Dear Parents and Families,

Welcome to the annual publication of the Child Learning and Development (CLAD) Lab’s newsletter! This summer, we are celebrating our fifth year of research in the lab, and are excited to share some our recent work with you! This newsletter reports on several of the studies conducted during the past year. I hope you enjoy reading about this work, especially the studies in which you and your children participated.

Thank you for participating in the research being conducted in the lab. Without your support and participation, I would not be able to carry out my research or train the next generation of developmental scientists.

To keep up to date on all things CLAD Lab-related, you can visit our Facebook page at www.facebook.com/cladlab or visit our website at bitly.com/cladlab. I hope to see you all in the lab again soon!

Carolyn Palmquist
Director, Child Learning and Development Lab

Research Updates

Are children sensitive to different types of knowledge?

Knowledge can be separated into two broad categories: episodic knowledge and semantic knowledge. Episodic knowledge is currently relevant information that is specific to a particular situation, like knowing where something is and who put it there. Semantic knowledge is consistently relevant information that can be generalized and applied to multiple contexts, like knowing how something works or what it’s made out of. Over the past three years we have explored how and when children differentiate between individuals with these different kinds of knowledge.

We have used a similar procedure for this entire series of studies. Children are first introduced to two actors. One actor always points to objects inaccurately and the other always points accurately. For some children, actors share episodic knowledge by pointing to the location of objects; for other children, the actors share semantic knowledge by pointing to identify the functions of objects. For example, when a neutral experimenter asks them to point to an object that cuts paper, the accurate actor points to scissors while the inaccurate actor points to a spoon. Next, children see pictures of unfamiliar objects and are asked which of the two actors they would like to ask for help in identifying the names of the objects. We have been interested in whether children would show...
a preference for the previously accurate actor, but only when she has shared semantic, not episodic, information in the past. If so, this would suggest that they value individuals with certain kinds of knowledge over others.

Three summers ago, our lab found that 4-year-olds prefer to learn new information from those who have shared accurate semantic information in the past, but not accurate episodic information, suggesting that they do, in fact, differentiate between individuals with different kinds of knowledge.

This past year, we explored whether individual differences between children make them more likely to demonstrate a preference for individuals with certain kinds of knowledge. We found that children with better theory of mind (the understanding that others have thoughts and desires that are different from your own) were more likely to prefer those who had demonstrated accurate semantic knowledge, but not necessarily those who had demonstrated accurate episodic knowledge. This finding suggests that children not only differentiate between episodic and semantic knowledge, but also that the ability to consider others’ mental states may help them in identifying individuals who have the most useful knowledge to share.

Do children make predictions about others based on appearance?

Over the past few years, our lab has collaborated with the Infant Cognition Lab at the University of Massachusetts Amherst to investigate whether children, like adults, use others’ appearance to make inferences about their traits and how they will behave in the future (e.g. associating a strong jaw line with a dominant personality). Previously, we studied whether children associate competent-looking features or trustworthy-looking features with people who behaved in a knowledgeable way in the past. Interestingly, we discovered that children associate knowledgeable behavior with a trustworthy-looking face but not with a competent-looking face, which we believe is because the ability to identify faces as trustworthy emerges in infancy, whereas the ability to identify competence only emerges in the preschool years.

The results of this previous study indicate that children are capable of associating certain facial features with behaviors and traits, particularly when it comes to trustworthy-looking faces. However, it was still unclear whether children are capable of using appearance to predict how an individual will behave in the future (as adults often do). Our most recent set of studies examines whether children will predict knowledgeable behavior from individuals with trustworthy-looking features or competent-looking features, even before receiving any information about how an individual has behaved in the past.

Similar to our first study, 4- and 5-year-old children were either shown a competent and incompetent puppet pair or a trustworthy and untrustworthy puppet pair. Then, children saw pictures of eight unfamiliar objects, one object per trial, and were asked to predict which puppet in the pair would know the correct name for each object. After making a prediction, the children then heard each puppet provide a different name for the unfamiliar object (e.g. “coodle” and “fimp”) and were asked to choose which puppet told them the correct object name.
We found that children do use appearance to make predictions. The first time children were asked to predict who would tell them the correct name for an object, the children who saw the competent- and incompetent-looking puppets chose the incompetent puppet significantly more than the competent puppet. However, in the trustworthy condition, the children chose the trustworthy puppet significantly more than the untrustworthy puppet. Therefore, children seem to have some expectations about which features indicate who is most likely to be knowledgeable. Interestingly, this preference only occurs on the first trial, or the first time children see the puppet pair. One reason for this could be that children only use others’ facial features as a tool for making predictions when they have no other information about those individuals. Once the children have additional, information about the puppets (e.g., the labels they provide for each unfamiliar object), appearance becomes less important for making inferences. Currently, we are conducting a follow-up study in which children see a new pair of faces on each of the eight trials, rather than the same pair on every trial. If children do only use facial appearance as a cue when they have no other information about an individual, they should show a preference for a particular kind of face with each new pair of faces they see (i.e., on every one of the eight trials).

Do preschoolers have a hostile attribution bias?

For many years, social psychologists have been interested in a phenomenon known as the hostile attribution bias. Both school-aged children and adults who have this bias are more likely to interpret ambiguous situations in negative ways. For example, they are more likely to say that someone who knocked over their drink did so intentionally, rather than accidentally. In other words, they assume that ambiguous acts are driven by hostile intentions or motivations. Whether someone has this bias or not has implications for how they will interact with, and develop trust in, others.

Interestingly, very little work has explored this bias in young children, despite its implications for how preschoolers may come to trust and learn from others. Therefore, last summer our lab began developing a measure of hostile attribution bias for use with preschoolers. We recruited eight pairs of 6-year-olds from our database of volunteers to act in several short videos depicting ambiguous situations like the one mentioned above. Having created these videos, we are now in the process of piloting a task in which we ask preschoolers to interpret the ambiguous situations (e.g., the actor’s intentions, how the interaction made the actors feel, etc.). Once we develop an accurate measure of the hostile attribution bias in preschoolers, we hope to explore whether individual differences in this bias predict children’s willingness to trust and learn from others, particularly those who may have been inaccurate in the past.

The trouble with deception

Preschoolers have a great deal of difficulty interpreting deceptive information as false. That is, instead of identifying false statements as incorrect, they often inappropriately assume that they are true. Over the past year, our lab has been exploring whether certain factors may influence
children’s ability to correctly (or incorrectly) interpret deception. In particular, we asked whether individual differences (like theory of mind and inhibitory control) or the situation in which children hear deception (whether they have knowledge that conflicts with the deceptive statement or not) influence their interpretations of deceptive statements.

In this study, 3- and 4-year-olds played a game during which an experimenter dropped objects through one of two clear, criss-crossing tubes. These tubes ended in opaque cups so children could not see where the dropped objects landed. For some children, the tubes were visible and they could watch the objects as they were dropped through the tubes (i.e., they had knowledge about the event); for other children, a screen blocked the tubes from sight so they could not see the objects as they travelled through the tubes (i.e., they had no knowledge about the event). In both cases, the experimenter dropping the objects provided incorrect information about the objects’ locations. For example, if the object had fallen into the cup on the right of the experimenter, the experimenter said the object was located in the cup on the left. After hearing the incorrect information provided by the experimenter, children were then asked to choose where they thought the object had landed. Children also completed tasks to assess theory of mind and inhibitory control.

Unexpectedly, we found that neither situation (knowledge or no knowledge) nor individual differences (theory of mind and inhibitory control) predicted whether children would be able to correctly interpret deception as false. Instead, we simply found that 4-year-olds were much more likely to understand deception than were 3-year-olds (even on the first trial). To better understand this age difference, we are in the process of designing a follow-up study in which we assess whether children’s own ability to produce deceptive statements predicts their ability to interpret others’ deception correctly. We hope this new direction will shed light on the factors that help children come to better understand deception.

Verbal instructions help 3-year-olds develop problem-solving strategies

In 1995, Brue Hood began studying how young children and toddlers understand gravity. To do so, he created a paradigm he called the “chimney task,” and he presented children with an apparatus (featured above) that included several criss-crossing tubes that ended in different cups. He hypothesized that if children really understood how gravity worked within the constraints of these tubes, they would be able to correctly predict how objects would travel through them and where they would land. Interestingly, he found that children repeatedly made incorrect predictions, stating that the object would “fall straight down” and land in the cup directly below, rather than in the cup that was at the end of the tube into which the object was dropped. Hood
called this a “gravity bias.” He argued that children’s expectations that objects always fall straight down is so strong that it disrupts their ability to make correct predictions about how objects should travel through the tubes.

Since Hood’s discovery, researchers have been exploring ways to help very young children overcome their innate “gravity bias.” For example, previous studies demonstrated that children benefit from having direct contact with the tubes and make more correct predictions about where objects will land than children who are not allowed to touch the tubes.

In a recent study, we found that another way to help very young children overcome their bias is to give them verbal instructions to “imagine” the ball traveling down the tube before predicting where it would land. This visualization instruction alone improves children’s performance, and it is even more helpful than the experimenter providing an explicit rule about where the object will land, e.g. “The ball will fall on the other side.”

Although our previous work successfully identified a way to improve children’s performance on the chimney task, allowing them to overcome their gravity bias and make more correct predictions about how an object will travel through the intertwined tubes, it is important to note that in this study children were given the “imagine” instructions before every prediction they made. They were reminded of how to solve the problem each time they encountered it. We began to wonder whether our intervention had actually taught toddlers a new strategy by which they could solve the problem, or whether children were simply re-applying the rule every time we reminded them of it.

Our current study is designed to tease apart whether or not toddlers have truly gained an “imagination strategy.” In this study, our 2- and 3-year-old participants are given either the “imagine” prompt or control prompt (where they receive no extra information about how to solve the problem). But now, we include two more sets of trials in order to test whether, after a short break, children can remember to apply the imagine instructions on their own accord and whether they can generalize this strategy to other spatial problems.

So far, our preliminary results suggest that older children are able to make better use of the imagine instructions than their younger peers, making more correct predictions in the later sets of trials. Therefore, age-related developments may make children more likely to develop an “imagine strategy” to solve this difficult spatial problem.

We are excited to continue collecting data this summer and look forward to sharing our final results with you next year!

Past and Future Events

The Child Learning and Development Lab enjoys ongoing outreach to area communities in order to connect with families with children ages birth to 6. This year we grew our collaborations with many area preschool partners including Cushman-Scott, Crocker Farm, Amherst High School pre-k, Nonotuck Community School, Sunnyside, Woodside, Williston Children’s Center, UMass Center for Early Education and Care, Pelham Elementary, and Fort Hill School. You may have also seen our purple t-shirts at the Look Park Summer Concert Series, UMASS Preschool Fair, Hadley Asparagus Festival and the Holyoke Children’s Museum.

We are always looking for new ways to connect with schools and families who are interested in supporting science and research. Please feel free to contact us with questions and ideas for new partnerships: cladlab@amherst.edu
Additionally, if you know of any fun community events that you and your family will be attending, be sure to let us know about them so we can attend them as well. You can email us at cladlab@amherst.edu with information. We are always looking for fun new events to go to!

Register with us

If you are interested in learning more about the lab, you can contact us by calling 413-542-5670 or emailing cladlab@amherst.edu. If you are interested in participating in future research, visit our website at www.bitly.com/cladlab to register your family with our lab. If you register your family, we will contact you when there is a study that your child is of the right age to participate in. During the summer, we are open Monday through Friday, from 9am to 5 pm, and participation in a study usually takes no more than a 30-minute visit to our lab.

Recent Publications


Popular Press Coverage

- They Study Childhood: https://www.amherst.edu/news/news_releases/2018/6-18/they-study-childhood