

# Cognitive Development Labs at Wesleyan University



*Dr. Hilary Barth with Yellow Lab members*



*Dr. Anna Shusterman with Blue Lab members*

The Cognitive Development Labs at Wesleyan University explore how children think about numbers, space, language, and people. Through short, fun games, the Labs investigate how kids learn about the world around them.

The Labs include the Yellow Lab, directed by Dr. Hilary Barth, and the Blue Lab, directed by Dr. Anna Shusterman. Both of the Cognitive Development Labs are located in Judd Hall on Wesleyan University's campus.

Our research would not be possible without the support of local schools, daycares, and families. If you have a child under age 10 and are interested in having your child participate in one of our studies, please contact us at 860-685-4887 or sign up online at [www.wesleyan.edu/cdl](http://www.wesleyan.edu/cdl).

# Lab Members, 2014-2015

## **Directors**

Hilary Barth (Yellow Lab)  
Anna Shusterman (Blue Lab)

## **Post-Doctoral Fellow**

Pierina Cheung (Blue Lab)

## **Joint Lab Coordinator**

Ilona Bass

## **Research Assistants**

### **Yellow Lab**

Aime Arroyo-Ramirez, Zoe Feingold,  
Ellen Lesser, Louise Lyu, Elissa Palmer,  
Sheri Reichelson, Jillian Roberts, Anna  
Schwab, Sarah Seo, Sonia Zavala

### **Blue Lab**

Abby Archibald, Davey Bales, Steph  
Blumenstock, Anthony Gutierrez, Elaine  
Maskus, John Pacheco, Tawni Stoop,  
Julia Vermeulen

## 2014-2015 News

Our labs received a stipend from the National Living Laboratory Initiative to support our ongoing partnership with the Connecticut Science Center in Hartford. Visitors have been able to participate in our studies during their visit and learn more about child development research. If you're at the Science Center on a Saturday morning, be sure to look for our station on the fifth floor!

We have also done a lot of preschool outreach this year. Members of our labs attended Cromwell's Family Math Night, in which children entering kindergarten came with their families to play math games with our research assistants. Additionally, Dr. Shusterman continued Kindergarten Kickstart this year, a research-based five-week summer preschool program aimed at helping students at risk for educational disadvantage develop literacy, numeracy, creativity, and social and behavioral skills that will ease their transition into kindergarten.

We had the opportunity to present our research at the 2015 Meeting of the Society for Research in Child Development in Philadelphia, PA; the inaugural International Convention of Psychological Science 2015 in Amsterdam, the Netherlands; the 2015 National Council of Teachers of Mathematics Research Conference in Boston, MA; and the 2015 National Living Lab East Coast Cohort Meeting in Boston, MA.

We are excited to share with you what we were working on this year!



Thank you to everyone who makes our research possible!

Apple Tree Children's Center  
BASREP, Inc.  
Bethany Lutheran Preschool  
Bielefield Elementary School  
Brewster Elementary School  
Burr Elementary School  
Carriage House Day Care  
Center Congregational Preschool  
Chester Child Center  
Christ Lutheran Nursery School  
Connecticut Science Center  
Discovery Center Preschool  
Haddam Elementary School  
Head Start  
HK Recreation Department  
Island Avenue Elementary School  
Jeffrey Elementary School  
Kid City Children's Museum  
Killingworth Elementary School

Korn Elementary School  
Lawrence Elementary School  
Lyman Elementary School  
Madison Beach & Rec Department  
Macdonough Elementary School  
Middletown Cooperative Preschool  
Miss Joanne's Learning Center  
Moody Elementary School  
My School  
Neighborhood Preschool  
Northwest Children's Center  
Roberge Childcare Center  
Russell Library  
Ryerson Elementary School  
SERC Family Resource Center  
Snow Preschool and Elementary School  
Southfield Children's Center  
Town & Country Early Learning Center  
Wallingford Community Day Care Center

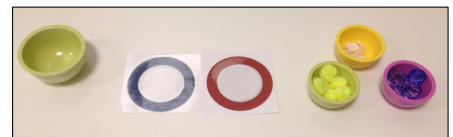
...and to all the children and families who participated!



# Yellow Lab Studies

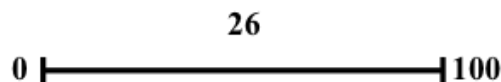
## Thinking about fairness when part of a group

How does being part of a group impact children's ideas about fairness? In this game, children were given a t-shirt and saw a photo of two people: One of these people wore a shirt that matched the child's, and the other did not. Children then distributed objects (like candy or craft supplies) to the two people in the photo. We've found that children give more objects to the person who is wearing the same color t-shirt as they are when forced to choose between two predetermined options, but when allowed to distribute the objects freely they are more likely to give the same number to both people. Additionally, older children are better than younger children at realizing that giving both recipients nothing is one way of maintaining equality.



## Thinking about numbers & space

Number lines can tell us a lot about what children do and do not understand about numbers. We have found that using number lines to estimate the sizes of numbers requires a collection of skills that are important for a good understanding of math. With increasing age, children also gain the ability to use the midpoint of number lines as a reference point, a strategy that leads to greater estimation accuracy. In a related project, we are also investigating preschoolers' and grade-schoolers' ability to estimate non-numerical magnitudes (like the location of a dot on a line). We find that although children's numerical and spatial thinking does change as they get older, children and adults do not think about numbers or space in fundamentally different ways. We are currently extending this research to look at how children and adults think about time intervals.



## Making decisions

The way options are presented affects how adults make choices; is the same true with children? We displayed four distinct items (either foam beads or candy) in three bowls: Two bowls each held one item, and the third bowl contained two different items. We then asked children to choose five items from the bowls. If preferences determine choices, children should on average choose each item with equal frequency, regardless of bowl placement; if the bowls influence choices, children should choose more items from the bowls with only one item in them. So far, we've observed the latter outcome, suggesting that children's choices are influenced by the way in which options are presented.

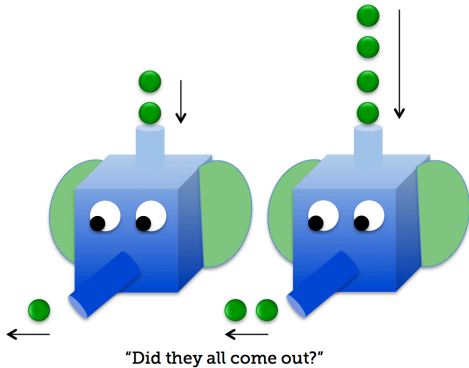




# Blue Lab Studies

## Toddlers' knowledge of "two"

What do very young children (age 18-24 months) understand about the quantity 2? In the "Mr. Elephant" game, children see Mr. Elephant eat 1, 2, or 4 "peanuts," which he then sneezes out of his trunk. But sometimes, some of the peanuts get stuck in his trunk. We think children will notice if Mr. Elephant eats 2 peanuts and only sneezes out 1, but may not notice if he eats 4 and sneezes out 2. Our



hypothesis comes from the singular/plural grammatical distinction in English: Children may be able to distinguish "1" from "more than 1," but lump all "more than 1" quantities into one mental category. In certain dialects of Slovenian, there is a grammatical dual marker that refers specifically to 2 objects. Perhaps children who grow up learning these languages will be better at differentiating 2 and 4 than English speaking children. Our ongoing collaboration with researchers in Slovenia will help to answer this question.

## Newly learned number words in novel contexts

Our lab is particularly interested in what preschoolers understand about numbers and number words while they're figuring out how counting works (around age 4-5). In one study, we are assessing whether linguistic input influences how children generalize new number words. For example, some children who know the word "two" might practice learning the number "three" by hearing "This picture has three rabbits," while children in other conditions hear "This picture has three animals," or "This picture has three." We find that children are better at generalizing newly learned number words when trained using more general terms as opposed to specific nouns.

## Number input in children's picture books

How does picture book reading contribute to children's number knowledge, and how do parents read number-related content with their children? We had parent-child dyads read two picture books, one with number content and one without. Half of these families were told that we were investigating how parents read picture books with their children, while the other half were told that we were looking at how parents convey number content in picture books to their children. We find that using books with explicit number content prompts parents to talk about math with their children, but suggesting that they could focus on number while they read does not make a difference.



## Friendly touch and compliance

A friendly touch on the shoulder can increase compliance in adults; can the same be said for children? Compliance and self-control are both important skills to learn in early development, and are highly correlated with later success in life. We're administering a classic delay-of-gratification task in which children have the option of eating one marshmallow now or two in fifteen minutes. Some children will be given a friendly touch on the back during the directions, and some won't. We're looking for differences in how long these two groups of children are willing to wait for the second marshmallow.

# Interested in participating?

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