

Childhood Cognition and Learning Lab

Annual Newsletter

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Dear Parents,

It's been a busy year at the CCLL— and it's all thanks to you! We would not be able to conduct our research and make the discoveries that we are making without the help of you and your child! The goal of this newsletter is to update you on our current

projects at the CCLL. We hope you enjoy reading through our most recent installment of the Childhood Cognition and Learning Laboratory's Annual Newsletter!

With our most sincere wishes for a happy 2007,

—The CCLL Staff

What We Do and Who We Are

We're interested in young children's thinking, and how it changes and develops during the preschool, and early school, years. We are currently studying children's perspective-taking, planning and future thinking skills.

Our lab was formed in the Winter of 2004 and since that time we've been asking some very interesting questions about children's development. For instance:

- 1) What do young children know and understand about the future? For example, can young children think hypothetically about a future situation (e.g., going to the park) and how this situation may cause them to feel?
- 2) How do perspective-taking skills change across the preschool years? For instance, how adept are young children at understanding that although they may feel a certain way (e.g., tired, thirsty) or feel a certain desire or emotion (e.g., happiness), others may have different internal states, desires and emotions?
- 3) How do children make sense of their own, and others', actions in contexts in which the cause is not always clear? For instance, do young children understand that mistaken beliefs can lie at the root of action?

We are currently running many different studies to help us answer these questions, and are always happy to have parents of preschoolers and early school-aged children bring their child into our lab to participate in these studies. All of our studies involve a series of engaging and "child-friendly" games. By watching how children play these games, we learn a great deal about their thinking.

Recently-completed and ongoing lab studies

"Candles in the crayon box!"

In this recently-completed study, we examined various aspects of young children's understanding of "false beliefs." Younger preschoolers tend to have difficulty with this concept. For instance, if you show a 3-year-old a crayon box, she will have no difficulty telling you that she thinks there are crayons inside. However, if you then show her that the box contains candles, and then ask her what she first thought was inside (before it was opened), she will likely state "candles!" In our study exploring this intriguing phenomenon, children were given tasks similar to the crayon box one described above. Children were also given a variation on this task: they were shown a character (e.g., a young girl on a diving board) and were asked to state their belief about what she would do next (most children thought she would jump in the water). The character then behaved differently from what the child had expected. We then asked children to re-state their



initial belief about the character's intention (i.e., "What did you think she was going to do?"). The main goal of this study was to explore how different contexts (e.g., the prediction of the contents of a box vs. the prediction of someone's action) may influence children's ability to acknowledge prior false beliefs.

Results. We found that young children were better able to acknowledge that they had held a false belief about someone's *action* as opposed to a false belief about the *contents* of the box. We speculate that this may be because children more often witness people changing their minds, than objects changing their nature. Dr. Atance will be presenting the results of this study at the Biennial Meeting for the Society for Research in Child Development in Boston in April of 2007.

"Anticipating Action Sequences"

This study focuses on the development of anticipation skills in preschoolers. To assess these skills, we ask children to plan how they can achieve a specified goal. For instance, children are asked which piece of an ant costume (the head or the body) needs to be put on first to dress up like an ant. Or, children are asked to plan what size ball they need to roll down a series of tubes to knock down a domino at the bottom.

Results. In a first experiment that we've just completed, children showed significant improvement with age on these planning tasks. Whereas 3-year-olds were often unable to correctly anticipate the sequence needed to achieve the goal, the 5-year-olds were correct almost 100% of the time. This is likely because older children's

problem-solving skills are more developed and also because they have had more extensive experience with the types of contexts that were presented to them (e.g., putting things on, rolling things, etc.). However, one possibility that we will directly test in Experiment 2 is whether inhibitory control skills may contribute to children's performance on these tasks. Thus, children will be given the same series of planning tasks that were used in Experiment 1, along with a series of inhibitory control tasks. These tasks require children to inhibit responding in an automatic (or learned) way without first giving a solution some conscious thought.



“Future-oriented Skills”

The goal of this recently-completed study was to learn more about the development of future-oriented thinking in preschoolers (3-5 year olds). Children were given a series of tasks that assessed such future-oriented skills as planning (e.g., children are asked to think ahead and plan a course of action), delay of gratification (e.g., children had to try and delay receiving a smaller reward *now* in favour of a larger reward *later*), and talking about oneself in the future (e.g., “What are you going to do tomorrow?”).

Results. Results indicated that all of the various tasks were showing substantial improvement during the 3 to 5 year age range. Yet, these

different skills (e.g., planning, delay of gratification, etc.) were not related to one another after we took into account children’s age and language abilities. This suggests to us that there exist distinct components of future thinking. For instance, a child who is quite skilled at *talking* about the future (e.g., what they’re going to do tomorrow) may not necessarily be equally skilled at *planning* for the future. Dr Atance, along with Laura Jackson, are currently writing this study up for publication. They are also hoping to present this research at the Annual Jean Piaget Conference in Amsterdam, the Netherlands, in June of 2007.



“Explaining the Actions of Self and Other”

In this study that has also recently been completed, children were shown various situations that changed unexpectedly. For instance, children saw a stuffed dog on the table and were told that there was a bone that they could get to feed the dog. In the child’s absence, the dog was removed and a mouse appeared. Children were then asked why they went to retrieve the bone. We were interested in how children explain their actions in this type of situation. For instance, would they remember that the dog was the reason they went to get the bone? We were also interested in how children would explain their action in a context in which they held an incorrect belief about the world. Thus, children were shown a crayon box and told to retrieve a piece of paper to draw on with the crayons. After retrieving the

paper, children were shown that the box contained candles. Children were then asked why they went to retrieve the paper. We also ran an experiment in which children were asked to explain another individual’s action in these same situations.

Results. We found that 4-year-olds outperformed 3-year-olds on these tasks (both in explaining the actions of self and the actions of other). However, overall, both 3- and 4-year-olds had more difficulty explaining an action that was based on an *incorrect* state of mind (e.g., the belief that the crayon box contained crayons) rather than a previous state of the world that had changed (e.g., dog replaced by a mouse). This research has been submitted for publication to the journal *Developmental Psychology*.



"Autism Study"

Our laboratory has just begun a study examining the future thinking skills in children with Autism Spectrum Disorders. We are interested in determining whether these children experience difficulties with future thinking skills and, particularly, tasks which require them to project

themselves into the future. Because some children with autism have difficulties with imagination and pretend play, we are curious about whether thinking about the future may pose a challenge for them. We will provide you with more information about what we find in our next Newsletter!



Pictured here is Laura Jackson, one of our friendly researchers.

"Parental Reactions Study"

In this study, parents actually get to participate with their children; this is because we are interested in observing how parents and children discuss events that are mildly surprising or unexpected. Because we want parents'

interactions with their child to be as natural as possible, we prefer not to give you too much information about this particular study! However, we promise to give you an update in our next Newsletter!



Publications and Presentations

We've had a busy year presenting our work at various research conferences and publishing our results in psychology journals. Here is a sampling of some of our conference presentations and journal articles:

Atance, C. M., & Meltzoff, A. N. (2006). Preschoolers' current desires warp their choices for the future. *Psychological Science*, 17, 583-587.

Atance, C. M. (2006). *Preschoolers' mental time travel into the future*. Paper presented at an Invited Symposium at the annual meeting of the European Society for Philosophy and Psychology, Belfast, Ireland.

Bernstein, D. M., Atance, C. M., Meltzoff, A. N., & Loftus, G. R. (in press). Hindsight bias and developing theories of mind. *Child Development*.

We look forward to seeing you again soon! And, if you've not yet come in for a study, we look forward to meeting you!

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