Dear Parents,
As we begin a new academic year, we’d like to take this opportunity to share with you some of the things we have been working on at the Child Development Labs at UVa, and to thank you for your continuing support.

On the following pages, you can read about a few of this year’s projects—from when children begin to forgive to whether children imitate aggressive media content. Your child may have participated in one or more of these studies. Some of our research this year has been featured in the popular press, including UVAToday and WVTF Public Radio! Visit childdevelopmentlabs.org to read the articles and to find links to our scientific publications.

As many of you know, the Child Development Labs is an umbrella group that includes four separate labs: the Early Development Lab, the Jaswal Lab (formerly the Child Language & Learning Lab), the Early Social Development Lab, and the Babylab. Each lab is supervised by a different faculty member, but we regularly collaborate with each other. If your family has come to Gilmer Hall this year, you may have participated in multiple studies being conducted by different labs during your visit.

You can keep up to date on all things CDL-related by following us on Facebook. If you know of other families who might be interested in participating in our studies, please pass our information on to them! We currently have studies for children 0 to 8 years of age, and we are always looking for additional families to join our efforts to better understand child development!

Finally, we would like to announce that the Jaswal Lab (formerly the Child Language & Learning Lab) is in the midst of a transition to work on questions related to autism and communication. The lab will continue to conduct studies involving social cognition in typically developing children, but these projects now represent a secondary area of interest. To learn more about this new line of work, visit their website: www.jaswallab.org.

Once again, many thanks! We look forward to seeing you and your family again soon.

Vikram Jaswal  
Jaswal Lab  
Angeline Lillard  
Early Development Lab

Toby Grossmann  
Early Social Development Lab  

Amrisha Vaish  
Early Social Development Lab

Visit Us at the Museum!

The Child Development Labs partner with the Virginia Discovery Museum in Charlottesville and the Science Museum of Virginia in Richmond to share child development research with the public. Together, we have made exciting discoveries. Thank you to these museums for their continued support!
About People

The Early Development Lab welcomes new graduate student **Ian Becker** and post-doctoral scholar **Dermina Vasc** to the Child Development Labs! Ian is interested in understanding how educational contexts shape motivation, and in turn shape learning. Dermina is interested in children’s gesture and pretend play, as well as children’s learning.

Graduate student **Shaina Rowell** of the Jaswal Lab recently defended her dissertation. She is doing great things and will be missed! This summer she began her new position as an Education Specialist in Psychological and Brain Sciences at Washington University in St. Louis. She will collaborate with faculty to increase student learning and engagement and evaluate the impact of course changes.

Popular Press

- “**Study finds one more element needed to make educational apps most effective**,” (December 19, 2016) UVAToday.
- “**When do children show morality?**” (November 17, 2016) UVAToday.
- “**Science Vs. Reality**” (November 7, 2016) UVAToday.
- “**How creative learning could benefit Southeast Asia’s children**,” (October 3, 2016) Southeast Asia Globe.
- “**Parents: Why our second-grader is not going back to school**,” (October 1, 2016) The Washington Post.

Recent Publications

foundations of learning from testimony. 


Visit the Child Development Laboratories’ website to download our publications, see or listen to news coverage of our research, and view previous newsletters: [childdevelopmentlabs.org](http://childdevelopmentlabs.org)

What’s going on at the Early Development Lab

Do children prefer to pretend?

Pretend play is a common childhood pastime. But, do children themselves prefer pretend play to the real activities the play replicates? For example, would children rather use a toy kitchen and pretend to cut plastic vegetables, or would they rather use a knife and really cut vegetables? Graduate student Jessica Taggart
and lab coordinator MJ Heise found that, perhaps surprisingly, children overwhelmingly preferred to engage in real activities! Children find real activities to be functional, useful, and provide novel experiences. When they chose to pretend, it was often because they were afraid, unable, or not allowed to do the real thing. Distinguished Majors student, Julia Rauen, took this research a step further by exploring children’s preferences for pretend and real professions and how gender might play a role in these preferences. We will be ready to share these findings soon. We are now exploring parents’ perceptions of their children’s interest in pretend play, and whether children’s behavior reflects their stated desire to engage in real activities. Stay tuned!

Can pretend play reduce stress?
Preschool children spend much of their days engaging in pretend play, but research regarding the unique role of pretend play in development is lacking. A study from 1981 found that pretending helped children regulate their emotions after watching a stressful movie about Lassie the dog; however, other research has shown conflicting results. A Distinguished Majors student, Sky Cardwell, and lab coordinator MJ Heise have examined whether pretend play is more effective at helping children regulate their emotions following a stressful video compared to doing a puzzle. Early results suggest that pretend is no more effective than other activities in helping children regulate their emotions.

Does prosocial media make children more prosocial themselves?
One way to learn about the social world is through fictional media, such as books and television shows. Graduate students Jessica Taggart and Sierra Eisen, along with Distinguished Majors student Caroline Chamberlain, are investigating whether media that models kind behaviors can actually encourage preschoolers to act kindly. For example, in The Berenstain Bears Lend a Helping Hand, two bear cubs repeatedly engage in helpful behaviors such as fetching their neighbor’s cat out of a tree and cleaning out an elderly neighbor’s attic. Three- to 6-year-old children either watch the television episode, read an audiobook version of the episode, or play with blocks without any media exposure. Then children’s prosocial behavior, empathy, and emotion understanding are assessed. This study is ongoing, and we look forward to learning more in the months to come! We hope that this study will provide valuable information regarding which types of media are most effective in promoting prosocial behavior.

Does social interaction improve learning from apps?
What factors impact children’s learning from educational apps? In a previous study, graduate
student Sierra Eisen presented 5-year-olds with either a physical puzzle of Australia and a lesson about its states or a touchscreen app about Australia’s states. Children who used the puzzle learned more of Australia’s state names than children who used the app. In a follow-up study, we examined whether this was due to the amount of social interaction that each material provided. When an experimenter taught children about Australia’s states using the app instead of letting children use the app alone, their learning greatly improved. This study shows that when children use apps along with an adult, their ability to learn from them may increase.

Do children imitate aggressive behaviors from media?
Over 50 years ago, psychologist Albert Bandura conducted a study that later became one of the most famous psychological studies. Children saw a movie with an adult acting aggressively towards an inflated, clown-like doll (the Bobo Doll). He observed children’s behavior after they watched that movie and found that the majority of children closely imitated the aggressive behaviors of the model. Over the last few years, studies in our lab have shown that children today almost never imitate the aggression displayed by an adult in a movie. In a recent study, we looked at whether children would imitate more if, instead of the clown, the object of aggression was a regular punching bag, which may be considered acceptable to aggress upon. We found that in this case, children were indeed more likely to imitate the aggression displayed in the movie. However, we found interesting gender differences: boys were much more likely to imitate than girls (58% vs. 8%).

What math symbols help most?
In many preschools, children learn to count using a variety of different items, such as plastic farm animals and crayons. Lab coordinator MJ Heise is interested in how this technique differs from math learning in Montessori. In Montessori, children use a specific set of plain materials to teach children how to count, add, subtract, and multiply. These materials include plain yellow beads and red counters. In this study, children solve two sets of math problems—one with Montessori-like materials and one with conventional materials. We are interested in whether it is easier for children to solve math problems using a particular type of material.

Whose perspective matters more?
Do stories that model positive, prosocial behaviors influence children’s actions, and if so, how? Graduate student Jessica Taggart is interested in the role of perspective taking on prosocial behavior. Prosocial stories can be told from many perspectives, including the character who performs a prosocial action (e.g., the character who shares - the “giver”), or the...
recipient of a prosocial action (e.g., the character who is shared with - the “receiver”). Does the perspective from which the story is told influence behavior? Six- and 8-year-olds were read a story about two children: One child with a lunch (i.e., the giver) who shares that lunch with another child who forgot his own (i.e., the receiver). Children heard this story from either the giver or receiver’s perspective, and then they completed assessments of prosocial behavior and empathy. We just finished this study and look forward to determining the ways in which perspective taking might influence the way children behave.

**What goes on in another’s mind?**

Understanding that another person has a mind and beliefs of their own is an important part of our social interactions. This understanding—a “theory of mind”—is believed to only develop by the time a child is 4. However, past research indicates a positive link between how much a child engages in pretend play and how quickly they achieve a theory of mind. Therefore, graduate student collaborator Helet Botha is investigating whether 3-year-olds fare better on a theory of mind task when it is part of a pretend play game. In the study, children are introduced to a toy character, Fussy Monkey. They see Fussy Monkey hide a banana before leaving the room. The experimenter then switches the banana to a different location.

In the regular version of the task, children are asked where Fussy Monkey would look for its banana upon its return: in the first or in the second location? In the pretend version of the task, the experimenter encourages children to pretend that they are Fussy Monkey before posing the question. Will children be better able to answer the theory of mind question after they pretend to be Fussy Monkey? We look forward to learning more in the months to come!

**Moral ambiguity in children’s stories**

Children’s fiction frequently depicts moral behavior, including characters who are sometimes “good” and sometimes “bad.” How do children think about these morally ambiguous characters? Graduate student Sierra Eisen read stories that each contained a moral, an immoral, and a morally ambiguous character to 4-, 6-, and 8-year-old children. Six- and 8-year-olds were more likely than 4-year-olds to strongly prefer the moral character over the ambiguous and immoral characters and to say the moral character was “best” and “nicest.” Six- and 8-year-olds also gave more stickers to the moral character than the ambiguous and immoral characters; 4-year-olds rewarded all characters equally. To learn more about how children think about these morally ambiguous characters, a second study is varying the number of times an ambiguous character does nice and mean things to see how children’s responses change. Will 4-year-olds treat a character who is usually nice the same as a character who is always nice? Stay tuned!
Do classrooms influence learning?
Over the last two years, the Early Development Lab has followed children attending a local Montessori school. Last summer, this school switched from having two Montessori-trained teachers in each classroom to having one trained teacher and one aide in each class. We are interested in how this change in classroom model affects learning. For example, children may do better with two teachers since there are more instructors available to give lessons. However, children may do better under one teacher and one aide because the responsibility of each teacher is more clear. We hope that this study will shed light on how the Montessori method is most successful and inform Montessori school models.

What’s going on at the Jaswal Lab

That’s not fair!
Children think everyone should be given the same number of resources (e.g., toys, treats). But are unequal outcomes ever okay? In her dissertation research, graduate student Marissa Drell showed 6-year-olds, 8-year-olds, and undergraduates a series of cartoons involving two characters and four pieces of candy. One character expressed a desire for just one piece and took one, and the other character took the remaining three. Participants then decided whether what happened was “okay” or “not okay.” Most undergraduates said this type of inequality was “okay,” but most 6-year-olds and half the 8-year-olds said it was “not okay.”

In follow-up work, Marissa wondered whether there are any conditions under which 6-year-olds would say unequal outcomes are okay. In a new condition, the character who took one candy generously gave the remaining three candies to the second character. Surprisingly, most 6-year-olds continued to indicate that this inequality was “not okay!” Young children have such a strong aversion to unequal outcomes that they have difficulty considering when other factors, including desire, choice, and generosity justify a deviation from the norm of equality. Only with age do children take these factors into account when making fairness evaluations.

Money changes minds
Previous work in the Jaswal Lab has shown that children are willing to give up desired resources, such as shiny stickers, for the sake of group loyalty. But what happens to their concern for group members when money enters the picture? Graduate student collaborator Tiffany Hwang investigated how handling money influences children’s material and social goals. In this study, 6-year-olds joined one of two teams and received a nickel from an experimenter. They could exchange their nickel for a boring sticker from a teammate or an exciting sticker from an
opponent. More interested in getting the most for their money, children preferred to strike a deal with their opponent to net the exciting sticker. Prioritizing material goals, they gave up the opportunity to strengthen social ties with their teammate. This finding suggests that introducing money into the mix can instill a materialistic state of mind in children as young as 6 years old.

**Remembering being good**

Have you ever noticed that it's easier to remember your own good deeds and harder to remember your bad deeds? For her dissertation research, graduate student Shaina Rowell investigated whether children also have this positivity bias in the way they remember. In the study, 8- to 10-year-olds heard mean and nice verbs, such as “hit” and “share.” For half of these verbs, children were asked whether they do that action; for example, they were asked, “Do you share?” For the other half of the verbs, children were asked whether another child does that action. By answering these questions, children made a temporary link between each verb and themselves or the other child. Afterwards, children did a memory task where they heard all the verbs again along with several new verbs, and they tried to identify which verbs they heard before and which were the new verbs. Children were better at remembering the nice verbs, like “share,” than the mean verbs, like “hit,” when they linked the verbs to themselves. But when they linked the verbs to the other child, they remembered the nice and mean verbs equally well. Remembering more of their own good deeds than their bad deeds could reinforce children's views of themselves as good people, motivating them to keep doing good deeds in the future.

**What’s going on at the Early Social Development Lab**

**When do children begin to forgive?**

As adults, we are more likely to forgive transgressors who show remorse. Yet, we don’t know when children begin to forgive these remorseful transgressors. Postdoctoral research associate, Dr. Janine Oostenbroek, recently investigated the emergence of forgiveness in 4- and 5-year-olds. Children experienced a minor harm (such as a torn picture) caused by two transgressors; one transgressor showed remorse and the other did not. Five-year-olds were more forgiving of the remorseful transgressor; 4-year-olds, on the other hand, were no more forgiving of a remorseful than unremorseful transgressor. However, when the remorseful transgressor explicitly apologized, even 4-year-olds were more forgiving. By age 4, children forgive a remorseful transgressor, but only if those transgressors explicitly apologize. By 5, children forgive a remorseful transgressor even without explicit apologies.

**What do children make of gratitude?**

Gratitude is a positive emotion that we feel when we have benefited from another. But why do grateful individuals display their gratefulness to others? What do gratitude displays convey to our benefactors and to
bystanders? Early Social Development Lab Director Amrisha Vaish examined whether and when children begin to understand the social functions of displaying gratitude. Children viewed videos of two individuals receiving benefits from a giver; one recipient displayed gratitude, whereas the other displayed happiness but not gratitude. We asked children what they thought about the two recipients, as well as who they think the giver prefers. We also asked them to distribute three flowers between the two recipients (to gauge their willingness to cooperate with each). We predict that children will prefer and cooperate more with the grateful recipient and will also think that the giver prefers the grateful recipient. Stay tuned!

Are all rules the same?
Are all rule violations the same (e.g., playing a game wrong versus hurting someone)? Of course not! So how do young children pick up on which rules are more important than others? And at what age? Graduate student N. Meltem Yucel is currently conducting a study with 3- and 4-year-olds to answer this question. In her study, she is using eye-tracking methods to better understand how children physiologically and behaviorally react to rule violations. By looking at changes in children’s pupil size, she is interested in showing whether the violation of certain rules (such as destroying someone’s drawing) is more emotional than others (such as playing a game wrong).

Do children “pay it forward”? “Paying it forward” has been the recent focus of many news stories, but little is known about this behavior in children. Graduate student Stefen Beeler is interested in at what age children engage in this phenomenon. Three- and 4-year-old children played a seemingly difficult game to find a key that unlocks a box full of stickers. Some children had help; they received a note from the previous player about where the key may be hidden. After unlocking the box, children were given the opportunity to share their stickers. Data collection with 3-year-olds is in progress. We found that 4-year-olds who received help not only share more often, but also share more than those who did not receive help. As early as 4, children may pay forward kindness as a form of gratitude for the help previously received. Although gratitude is a complex emotion, this study opens the door for us to investigate how young children may begin to experience and express gratitude. Stay tuned!

Who does more to fix their mistakes? Children (like grown-ups!) sometimes do things that hurt or upset the people they care about. Individuals differ in how they respond to their interpersonal mistakes: some do more to console the person they harmed, and to repair their relationship, than others. Graduate student collaborator Helet Botha is investigating a person’s mindset as one of the factors that may
drive these differences. The belief that personality traits can change over time (a growth mindset) motivates people to approach mistakes as opportunities for learning. On the other hand, the belief that traits cannot change (a fixed mindset) promotes the idea that one cannot recover from one’s failures. We asked 9-year-olds to imagine themselves as the transgressor in a series of stories, and asked them what they would say to the friend that was hurt by their actions. We also asked them some questions to determine their mindset. We predict that the more a child is growth-minded, the more they would try and fix their imagined mistakes.

What’s going on at the Babylab

Is it all in the eyes?
Do children as young as 9 months of age understand social information conveyed by the eyes? Graduate student Caroline Kelsey explored this question using functional Near Infrared Spectroscopy (fNIRS), an infant-friendly neuro-imaging technique similar to EEG. 9-months olds were brought into the lab and fitted with a fun, stylish cap. The sensors in the cap shine light and based on the reflection of that light, we get an indirect measure of brain activity! While sitting on their parents’ lap in front of a screen, infants watched a series of movies of eyes with dilating and constricting pupils. We have learned that the social information gained from eyes may differ based on the race of the other individual. As a next step, some of these infants are being invited back into the lab to see how their brain response at 9 months predicts behavioral preferences at age 1.

Is caregiver presence helpful?
Undergraduate Demitra Chavez and graduate student Cat Thrasher are exploring whether caregiver presence affects children’s gymnastics performance. Child gymnasts will be observed on the balance beam while their parents are watching or not. Participants will then come into the lab, where children will wear an electroencephalography (EEG) cap to read brain responses to emotional stimuli while their parents are either present or absent. This study makes a rare connection between real-world behavior and brain responses in a controlled laboratory setting.