ Mixed emotions ■ Negative emotions only



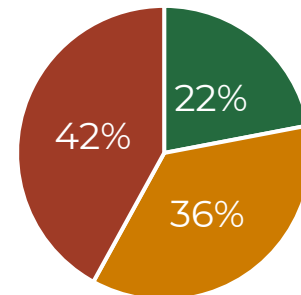
Black female



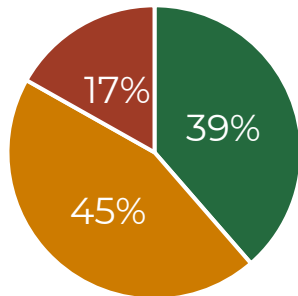
Hispanic female



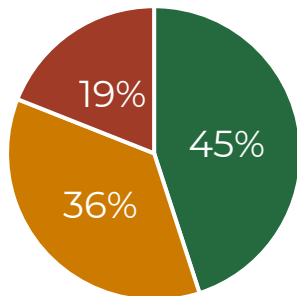
AAPI female



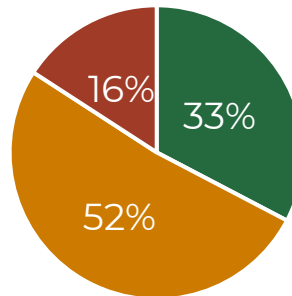
White female



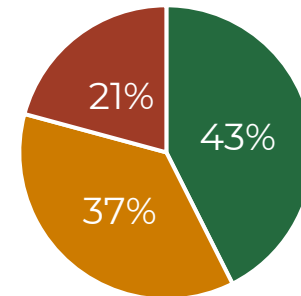
Black male



Hispanic male



AAPI male*



White male

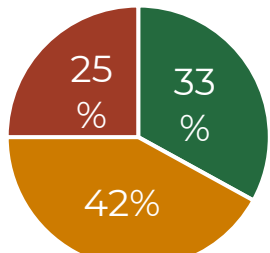
*Note that AAPI male is a small sample size – n 64 – however this group is included here because it may be comparatively informative
Source: MNP Parent Survey Data, n2312 respondents



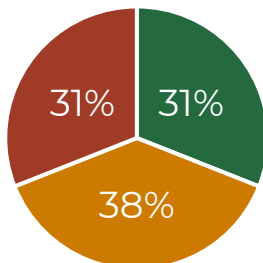
HIGHER-INCOME HISPANIC AND BLACK PARENTS REPORT THE MOST, BUT NOT UNIVERSALLY, POSITIVE EMOTIONS

Here is a list of words. Please check any that describe the feelings you had when you were learning math.

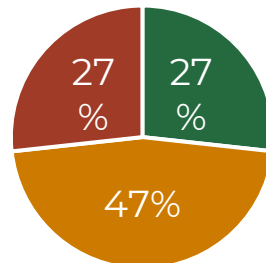
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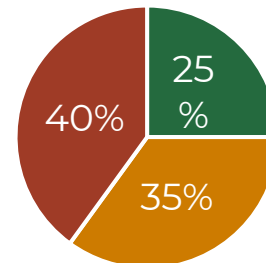
Black <\$75k HHI



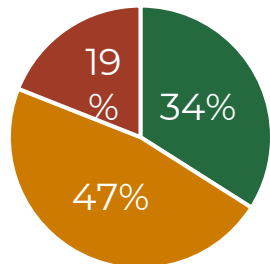
Hispanic <\$75k HHI



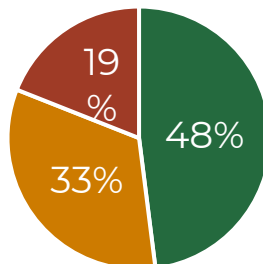
AAPI <\$75k HHI*



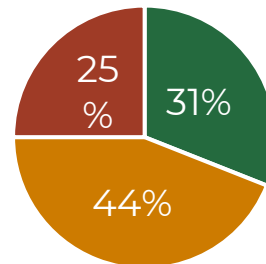
White <\$75k HHI



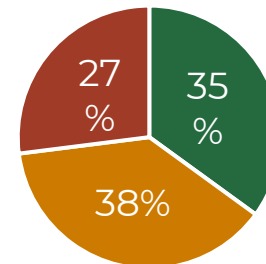
Black \$75k+ HHI



Hispanic \$75k+ HHI



AAPI \$75k+ HHI*



White \$75k+ HHI

HHI refers to reported annual household income and is based on parents' reported income when asked: What is your total annual household income before taxes (in other words, the total combined income for everyone who is currently contributing to your total household income)?

*Note that these groups have small sample sizes (AAPI <\$75k HHI is n 86 and AAPI \$75k+ HHI is n 77) however these groups are included here because they may be comparatively informative

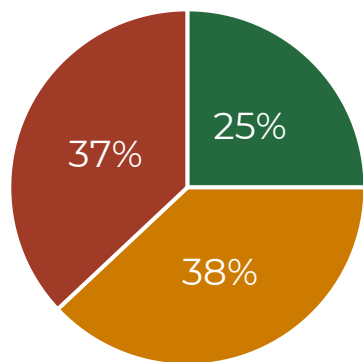
Source: MNP Parent Survey Data, n2312 respondents; note that while the key population is Black, Hispanic, and lower-income white and AAPI parents, the full research audience includes higher-income white and AAPI parents for comparison



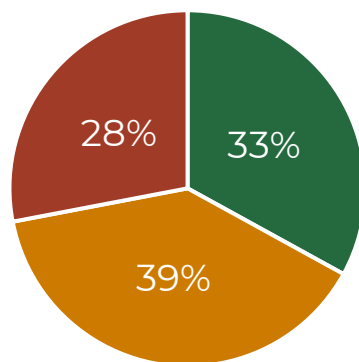
LOWER-INCOME LEVEL HOUSEHOLDS ARE MUCH MORE LIKELY TO REPORT NEGATIVE EMOTIONS ABOUT LEARNING MATH

Here is a list of words. Please check any that describe the feelings you had when you were learning math.

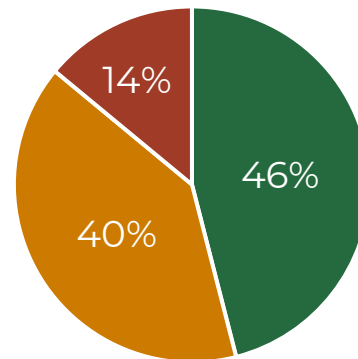
■ Positive emotions only ■ Mixed emotions ■ Negative emotions only



Lower-income level



Middle-income level



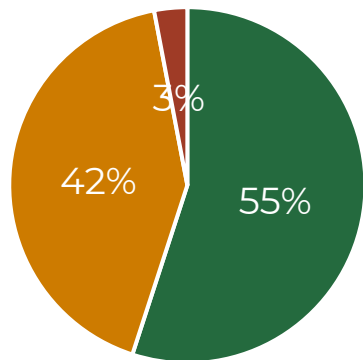
Higher-income level



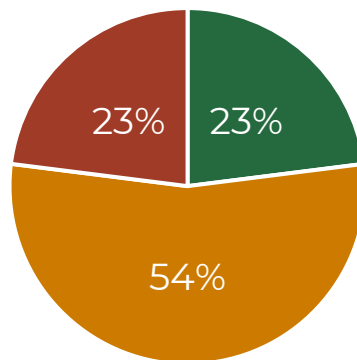
PARENTS WITH LOWER SELF-REPORTED MATH CAPABILITY REPORT MUCH MORE NEGATIVE EMOTIONS

Here is a list of words. Please check any that describe the feelings you had when you were learning math.

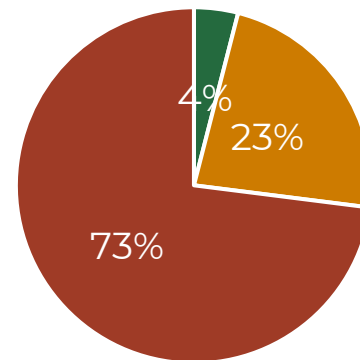
■ Positive emotions only ■ Mixed emotions ■ Negative emotions only



Self-report as *excellent* or *very good* at math



Self-report as *good* at math



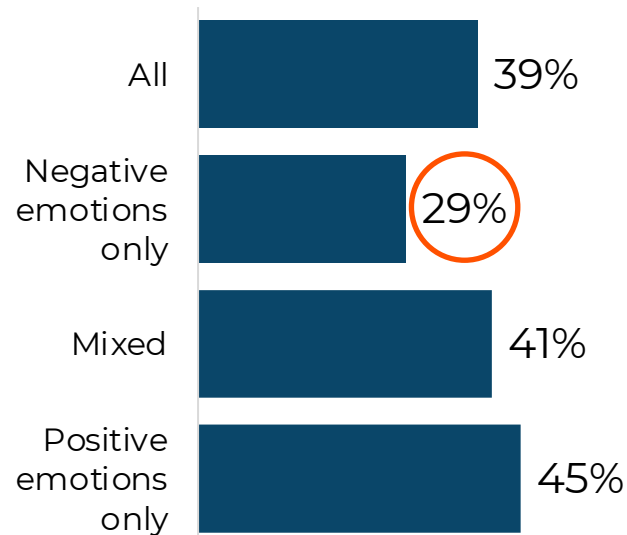
Self-report as *just ok* or *not very good* at math



PARENTS' OWN EMOTIONS CAN IMPACT WHAT THEY EXPECT FROM THEIR CHILDREN

Parents with more of their own negative emotions about learning math tend to have lower expectations for their children's performance in math.

Which, if any, of the following would you say are your expectations for your child in math class?
Really understand and master the material





PARENTS' IDENTITY AS “GOOD” PARENTS IS TIED TO HELPING AND PROTECTING THEIR CHILDREN – INCLUDING WITH MATH

- Parent participants in the research often talk about what “good” parents do, and they want to be able to do those things themselves as part of their identity as a good parent.
- Many parents believe that one aspect of being a good parent is being able to help their child, including with schoolwork and math. When they are not able to help directly, they express frustration, anxiety, and guilt.
- Another aspect of many parents' identities as good parents is protecting their children from unnecessary anxiety or stress.
- Messaging that does not acknowledge their intentions to be good parents can inadvertently trigger defensiveness and undermine the persuasive impact of the message.

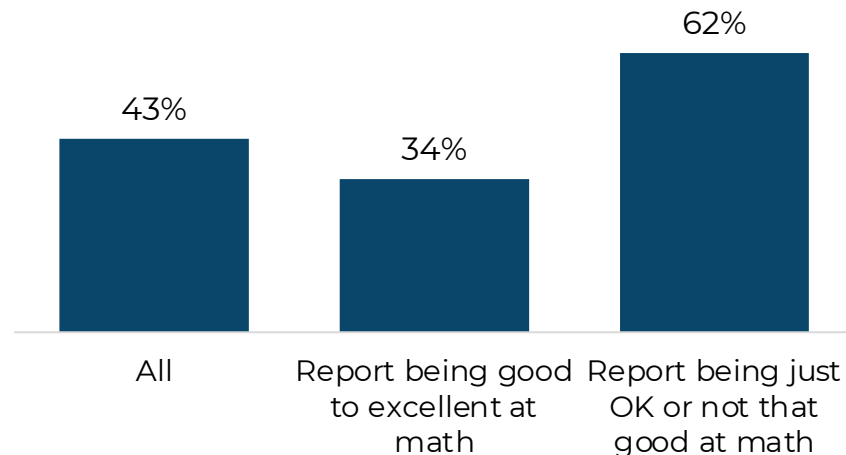


PARENTS FACE BARRIERS TO SUPPORTING THEIR CHILDREN'S MATH LEARNING

- Many parents do not feel confident that they can help their children with math directly, even though they feel like they should be able to — especially parents who report not being as good at math
- Barriers to helping their children with math include:
 - They feel the school has poor communication; they may not know their child needs help
 - They feel ill-equipped because they are not “math people”
 - Common Core is confusing, yet their child has to do the “new math,” not the math that parents grew up with

Please tell us how much you personally agree or disagree with each of the following statements on a scale of 1 to 7, with 1 meaning you strongly **disagree**, and 7 meaning you strongly **agree**. You can use the slider below to choose any number from 1 to 7 to say how strongly you feel.

I don't know how to help my child with higher-level math like algebra if they get stuck
Showing total agree (5, 6, or 7)





COMMON CORE IS A COMMON BARRIER TO PARENTS HELPING THEIR CHILDREN WITH MATH

Parents — even those who consider themselves to have always been good at math or use it in their work — report struggling to help their children with Common Core math. Parents say that when they try to help, their children tell them that they're supposed to be solving problems a different way.

“ I think now with the introduction of Common Core, it is so much harder to help my kids with math. The tricks that you learned along the way growing up, sometimes it can't even apply to that. I'm helping the kids and I'm saying, 'OK, you do it this way.' 'No, that's not how I was taught.' ...It's a barrier between how I was taught to how they're being taught now in the classroom, so it's even more confusing and frustrating.”

–Hispanic Female Parent/Guardian, CA

“ She asks me sometimes, if it's algebra, if I'm able to help her. But the thing is, now with Common Core, I'm not able to explain all the steps to her. I can solve the problem the way I learned, I will have the right answer, but the way you have to solve it is not there.”

–AAPI Male Parent/Guardian, CA



SOME PARENTS WHO FACE BARRIERS TO HELPING THEIR CHILDREN WITH MATH LOOK FOR OTHERS WHO CAN HELP

- Many parents also want teachers to do more to help their children, especially when they feel ill-equipped to help at home
- Parents in higher-income level households are more likely to have paid tutors for their children, while parents in lower-income level households rely more exclusively on free or lower-cost support like their children's teachers, peer tutors, or afterschool programs
- Many parents across reported income level report that their child has at times needed one-on-one tutoring or explanations or help with higher-level math learning

“ I have been thinking about why don't our teachers reach out to our students more and help them out.”

**–Hispanic Male Parent/Guardian,
FL**



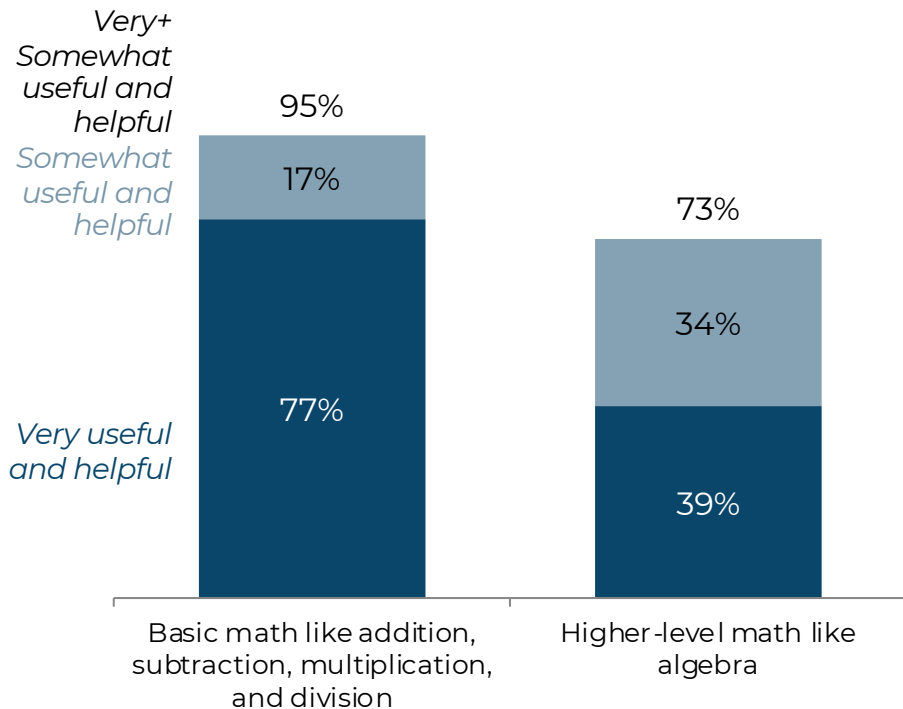
PARENTS SEE RELEVANCE FOR BASIC MATH — FEWER SEE RELEVANCE FOR HIGHER-LEVEL MATH (1 OF 2)

- Parents' perceptions about the utility and relevance of math closely mirror youth participants' perceptions:
 - There is widespread agreement that 'basic math' (addition, subtraction, multiplication, division, and perhaps fractions and percentages) is a necessary life skill, especially in relation to money, such as personal finances, taxes, or calculating percentages for discounts or tipping.
 - Many parents do not think that higher-level math is very useful or relevant for most people in their everyday life. This belief is often reinforced by the lack of perceived relevance of higher-level math in their own lived experiences as adults.
 - Parents report that if their child is not "good" at math, it is okay, because they can just choose a career that doesn't require math skills.
- Some parents have a general sense that learning higher-level math helps children's minds develop or learn logic in ways that cannot be developed otherwise. Student research participants report hearing this from the adults in their lives, and few find it credible or motivating.
- Some parents think that while higher-level math itself may not be useful, passing math classes is a box that has to be checked along the way to a good life (e.g., you need to pass math to graduate high school).
- Others see higher-level math as a safety net. Knowing higher-level math will help keep their children's career options open, whereas not knowing higher-level math may close the doors to some careers. A few parents say they have personally felt their career options limited due to not being good at math.



PARENTS SEE RELEVANCE FOR BASIC MATH – FEWER SEE RELEVANCE FOR HIGHER-LEVEL MATH (2 OF 2)

Thinking about...how useful and helpful do you feel it will be for your child to have learned how to do that kind of math?



Source: MNP Parent Survey Data, n2312 respondents

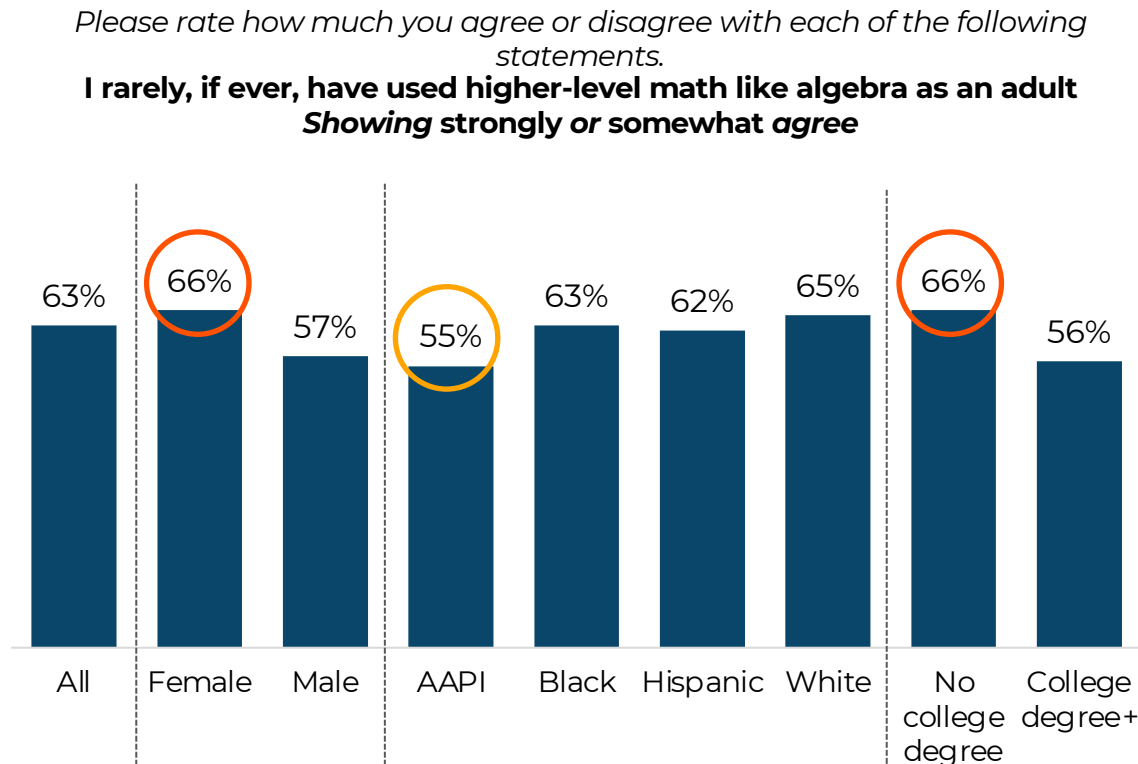
“ I don’t need calculus in what I do right now. Basic algebra is perfectly fine, and with the help of spreadsheets nowadays, there’s a lot of solutions that can be found just by plugging it into an Excel Workbook.”

–Black Male Parent/Guardian, TX



MANY PARENTS REPORT THAT THEY DON'T USE HIGHER-LEVEL MATH IN THEIR OWN LIVES

- Even among parents with a college degree, a majority agree that they rarely, if ever, use higher-level math as an adult
- Women and parents without a college degree are more likely to report not using higher-level math
- AAPI parents are most likely to say they DO use higher-level math like algebra as an adult



Source: MNP Parent Survey Data, n2312 respondents



MANY PARENTS BELIEVE PEOPLE ARE INNATELY GOOD – OR NOT GOOD – AT LEARNING MATH

- Many parents believe that both being good at math and enjoying math are innate traits
- Parents who consider themselves good at math, or not good at math, often express surprise when they consider their children to be in the other category (i.e., “they must have gotten it from the other parent”)
- When there are notable differences between parents and their children, it is more likely for a non-math person parent to report having a child who is a math person as opposed to a math parent having a non-math child





STRUGGLE AS A SIGN OF NOT BEING “GOOD” AT LEARNING MATH

- Since many parents see math capability as innate, when they see their children struggling with math, they may see this as a sign that their child is not good at math, and cannot get significantly better
- Students also often feel that struggle is a sign of lacking capability — and when parents share this belief, they can unintentionally reinforce this narrative



COMMON BELIEFS ABOUT RELEVANCE, CAPABILITY, AND STRUGGLE LEAD TO CONCERN THAT PRESSURE TO LEARN MATH IS UNPRODUCTIVE

- While parents think that basic addition is useful and relevant, fewer think that higher-level math is
- Many parents think there's a ceiling to math achievement, and some kids have lower ceilings than others
- When parents see their children struggling to learn math, they tend to assume this means the child is not good at learning math
- These beliefs together lead some parents to worry that putting pressure on kids to learn math increases the child's stress but does not increase their learning
- This is compounded by the feeling that parents are not able to help their children directly when they are struggling — and often don't know of any resources to help their children outside of the math teacher



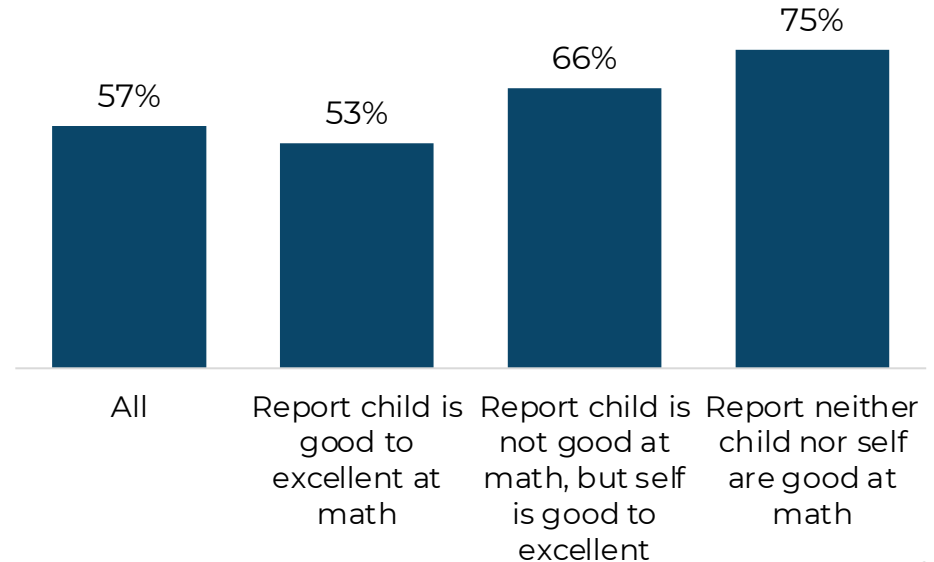


PARENT'S CONCERN ABOUT STRESS IN MATH HEIGHTENED BY NEGATIVE VIEWS OF CAPABILITY

- When parents believe their child is not “good” at learning math, they are much more concerned about stress and pressure to do well negatively affecting their child
- Parents are even more likely to be concerned when they also believe that they themselves are not “good” at math

When it comes to your child's mental health, how concerned would you say you are about stress or pressure to do well in math negatively affecting them?

Showing very or somewhat concerned





CONCERN ABOUT STRESS CAN LEAD TO LOWER EXPECTATIONS AND LESS ENCOURAGEMENT TO KEEP TRYING WHEN MATH GETS DIFFICULT

- Some parents are then hesitant to set high expectations or encourage their kids to persist through struggle because they want to avoid causing stress or anxiety for their child around learning higher-level math.
- Thinking about learning math already raises a lot of negative emotions for many parents, and adding worry about too much pressure on their children makes the topic of math learning even more emotionally fraught for many parents.
- Narratives that raise the stakes for learning math (by showing parents that it is useful and helpful for their child to have learned) can create additional anxiety when not paired with messaging about their child's capability to learn and parents' role in helping their child. Specifically, messages about relevance need to be paired with concrete resources that parents can turn to in order to help their kids when they are not able to help directly. (See slide 88 for an example.)



Honestly, I'm not trying to have them become a scientist or anything, because I know that's not what they want to do. To put all that stress on a kid, to me, it's too much."

–Black Female Parent/Guardian, NY



I want him to enjoy learning. I don't want - maybe I don't want him to turn into me, where I enjoyed [math] at first, and then maybe I experienced some teachers who were very fast paced and put a lot of pressure, and I wanted to get good grades...Or maybe I just don't have the mind for it. But I always want him to have a love for learning, and I don't like seeing him stressed out and crying over if he doesn't get [a math concept] right away."

–AAPI Female Parent/Guardian, CA

The background is a solid yellow color. There are several decorative elements: a dashed blue line that curves from the top left towards the center, another dashed blue line that curves from the top right towards the center, and a white paper airplane icon with a yellow outline pointing towards the right. The text is centered in the middle of the page.

DETAILED MESSAGING RECOMMENDATIONS



MESSAGING RECOMMENDATIONS: HOW TO COMMUNICATE EFFECTIVELY WITH PARENTS

- As a reminder, these recommendations are for messaging addressed to parents (not to students)
- Some recommendations are focused on helping parents change their own beliefs and mindsets about math, so that they are better able to support their children in learning math
- Other recommendations are focused on encouraging and giving parents the tools to change what they are communicating to their children about math



USING THESE RECOMMENDATIONS: IMPORTANT NOTES THAT APPLY TO ALL RECOMMENDATIONS

- Messaging should affirm that most parents strive to be “good parents,” and want to be able to help their children succeed, including getting their child help when learning math gets hard
 - Acknowledge that parents face many challenges, have good intentions, and want what is best for their child
 - Affirm that most parents strive to be “good parents” and want to be able to help their children succeed, including finding resources to support their child when learning math gets hard
 - Messaging that can be read as making negative assumptions about parents’ current behavior (i.e., “don’t judge your daughter harshly for her struggle”) can trigger defensiveness among parents, many of whom are already sensitive about being judged for their parenting
- Messengers should be diverse and varied
 - Effective messengers include other parents and education experts who can share their own experiences helping students persist and provide resources
 - When parents are messengers, include parents who have had strong and positive experiences learning math and also those who have not and feel less capable of directly helping and regardless found ways to support their child’s math learning



USING THESE RECOMMENDATIONS: PACKAGING MESSAGING IDEAS TOGETHER

- Motivate parents to encourage their kids to persist when learning math gets hard, by elevating three core messages as a package:
 - 1) higher-level math is relevant and valuable,
 - 2) anyone can get better at math with the right support, and
 - 3) effective resources are available.
- It's important that messages for parents about the relevance of higher-level math are always packaged and presented with messaging about student capability and available resources — because messages that focus only on relevance of higher-level math and why it's important for students to learn it, without reassuring parents that kids are capable of learning higher-level math and without providing access to resources, can heighten parents' stress.
- Additionally, messages about help-seeking and providing support to students are much more effective when packaged with messaging about students' ability to get better. Messages about capability give parents hope that encouraging their kids to get help and providing resources will actually help rather than cause unnecessary stress.





USING THESE RECOMMENDATIONS: HOW TO AVOID RAISING PARENTS' ANXIETY

- The research team has found that the order of messaging can raise or lower parents' anxiety: showing parents how important it is for their children to learn higher-level math before giving them resources and strategies for supporting their children in doing so can cause parents to shut down — especially those who say their children are currently struggling with math
- Leading with resources and strategies for supporting children makes parents more open to messaging about the relevance of higher-level math
- To help ease parental concern about detrimental pressure on their kids to excel in math, messaging can explain:
 - That research has shown any child can be successful in math with the right support
 - That using our advice can help children build confidence to take on tough challenges and get the help they need, even outside of the math classroom



ELEVATE STUDENT AGENCY: WHY THIS RECOMMENDATION IS IMPORTANT

- Parents often underestimate the potential for their child to have agency in their own education when their child is struggling with math learning. In response to seeing their child struggle, some parents encourage their child to just try harder while other parents try to minimize the stress or pressure kids feel, and they may not realize they can encourage their child to advocate for themselves in the classroom or get resources outside the classroom.
- This can be compounded by some parents' negative views of their own math capability. When they feel that they themselves were never good at math, they are less likely to see a path to improvement for their children through advocating for what they need.



My expectations weren't so high with my own kids just because I myself had problems with math...so I just want them to be comfortable or just pass by. My expectation is I just want him to learn and know the basics...Like I said, he's struggling, so even with the basics, sometimes, it gets — it bothers him, so I want him to be able to be OK as an adult just for the everyday things. I'm not talking about the complicated things. I'm not talking about trigonometry, geometry, any of — algebra not even. Just to be able to be comfortable knowing what he knows.”

—Hispanic Female Parent/Guardian, NY





ELEVATE STUDENT AGENCY:

HOW TO IMPLEMENT THIS RECOMMENDATION WITH PARENTS (1 OF 2)

- Messaging should encourage parents to get curious about their child's math learning experience.
 - Equip parents with questions they can ask and things they can do to get their child to share more about their experiences learning math.
 - For example, parent messengers can describe steps they took to get their kids to open up about their experiences learning math, and the changes they then took to better support their child's math learning.
- Messaging should also show parents how kids can exercise agency in their math learning with messaging.
 - Share short stories that center a diversity of choices and actions a student can make to positively impact their learning. For example, include decisions a student makes every day in math class as well as those they make in everyday life: asking for and accepting help, seeking out available resources, how much to focus on homework, etc.





ELEVATE STUDENT AGENCY:

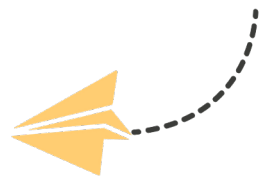
HOW TO IMPLEMENT THIS RECOMMENDATION WITH PARENTS (2 OF 2)

- It is important to acknowledge that other factors and people (including teachers and peers) influence and impact students' math learning. Messaging should not lay the full responsibility for their children's math performance on parents' shoulders, which can also trigger defensiveness.
- Framing advice to parents as a way of creating a supportive environment for learning shows parents what they can do to help, while also acknowledging that children often have agency to do their own learning and that teachers are primarily responsible for teaching math.



You can acknowledge negative feelings that your child may be feeling, like frustration, but also try to surface other more positive feelings, like curiosity in learning, or the feeling of persisting through something hard and eventually succeeding. This can build confidence for kids, and encourage them not to give up when facing challenges.

ELEVATE STUDENT AGENCY: EXCERPT FROM SAMPLE MESSAGE STATEMENT TESTED WITH PARENT AUDIENCE



- This message lifts up values many parents want to instill in their children, like persistence and learning from mistakes
- It also gives suggestions about how parents can help their child channel negative emotions into something fruitful, like building confidence and persistence, which can help parents feel better equipped to talk to their child
- Importantly, it encourages parents to center their child's agency through tapping into curiosity in learning and confidence in facing their own challenges





ELEVATE STUDENT AGENCY: IMPACT OF THIS RECOMMENDATION IN THE RESEARCH

“ [I’m beginning to think about how] to have a more open dialogue with your child no matter your attitude or beliefs on math. Having more of an understanding where my daughter is coming from and how I can help her get the right resources.”

–White Female Parent/Guardian, FL

“ This made me realize my own faults, and what I can do better to improve myself. If anything, I need to be more patient, and allow my kids to freely express themselves [so I can] understand their struggles...I have to talk to my kids to see how they feel about their math class.”

–AAPI Male Parent/Guardian, CA

Source: MNP Parent Qualitative Research

For each of the following, please rate whether you are MORE or LESS likely to do it, based on what you have seen or heard in this survey. If it makes no difference, please say so.

85%

Say they are more likely to **‘check in with my child about how they are feeling about learning math’** (57% say much more likely)

Source: MNP Parent Survey Data, n2312 respondents





ACKNOWLEDGE REAL-WORLD CONTEXT: WHY THIS RECOMMENDATION IS IMPORTANT

- Parents can feel criticized and react negatively when messaging does not acknowledge the obstacles they sometimes face to supporting their children's math learning
- Many parents have negative emotions around the difficulties they face supporting their child's math learning, and failing to acknowledge the efforts they put into trying can intensify those negative feelings and cause them to disengage

About messaging that did not acknowledge obstacles parents face:



It was more advice than anything about being a parent...which in a way comes across as parent shaming. I think what is missing is the emotional support and being more sensitive to the parents and their needs."

–AAPI Female Parent/Guardian, CA

Source: MNP Parent Qualitative Research





ACKNOWLEDGE REAL-WORLD CONTEXT: HOW TO IMPLEMENT THIS RECOMMENDATION WITH PARENTS

- Acknowledge the factors that may impact and influence how parents feel about supporting their child's math learning, including things like:
 - Parents' own experience with learning math and perception of their own math capability
 - The shift to Common Core, and how this makes it more difficult for some parents to help their kids learn “new math”
 - Adolescent development, and the changes that young people go through physiologically and biologically between 6th and 10th grades
 - Emphasizing the ways parents can support their child's math learning with other resources, rather than needing to be able to directly help them with the subject themselves

“There’s also a fundamental desire for parents to want to support their children, even when they don’t know how. Today’s math curriculum often looks very different to parents from what they studied growing up. Either it’s presented in a new structure, like Common Core standards, or parents have simply forgotten what they’ve learned and ... can’t understand what their kids are learning. It can be really stressful for parents and their children alike.”

ACKNOWLEDGE CONTEXT: EXCERPT FROM A SAMPLE MESSAGE STATEMENT FROM CHILD PSYCHOLOGIST/EXPERT TESTED WITH PARENT AUDIENCE



- The message begins by acknowledging the desire to be a good parent, which helps calm concerns parents may have about being judged or attacked for their actions as a parent
- Naming some of the common difficulties parents face lets them know they are not alone and can help calm their anxiety about whether or not they are being a “good parent” and are supporting their child’s math learning



ACKNOWLEDGE REAL-WORLD CONTEXT: IMPACT OF THIS RECOMMENDATION IN THE RESEARCH

“

[There seems to be] a common goal, helping the lady's daughter. Also, nobody seems to be trying to blame anybody or point fingers in any direction as to the reason that her daughter is in this situation to begin with, so that's positive as well.”

–Hispanic Male Parent/Guardian, TX

“

I love the support that this parent is receiving. Their concerns are being heard, and she is being shown that she is not alone. I love that they not only provide one solution, but a few. It's reassuring to hear and read as a parent.”

–AAPI Female Parent/Guardian, CA



ACKNOWLEDGE EMOTIONS IN MATH LEARNING: WHY THIS RECOMMENDATION IS IMPORTANT

Parents often have very distinct memories of (especially negative) experiences learning math, and many unwittingly pass down negative attitudes about learning math to their children.

69%

Of parent/guardian respondents chose at least some negative emotions when asked what they felt learning math when they were younger. **30%** ONLY chose negative emotions and no positive emotions (*emotions listed on slide 37*).

Even among parent/guardian survey respondents who say they are *good to excellent* at math, a majority (**56%**) listed at least some negative emotions like *anxious* or *overwhelmed*.

“**Growing up...Math would make me cry...It was stressful. But mostly I felt frustrated just thinking about math.**”

–Hispanic Female Parent/Guardian,
CA





ACKNOWLEDGE EMOTIONS IN MATH LEARNING: HOW TO IMPLEMENT THIS RECOMMENDATION WITH PARENTS (1 OF 2)

- Messaging should help parents reduce their stress and manage their own negative emotions about learning math by showing how they can provide support to their child(ren) without passing down their own negative emotions.
 - Effective messages show parents how they can unintentionally transmit their stress about learning math to their children by saying things like “I’m not a math person either” when trying to support their child who is struggling.
- In addition to helping parents manage their own negative emotions, messaging should acknowledge negative emotions that *students* often experience when struggling with math learning and affirm struggle as a normal part of students’ math learning process. This can help debunk the notion that some students are naturally good at math and help to reduce parents’ stress about their child’s math learning.
 - Messages can support parents by offering suggestions for how to speak with their child about their math learning experiences.
 - For example, messages might suggest ways that parents can acknowledge negative emotions that their child may be feeling, like frustration, but also model how they might be able to surface other more positive feelings, like curiosity in learning, or the feeling of persisting through something hard and eventually succeeding. This can build confidence for kids and encourage them not to give up when facing challenges.





ACKNOWLEDGE EMOTIONS IN MATH LEARNING: HOW TO IMPLEMENT THIS RECOMMENDATION WITH PARENTS (2 OF 2)

- Messaging can help parents help their children to reinterpret negative emotions about math by:
 - Encouraging parents to get curious about their child's emotions learning math — outside of the frame of performance.
 - Showing parents different ways to reinterpret children's emotions about math.
 - For example, some parents have a snap reaction to shut down any talk of 'hating' math. But when they are told 'when kids tell us they hate math, sometimes they're also expressing frustration about not being able to get the help they need,' parents instead start to think about how to connect their children with support.
 - Recommending that parents talk with their children about the values of persistence and using mistakes as learning opportunities is a helpful way for them to encourage motivation without making their children feel worse when they're struggling.
 - Many parents already value persistence and making the most out of mistakes, and they see those things as important skills for their children to learn generally. Parent participants in the research appreciate the connection to math.



It's common for adults to proclaim, "I'm not a math person." But research shows that kids pick up math anxiety from their parents, and it affects kids' ability to perform in math... Instead, do your best to express confidence, calm, and curiosity around math, so that you're modeling a positive (or at least neutral) attitude toward math for your child.

ACKNOWLEDGE EMOTIONS IN MATH LEARNING: EXCERPT FROM A SAMPLE MESSAGE STATEMENT TESTED WITH PARENT AUDIENCE



- The message begins by connecting with parents through a common statement some parents make about math
- After describing a counterproductive behavior, it offers an alternative behavior that may better support a child's math learning
- Importantly, the message offers an alternative behavior — but does not criticize or judge — the original statement



ACKNOWLEDGE EMOTIONS IN MATH LEARNING: REACTIONS TO PRINT MESSAGING IN THE SURVEY

Tested message: Talk with your child about the value of persistence, and the idea that mistakes are learning opportunities. You can acknowledge negative feelings that your child may be feeling, like frustration, but also try to surface other more positive feelings, like curiosity in learning, or the feeling of persisting through something hard and eventually succeeding. This can build confidence for kids, and encourage them not to give up when facing challenges.

78%

Of parent survey respondents
say they personally find this
advice *extremely* or *very* helpful





ACKNOWLEDGE EMOTIONS IN MATH LEARNING: REACTIONS TO PRINT MESSAGING IN THE SURVEY

Tested message: *Be careful about how you pass on your own experiences to your child. Kids can pick up math anxiety from their parents, and it affects their ability to perform in math. Do your best to express confidence, calm, and curiosity around math, even if you have had bad experiences with it, so that you're modeling a positive (or at least neutral) attitude toward math for your child.*

70%

Of parent survey respondents
say they personally find this
advice *extremely* or *very* helpful





ACKNOWLEDGE EMOTIONS IN MATH LEARNING: IMPACT OF THIS RECOMMENDATION IN THE RESEARCH



I feel that the advice... was great and it was helpful, it helped me to monitor what I say about math and make sure it's not negative..."

–Black Female Parent/Guardian, TX



I think that as a parent, it's normal to want to pass on your experiences to them, but maybe your particular experiences might not necessarily be helpful... Emotional support can be an equally effective way to aid them."

–White Male Parent/Guardian, TX



It made me think about things differently in how I approach the math struggle with my own child...I never thought about how I react when they are struggling to be a factor in the way he perceives math. I didn't think that by me saying I'm not good at math would set an example that math is hard or that it's okay to not understand it...I think that my child may gain some self-confidence if I changed the way I react and what I say to certain situations."

–White Female Parent, TX

Source: MNP Parent Qualitative Research



MAKE MATH RELEVANT:

WHY THIS RECOMMENDATION IS IMPORTANT

- Parents who don't use — or don't realize they use — higher-level math in their everyday lives and work, may not feel motivated to expect their kids to persist and succeed at learning math
- Some parents also report that they feel they have been able to live a good life without using higher-level math — and therefore tell their kids that higher-level math is not important to learn
- It's important to shift parents' beliefs about the relevance of higher-level math for their children's lives so that they don't undermine messages about relevance that children get
- For parents who already believe that math is relevant for their children, it's important to equip them with messages that are credible to children



Higher learning math isn't useful unless you plan to be in one of them occupations where knowing algebra, geometry, or something like calculus may be needed — like being an engineer or an architect... it wouldn't be really useful other than that.”
—White Male Parent/Guardian, TX

Source: MNP Parent Qualitative Research





MAKE MATH RELEVANT:

HOW TO IMPLEMENT THIS RECOMMENDATION WITH PARENTS (1 OF 2)

- Messaging should share credible examples of how higher-level math is relevant and useful for students' lives, futures, agency, and “adulting”
 - Effective examples for parents about the relevance of math connect to contexts that they and their children understand and believe are real
 - Examples of relevance may include: it helps keep your future career options open, it can help prevent you or your family from getting scammed or cheated, and it can help you better understand and choose between loans and interest rates





MAKE MATH RELEVANT:

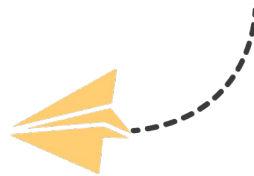
HOW TO IMPLEMENT THIS RECOMMENDATION WITH PARENTS (2 OF 2)

- Messaging should frame higher-level math as opening more career paths to young people rather than being a requirement for a good career
 - Focusing on the idea of opening as many doors as possible for their children, including careers that might not even exist yet, is hopeful and compelling for parents
 - However, suggesting that children need higher-level math because more careers than you'd imagine require it feels limiting and triggers defensiveness for many parents who feel they personally have good careers without knowing any higher-level math
 - Similarly, a broad statement that children will need higher-level math for managing finances triggers defensiveness among parents who don't feel they use higher-level math
 - Instead, giving specific examples like calculating financial aid packages for college or calculating interest payments for different loans or credit card options can help show parents the uses of higher-level math without triggering defensiveness



In the future, you might need to take out a loan to get what you want. This might be to pay for college, or later, to buy a car or a house. In algebra, you learn how compound interest works, and you will need this to understand how much money you need to borrow, and how much in interest different banks would charge over different time periods.

MAKE MATH RELEVANT: SAMPLE MESSAGE STATEMENT TESTED WITH PARENT AUDIENCE



- Sixty-five percent (**65%**) of parents in the survey report this is an extremely (31%) or very (34%) credible reason for students to learn higher-level math
- This example resonates with many parents because it focuses on navigating financial loans — something most adults have had to deal with at some point in their life
- It also explicitly shows specific ways in which higher-level math (here, algebra) can help you make a good decision

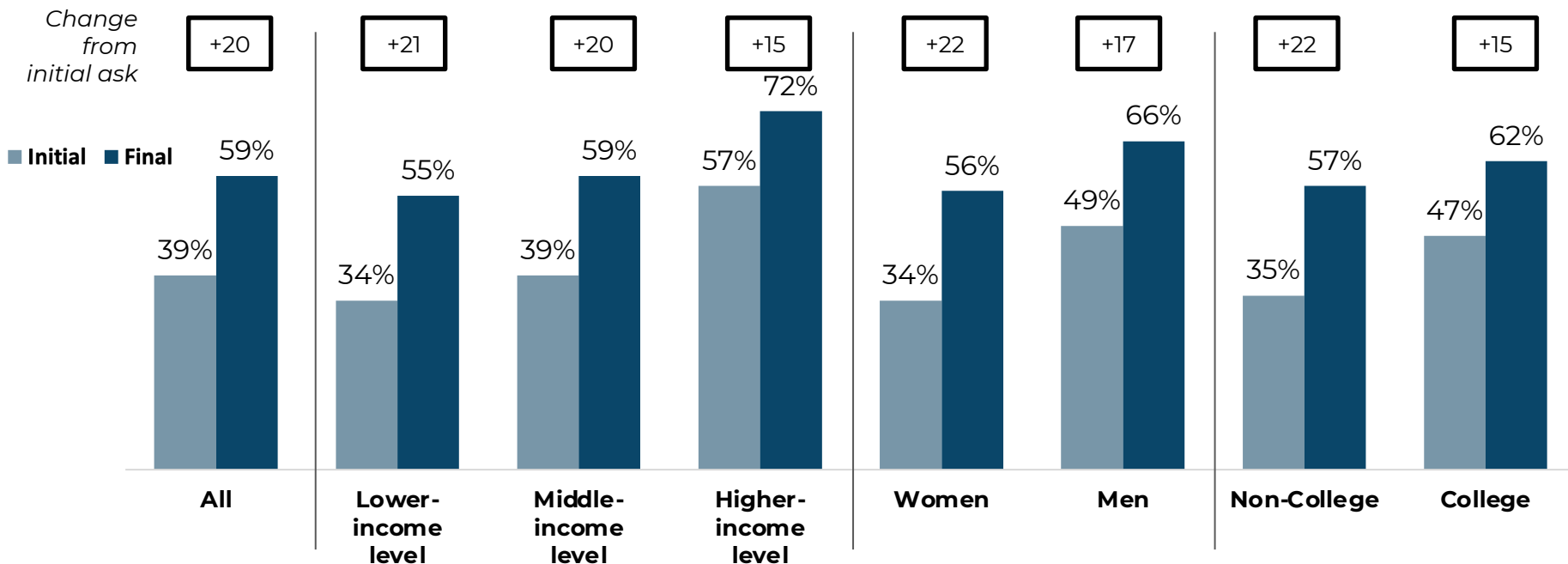




MAKE MATH RELEVANT: IMPACT OF THIS RECOMMENDATION IN THE RESEARCH (1 OF 2)

Thinking about **higher-level math like algebra** – how useful and helpful do you feel it will be for your child to have learned how to do that kind of math?

Showing very useful and helpful before and after messaging



Source: MNP Parent Survey Data, n2312 respondents



MAKE MATH RELEVANT:

IMPACT OF THIS RECOMMENDATION IN THE RESEARCH (2 OF 2)



I just didn't think of math that way since I never used it as an adult like that, but the survey is right — there could be more and better and new opportunities out there that do require it, so it's just best to just know it."

–Hispanic Female Parent/Guardian, TX



I'm thinking differently and need to talk to my child about the importance of knowing higher-level math for her future, and I want to encourage her more with learning math because I do want a brighter future for her."

–White Female Parent/Guardian, FL



I didn't realize before that we use [higher-level math] for financial planning."

–Hispanic Male Parent/Guardian, CA





ENCOURAGE HELP-SEEKING: WHY THIS RECOMMENDATION IS IMPORTANT

Parents **want** to help their children with math learning but often believe that means they must help directly — and don't feel equipped to do that.

“ The math now, it seems so frustrating to me because they teach the kids a different way. Like when I learned it, it was kind of like solve the problem, get the answer kind of simple. It had a few steps. Now I feel like there's so many steps to get to the answer. And sometimes I struggle with that when I'm helping my kids. Like I want to teach them how I learned, but I can't teach them how I learned because their teachers want them to show their work in a specific way.”

–Hispanic Female Parent/Guardian, TX





ENCOURAGE HELP-SEEKING: HOW TO IMPLEMENT THIS RECOMMENDATION WITH PARENTS

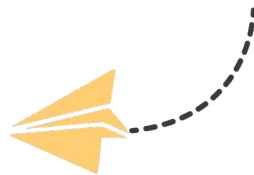
- Messaging should build confidence among parents to seek resources and support for their children when learning math gets hard.
- An effective way to build parents' confidence is to provide them with lists of resources that include a diversity of options with varying levels of financial cost and time commitment.
 - Parents also appreciate resources that they can share with their students that don't depend on the parents' own math skills.
 - Parents deeply value when messaging provides examples of what to say to children, and names specific resources or links for further information. They feel that such concreteness helps them fully understand how to implement the advice and gives them a place to go should they need additional help or guidance.



As a parent, you may or may not feel like you personally can help your child with math when they feel stuck or confused. However, there may be other ways you can support them in learning math:

- Extra help from their math teacher: You can encourage your child to ask their teacher for help at lunchtime or after school if they're worried about asking for help during class in front of other students. Many teachers also offer office hours—time during their free periods for students to drop by with questions.
- In-school tutoring programs: Your child's school may have a free tutoring center or a peer tutoring program for many subjects, including math.
- Help from other students: Your child may have a friend or a classmate who is not only good at doing math, but who also likes to help others. Some kids also use text messages to work together on homework or ask each other questions after school.
- Free, online tutorial websites (like Khan Academy) for kids to learn different types of math—from counting in kindergarten to advanced algebra and trigonometry in high school.
- Online how-to videos (like on YouTube) that explain challenging math ideas and allow kids to work at their own pace. Kids can also find different examples of how to solve a problem which can be helpful if the way shown in one video doesn't make sense to them.
- Math apps (like Photomath or Mathway) that can scan and recognize math content (like algebraic equations) and provide step-by-step tutorials on how a particular math idea works.
- Subscription-based websites (like Desmos and Symbolab) that offer tools and resources for kids to help them learn math.
- Forum websites (like Brainly) that provide a place for kids to post questions about math problems and have experts provide answers and suggestions in response.

ENCOURAGE HELP-SEEKING: SAMPLE LIST OF RESOURCES TESTED WITH PARENT AUDIENCE



- This varied list of resources offers different options to fit different schedules, learning styles, price points, and levels of involvement
- When offered a list of resources in parent focus groups, at least one participant in every single group took a picture of the list to share with their child afterwards

You can help your child with math by reassuring them they should look for help or ask for help when they need it, and that if they keep at it with the right help, they will be able to get it.

Here are just some of the different types of support for learning math you can encourage your kid to seek out:

- *Extra help from their math teacher*
- *Peer tutoring or getting help from classmates*
- *In-school tutoring programs*
- *Online how-to videos (like on YouTube)*
- *Free, online tutorial websites (like Khan Academy)*
- *Subscription-based websites (like Desmos or Symbolab)*

ENCOURAGE HELP-SEEKING: EXCERPT FROM A SAMPLE MESSAGE STATEMENT TESTED WITH PARENT AUDIENCE



- This message begins by affirming parents' intent to help their child — and lets them know they have a role even if they can't help directly
- It then lists a variety of resources — including online and in-person, as well as free and paid options — to show parents the different types of options that exist since not every resource will work for — or be available to — every child



ENCOURAGE HELP-SEEKING: IMPACT OF THIS RECOMMENDATION IN THE RESEARCH (1 OF 2)

For each of the following, please rate whether you are MORE or LESS likely to do it, based on what you have seen or heard in this survey. If it makes no difference, please say so.

Showing much more likely

61%

Encourage my child to ask questions in their math class

55%

Encourage my child to get help when they need it by asking a friend or someone they know from their math class

51%

Encourage my child to look online for help learning math if they need it





ENCOURAGE HELP-SEEKING: IMPACT OF THIS RECOMMENDATION IN THE RESEARCH (2 OF 2)



I know I may not be great at math, but now I know the resources to go to so I can help my child if he is struggling with a math assignment. Before I used to think that because I didn't know it then I could not be helpful, but just knowing how to look for resources is enough.”

–AAPI Female Parent/Guardian, CA



I didn't really think supporting them in math was that important. Now I think it is, and I have a vital role in that area.”

–Hispanic Female Parent/Guardian, FL





REFRAME STRUGGLE AND CAPABILITY: WHY THIS RECOMMENDATION IS IMPORTANT

- Parents sometimes believe that kids are innately either good or not at math — and that when their kids struggle it means that they're not good at math
- They therefore worry that encouraging their child to persist at math will simply cause them more stress without increasing their math ability



My 8th grader is not so good with math. She requires a lot of time and attention so she is able to fully grasp what she is needing to do. It can be a bit of a ‘problem,’ if you catch my drift.”

**–Black Male Parent/Guardian,
CA**



REFRAME STRUGGLE AND CAPABILITY:

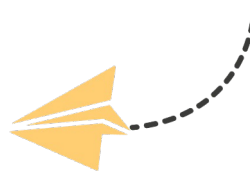
HOW TO IMPLEMENT THIS RECOMMENDATION WITH PARENTS

- Tap into parents' existing beliefs about the value of persistence and apply it to learning higher-level math, and equip them to communicate that idea to help their kids, especially when kids feel discouraged or frustrated with learning math. Messaging should help parents understand that they can:
 - Share the idea that mistakes are learning opportunities. Make comparisons to learning other skills or even something like exercise — if you get sore muscles or get out of breath, it just means you're doing something more challenging than what your body is used to to get stronger.
 - Acknowledge negative feelings like frustration, but also try to surface other more positive feelings, like the satisfaction of persisting through something hard and eventually succeeding.
 - Encourage trying. Many kids (and adults) feel like if they don't get math right away, it means they're not good at math; instead, emphasize that what matters isn't if they “get it” right away, but what matters is that they stick with math and ask for help when they need it, so that they learn the math skills that they might need for their futures.
 - Remind kids that it's important to find the help that works for them. If they don't understand the explanations from the teacher or parents, some websites and apps or someone like a friend, older sibling, or peer tutor can walk them through problems and show them different ways to think about math concepts.
 - Praise their child's hard work and effort, rather than praising them for “being smart” or getting things quickly, which can inadvertently discourage them from taking on challenging work and persevering.



“I think for society, being good at math means you understand it quickly, you don't need help, everything just makes sense to you. But in my definition, it's a student who may not get it, but works to get it, who puts in the time and energy to get it, who helps others when they don't get it, but also asks for help when they don't get it and they don't feel shy, they're not embarrassed to ask for help because they know that asking for help is, again, just part of the learning process.”

REFRAME STRUGGLE AND CAPABILITY: SAMPLE VIDEO MESSAGE OF AAPI MALE TEACHER TESTED WITH PARENT AUDIENCE



- By lifting up a common societal perception of what it means to be good at math, the messenger is connecting with many parents who also have that perception
- The teacher then pivots — without judgment about that perception — to show parents how there are many different aspects of being good at math, including struggling and working through that struggle
- When messages include several different aspects of what it means to be “good at math,” it increases the likelihood parents and guardians will see some of these aspects in their students



REFRAME STRUGGLE AND CAPABILITY: IMPACT OF THIS RECOMMENDATION IN THE RESEARCH (1 OF 2)

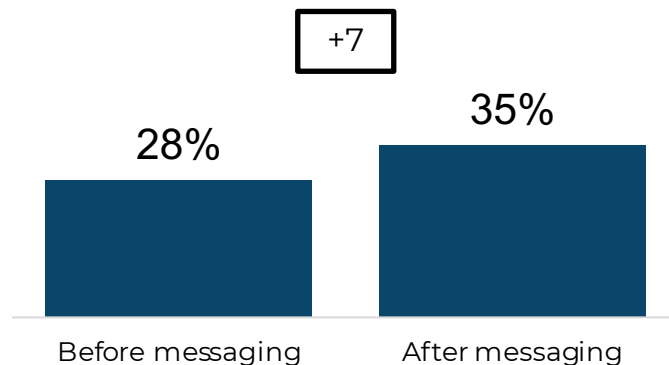
For each of the following, please rate whether you are *MORE* or *LESS* likely to do it, based on what you have seen or heard in this survey. If it makes no difference, please say so.

84%

Of respondents report they are *much more* (58%) or *somewhat more likely* (26%) to tell their child they can succeed at higher-level math after seeing the messaging in the survey

Please tell us how much you personally agree or disagree with each of the following statements on a scale of 1 to 7, with 1 meaning you strongly **disagree**, and 7 meaning you strongly **agree**. You can use the slider below to choose any number from 1 to 7 to say how strongly you feel.

If I see my child struggling to learn higher-level math like algebra, it means that they are probably not that good at it
Showing strongly disagree (1)





REFRAME STRUGGLE AND CAPABILITY: IMPACT OF THIS RECOMMENDATION IN THE RESEARCH (2 OF 2)



I realized that if they are struggling it doesn't mean that they aren't good at it, they probably need a different way of thinking to help them get the right answer.”

–Black Female Parent/Guardian, NY



Main reason [I think differently] is I learned from the video that it's not that they are not good at it. You don't have to get it right away. It is something that takes time.”

–AAPI Female Parent/Guardian, CA



I used to think that exact thing like literally up until I started this survey [‘If I see my child struggling to learn higher-level math like algebra, it means that they are probably not that good at it’]. I have seriously just learned a TON by taking this. I feel extremely different and way more confident about everything math now.

–White Male Parent/Guardian, TX





APPENDIX: DETAILED METHODOLOGY



METHODOLOGY: PARENT AUDIENCE

- Participants are parents or guardians of at least one child in 6th, 7th, 8th, 9th or 10th grade who attends a public school (including charter or magnet schools) in California, Florida, New York, or Texas.
- Research participants for qualitative research self-identify as Asian American-Pacific Islander (AAPI), Black, Hispanic*, or white, or identified as mixed race and also identified as AAPI, Black, Hispanic, or white to participate. Research participants for the survey were included regardless of race.
- For qualitative research, Black and Hispanic parents could be of any income level; AAPI and white parents/guardians were from lower-income households.

*Consistent with what the research team heard in focus group discussions and in surveys, a 2022 Pew Research survey of 3,030 U.S. Hispanic adults found that 53 percent of Hispanics prefer to describe themselves as “Hispanic,” 26 percent prefer “Latino,” two percent prefer “Latinx,” and 18 percent have no preference.



METHODOLOGY: PARENT QUALITATIVE RESEARCH

- Participants in a research discussion are of the same race and gender as one another
- Interviews and discussions are facilitated by an experienced, professional moderator of the same race or ethnicity as the participant(s)
 - Moderators use a guide with questions carefully designed to provide a particular order and flow of discussion; the content of each moderator's guide is informed by prior phases of research
- Focus group participants do not know each other and do not have children in the same school





METHODOLOGY: PARENT MINDSET RESEARCH

- Mindset research was focused on better understanding:
 - Parents'/guardians' own lived experiences of learning math
 - Their feelings about their own math learning and about their child learning math
 - The role math plays in their own lives
 - How they talk to their children about math and learning math
 - How they endeavor to support their children's math learning
- Tested messaging interventions were informed by the Landscape research and further iterated throughout the Mindset research based on cumulative learnings





METHODOLOGY: PARENT MINDSET LIVE ONLINE FOCUS GROUPS

- The research team conducted 15 live online focus groups in February and March 2023 among 101 parents and guardians of 6th to 9th graders in public school in the four priority states, including:
 - 16 AAPI parents/guardians (5 females, 11 males; 3 focus groups)
 - 26 Black parents/guardians (13 females, 13 males; 4 focus groups)
 - 43 Hispanic parents/guardians (22 females, 21 males; 6 focus groups)
 - This includes 14 parents/guardians (7 females, 7 males) in two focus groups conducted in Spanish
 - 16 white parents/guardians (8 females, 8 males; 2 focus groups)



METHODOLOGY: PARENT PERSUASION RESEARCH

- Persuasion parent research was focused on gauging reactions to messaging interventions and messengers intended to help parents and guardians encourage students to persist when math gets difficult
- Tested messaging interventions were informed by the cumulative learnings to that point, including from the Mindset research, and were further iterated over the course of the Persuasion research



METHODOLOGY: ASYNCHRONOUS FOCUS GROUP

- In an online asynchronous focus group (AFG), participants log onto a platform and respond in writing to specific questions and test materials that are programmed in advance.
 - The written discussion takes place across four days spread out over two weeks; this multi-day approach enables the research team to iteratively test materials, incorporate feedback, and revise approaches as they go.
- Trained moderators communicate privately via email with participants (thereby reducing social desirability bias) to probe their responses, and they also facilitate online group written discussions. Participants know whether their response is private to the moderator or posted to the group for discussion.





METHODOLOGY: PARENT ASYNCHRONOUS FOCUS GROUP

- The research team conducted one Persuasion AFG in October 2023 among 32 parents or guardians of 6th to 9th graders, including:
 - 8 AAPI parents/guardians (4 females, 4 males)
 - 8 Black parents/guardians (4 females, 4 males)
 - 8 Hispanic parents/guardians (4 females, 4 males)
 - 8 white parents/guardians (4 females, 4 males)





METHODOLOGY: PARENT SPANISH-LANGUAGE PERSUASION LIVE ONLINE FOCUS GROUPS

- To supplement the parent Persuasion AFG, the research team also conducted two live online focus group discussions in Spanish among Hispanic parents/guardians
- These focus groups had the same goal as the Persuasion AFG but focused on Spanish-language messaging
- There were two groups, one among seven (7) Hispanic females and one among six (6) Hispanic males, in November 2023
 - The moderator is a native Spanish-speaker





METHODOLOGY: PARENT QUANTITATIVE RESEARCH

- The survey was designed to test the effectiveness of various messaging interventions developed based on the prior phases of research and includes both video and print messaging interventions
- This helped to quantify the qualitative results and allowed the research team to further analyze results by subgroups, including race, gender, state, and income
- The survey was conducted using an online convenience sample panel





METHODOLOGY: PARENT PERSUASION ONLINE SURVEY

- The survey was conducted in December 2023 and January 2024 among 2,312 parents/guardians of 7th-10th graders in public school in California, Florida, New York, and Texas, including:
 - 167 AAPI parents/guardians
 - 522 Black parents/guardians
 - 709 Hispanic parents/guardians (including 112 who took the survey in Spanish)
 - 877 white parents/guardians
 - 37 parents/guardians of mixed or other races who did not also identify as API, Black, Hispanic, or white