Focus on Equity
Research Summaries

At the University of Washington's Institute for Learning & Brain Sciences (I-LABS), we believe that science can inspire change in policies and practices. As communities nationwide wrestle with systemic racism and inequities, research enriches our understanding about how issues of diversity, equity, and inclusion influence our children. Our work informs how we might design and implement more equitable practices for children.

Topical Briefs:

Supporting Dual Language Learning

Emergence of Bias in Childhood

How Race Shapes Children's Identities

Representation in STEM Disciplines

Equity in the Classroom

I-LABS Is:

○ Developing new educational programs for children who are dual language learners so they have excellent skills in both their home and school languages.

○ Dedicated to understanding how social biases form in early childhood and change over time.

○ Committed to revealing how racism shapes children's identities and how we can support anti-racist practices in education and our communities.

○ Working to broaden representation in STEM to include more women, girls, and others currently underrepresented in STEM.

○ Promoting understanding and practices that make all children feel welcome, valued, and empowered in their educational settings.

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Supporting Dual
Language Learning

Supporting children who are dual language learners in the U.S. is a critical component of building equitable educational systems. Speaking two languages is associated with social, cultural, health, cognitive, and economic benefits. Yet, U.S. educational classrooms lack adequate resources to support dual language learning. I-LABS is developing and testing new educational programs that support dual language learners so children can learn more than one language and experience the benefits of bilingualism. We are providing better support for children who are dual language learners and their families.

At a Glance

Handout: Bilingual Language Development
https://bit.ly/3aN8qFb

Clip: The Bilingual Brain
https://bit.ly/2ZmzCGh

Dig Deeper

Featured Resource: Bilingual Language Development
https://bit.ly/3h7u2OQ

Article: Why the Baby Brain Can Learn Two Languages at the Same Time
https://bit.ly/3hg0ayK

Video: The Linguistic Genius of Babies
https://bit.ly/2Zq0vc8

Video: Igniting Bilingual Learning
https://bit.ly/2FBWn1O

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Read Our Research

Scientists designed a new program to help infants learn a 2nd language, using a play-based, social curriculum. This program showed success with young children in Madrid, who readily learned English. It was especially effective with children living in poverty homes. Scientists at I-LABS now hope to make this program available to young children in the U.S. to help boost their English-speaking skills before entering schools.

> *Ferjan Ramírez, Sheth, & Kuhl, 2021, Int. J. Environ. Res. Public Health*
> https://bit.ly/3Nll00i

Early childhood is a critical period for learning a 2nd language. This paper describes studies showing that young infants are "linguistic geniuses" and can learn a 2nd language with ease when learning occurs from a human tutor interacting socially with them. Children do not learn when the identical information is presented via video.

> *Kuhl, Tsao, & Liu, 2003, Proc. National Acad. of Sci.*
> https://bit.ly/3k61KoY

Before their first birthday, infant brains already show a strong specialization response to the language or languages they are learning. Infants learning two languages show increased activity in brain regions linked to executive function skills.

> *Ferjan Ramírez, Ramírez, Clarke, Taulu & Kuhl, 2017, Dev. Sci.*
> https://bit.ly/2ZHtbhd

Children show significant gains in a 2nd language when they participate in a play-based language curriculum for 45 minutes a day for 18 or 36 weeks. Children across all socio-economic groups showed these gains.

> *Ferjan Ramírez & Kuhl, 2020, Mind Brain Educ.*
> https://bit.ly/3iUU4VK

Early, social language experiences have a strong effect on infants' language learning. In this study, 12-month-old infants with a brief social experience to Spanish were able to babble in Spanish and English depending on the language spoken by the person playing with them.

> *Sundara, Ward, Conboy & Kuhl, 2020, Biling.: Lang. Cogn.*
> https://bit.ly/3hhZ46q

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Emergence of Bias
in Childhood

Biases based on race, ethnicity, nationality, and language begin to emerge in the first years of life. Children generalize these biases to entire groups of people, even people they are meeting for the first time. I-LABS is dedicated to understanding how biases take shape in early childhood, with the particular goal of creating strategies to counteract negative impacts, like prejudices, that can develop over time.

Read Our Research

Before elementary school, children demonstrate biases based on social groups like gender, race, accent, nationality, and more. One way children acquire these biases is by observing the behaviors of trusted adults around them. Children can learn biases from watching everyday behavior as we interact with others.

Skinner, Olson & Meltzoff, 2020, J. Personality & Social Psychol.
https://bit.ly/3hOSwfn

Though children form biases early in childhood, adults can combat this by facilitating meaningful connections with people who are different from them. Intentional education around stereotypes and prejudice can reduce bias in children.

Skinner & Meltzoff, 2019, Soc. Issues Policy Rev.
https://bit.ly/3aIeXRj

Preschool children who witness one adult act in a biased way toward another person will subsequently direct bias towards that same person. This occurs even when the adult's bias occurs through subtle cues like posture or tone of voice.

Skinner, Meltzoff & Olson, 2017, Psychol. Sci.
https://bit.ly/3hjSLiT

By early adolescence, children develop implicit biases and explicit endorsements of common stereotypes about academic skills. This is true even in a racially and ethnically diverse group of children.

Cvencek, Nasir, O'Connor, Wischnia & Meltzoff 2015, J. Res.Adolescence
https://bit.ly/2QHAr7N

This paper explains how brain development and culture influence human learning and development. Social interaction and participation in intersecting communities of practice shape the development of the brain and change how we see the world. Diversity of experiences prompts learning. Cultural diversity is a strength.

Lee, Meltzoff & Kuhl, 2020, Handbook of the Cultural Foundations of Learning, Ch. 2
https://bit.ly/321eQgM

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How Race Shapes
Children's Identities

Racism is prevalent in our society and it impacts all children's understanding of themselves and others. Beginning in infancy, children learn about race from the actions and words of those around them. These ideas inform how they treat and perceive themselves and others. I-LABS is committed to understanding how children think about race and how racism shapes children's identities, with the goal of supporting anti-racist practices in educational spaces and in our communities.

At a Glance

Clip: Conversations About Race
https://bit.ly/3bmEhMX

Handout: Talking About Race
https://bit.ly/3l5TlgV

Handout: Race - What Kids Know as They Grow
https://bit.ly/3gm8Zqm

Dig Deeper

Featured Resource: How to Talk to Your Kids About Race
https://bit.ly/34l356B

Featured Resource: What Kids at Different Ages Know About Race
https://bit.ly/329086q

Featured Resource: How Children's Developing Sense of Self Affects Learning & Self-Esteem
http://bit.ly/3hb9FFq

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Read Our Research

In middle childhood, children's ideas about race and gender are strongly influenced by their experiences. Although most children categorized gender as more meaningful than race, Black and Multiracial children were more likely than White children to say race is meaningful. When talking about race, White children talked about equality or sameness, while Black children focused on pride and positive traits, and Multiracial children talked about family.

Rogers & Meltzoff, 2017, Cultural Diversity & Ethnic Minority Psychol.
https://bit.ly/34neKly

Stereotypes and systems reinforce ideas about who school is "for" and who does well in school. Although White students and Black, Indigenous, and students of color (BIPOC) have equally strong senses of self-esteem, BIPOC students in this study were less likely to associate school with their own personal identity.

Cvencek, Fryberg, Covarrubias & Meltzoff, 2018, Child Dev.
https://bit.ly/2FM80TW

This paper provides a state-of-the-art summary about how, when, and why children develop biases about race and what can be done to help children resist racial stereotypes. Bias is decreased when children receive intentional education about racism and prejudice and have opportunities for positive interactions with children who do not share their same race, gender, or language.

Skinner & Meltzoff, 2019, Soc. Issues Policy Rev.
https://bit.ly/3aleXRj

Racial prejudice influences families and children from a young age. These papers review eye-opening research, covering: (i) infants' preferences for looking at people of different races, (ii) how children learn prejudice from watching adults, and (iii) evidence revealing that discrimination against Black children occurs as early as preschool.

Thompson, Meltzoff, & Gilliam, 2021, Zero to Three
https://bit.ly/3h22r6v

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Representation
in STEM Disciplines

Women, persons with disabilities, and Black, Indigenous, and People of Color (BIPOC) are underrepresented in STEM careers. I-LABS is advancing our understanding of how STEM-related stereotypes develop and what kinds of training and programs can broaden representation in STEM fields.

Read Our Research

○ Stereotypes and bias can negatively impact STEM interest and academic outcomes for women and Black, Indigenous, and People of Color (BIPOC). Interventions that focus on social factors like mindsets, identities, and a sense of belonging can buffer the negative impacts of stereotypes, playing an important role in diversifying STEM fields.

Master & Meltzoff, 2020, International Journal of Gender, Science, and Technology
https://bit.ly/2YgbHHT

○ As early as 1st grade, children develop the stereotype that boys are more interested in computer science and engineering than are girls. We examine the origins, development, and consequences of these stereotypes from 1st to 12th grade, and what can be done to help children and society overcome them.

Master, Meltzoff, & Cheryan, 2021, Proc. National Acad. of Sci.
https://bit.ly/3WjWim9

○ Parental beliefs about "who does math" are linked to children's beliefs about their own math abilities. Mothers who do not identify with math may inadvertently dissuade their daughters from seeing themselves as a "math person." Fathers play an important role by encouraging and supporting math skills in their daughters.

del Río, Strasser, Cvencek, Susperreguy & Meltzoff, 2019, Dev. Psychol.
https://bit.ly/3aEcUxu

○ Young girls report being less interested and comfortable with technology and programing than boys. This study uses a short training program that includes positive engagement with programing to reduce or eliminate this gender difference.

Master, Cheryan, Moscatelli & Meltzoff, 2017, J. Exp. Child Psychol.
https://bit.ly/31drCbM

○ Preschool-aged children who feel they belong to a social group associated with STEM do better and are more motivated in STEM activities. STEM can be a social endeavor!

Master, Cheryan & Meltzoff, 2017, Dev. Psychol.
https://bit.ly/3gdXhxS

○ In the U.S., children internalize the view that "math is for boys" as early as the second grade. These math-gender stereotypes emerge even before any actual differences in math achievement.

Cvencek, Meltzoff, & Greenwald, 2011, Child Dev.
https://bit.ly/2YR3OJa

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Equity in the
Classroom

Educational opportunities are inequitably distributed, and this leads to discrepancies in academic and career outcomes. I-LABS is working to understand how the science of learning translates to the classroom environment, from preschoolers to adolescents, with a particular focus on how to make all children feel welcome, valued, and empowered in their educational settings.

At a Glance

Infographic: ABC's of Play
https://bit.ly/3hOJ64h

Infographic: STEM for All!
https://bit.ly/34hJW5l

Clip: Growing and Diversifying the Pipeline
https://bit.ly/2F98R1b

Dig Deeper

Video: The Social Classroom
https://bit.ly/2ZpdE5j

Video: Social Learners
https://bit.ly/2FhLNwT

Op-Ed: Changing education & society to increase women in STEM (from *Scientific American*)
https://bit.ly/3zytDAi

Article: Want More Girls to be Interested in Computer Science?
https://bit.ly/3jFqYdl

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Read Our Research

Children's language development is improved when classroom instruction uses an interactive, social, and play-based curriculum. These methods led to gains in preschool children's home language as well as in their second language.
Ramirez & Kuhl, 2020, Mind Brain Education
https://bit.ly/3hOaj7a

Many factors contribute to children's academic skills, interest, and motivation. In this study, maternal math anxiety contributed to elementary-aged children's beliefs about their own math competence. Closer connections between school and family may lead to more equitable outcomes for all children.
del Rio, Susperreguy, Strasser, Cvencek, Iturra, Gallardo & Meltzoff, 2020, Early. Education & Dev.
https://bit.ly/32PAKD9

Inequities in STEM (Science, Technology, Engineering, Math) fields are well-documented, especially with regard to the representation of females. This review paper offers practical suggestions to increase equity.
Master & Meltzoff, 2016, Prospects - UNESCO.
https://bit.ly/2Fq3Xwa

Computer science has one of the largest gender disparities in STEM fields. When computer science classrooms remove stereotypical content, such as science fiction posters, and replace it with non-stereotypical items, girls report a greater sense of belonging and are more likely to enroll in the course. Simple changes encourage children's interest in learning.
Master, Cheryan & Meltzoff, 2016, J. Educational Psychol.
https://bit.ly/3lHUC3u

School environments influence student achievement. Students of color and students from low income households often attend schools with inadequate structural design elements, like low lighting and poor air quality, which affect learning.
Cheryan, Ziegler, Plaut & Meltzoff, 2014, Policy Insights from Behavioral & Brain Sci.
https://bit.ly/3jChQ9C

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