Welcome to our Final 2008 ECDU Newsletter!

Well, what an exciting year 2008 has been!

Once again, to all those who participated in our studies this year, we would like to sincerely thank you for your contribution to our unit. You have not only increased our knowledge about children's development, but also assisted our students in obtaining their degrees at both the postgraduate and undergraduate levels. The results of our 2008 studies have been included in this newsletter.

The team at the ECDU are all anticipating an equally exciting and busy 2009 and look forward to catching up with all of you and your gorgeous children again. Until then, wishing you and your family a happy, healthy and safe festive season.

Can Babies Recognise Incorrect Counting?

Counting objects is something we do on a daily basis. We all do it the same way because there are cultural rules for counting: you count each object once and only once, you use the same terms "one-two-three…etc" each time, and the last term you say is the value of the set you've counted.

Most children begin to acquire these rules of counting around the age of 3 – 4. Before they can count themselves, infants witness many instances of counting, for instance when performed by parents and older siblings and when seen on television.

One of our recent studies aimed to discover what, if anything, infants take from these witnessed counting events. In particular, we wanted to find out if young infants, who were still many months or even years away from counting on their own, could recognize the difference between correct counting and incorrect counting. To do this, we showed babies videos of two different counting events: (a) a *correct* counting event in which they saw a hand touch six little fish in order while a voice counted each of them "one-two-three-four-five-six" and (b) an *incorrect* counting event in which the hand touched just two of the six fish, moving back and forth between them even while the voice counted "one-two-three-four-five-six".

From the adult's perspective, the incorrect count is a clear mistake because the same two fish are counted over and over again. Our study allowed us to test whether babies would also think it was a mistake.

We found that by 18 months of age, babies looked much longer at the correct counting event than at the incorrect counting event. Their looking patterns indicated that they lost interest in the incorrect counting event and so looked away, but they maintained interest in the correct counting event and watched it to the end.

We also ran a control condition in which the count words "one-two-three-four-five-six" were replaced by neutral beeping sounds. In this condition, infants looked equally long at both correct and incorrect counting events. So it wasn't something about the visual display itself that made infants look longer at the correct count video—it was the fact that it was a counting event defined by the words "one-two-three-four-five-six", that made them look longer when all six fish were touched.

So what new information does this give us about infant development? It means that long before they know how to count themselves, infants are absorbing fairly abstract information about the counting routine. It appears that at least one of the fundamental rules of counting - that each object is counted once and only once - is already understood (at some level) by 18 months of age.

## The Effects of Mothers' Conversation Styles on their Children's Foresighted Thinking

In this study, we used a picture book task to test the ability of children aged 39-45 months to correctly identify items (shown on picture cards) needed to satisfy future needs for various situations (e.g., identifying the need to take a jacket if planning to go walking in the snow). In the week prior to testing, half the children participated in an activity requiring them to discuss specific aspects of time, for ten minutes per day, with their mothers whilst looking at family photographs. Interestingly, when tested, these children were more likely to identify correct items (indicating a more developed ability to engage in foresighted thinking), compared to children who had not participated in the activity.

In addition, based on an analysis of five minutes of natural conversation between mothers and their children, we found that the children of mothers who elaborated more during conversation (e.g., those who encouraged greater conversational participation from their children), and the children of mothers who made more time-focused references, also performed better on the picture book task. It seems that the way that mothers talk with their children influences the age at which children are reliably able to show foresighted thinking.

Acting with the Future in Mind:

The Development of Foresight in Early Childhood

As adults, we often think about the past and plan for future situations. The process that allows us to relive past events, or to pre-live future events, has been called 'mental time travel'. Little is known about when children start to mentally travel in time. We explored this in a recent study, which tested children's abilities to remember a past problem, and to act on it to secure a future solution.
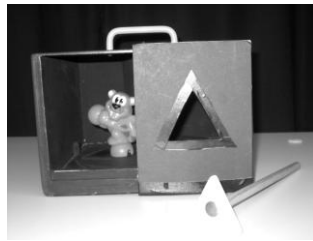
In our study, children were presented with a problem involving a toolbox, which they could not open with the tool that we provided. In one condition, they were presented with options for solving this problem instantly and in the same room. In the other condition, they were presented with those options after a 15-minute delay and in a different room. We found that 3 and 4-year-olds could solve the problem when they were presented with the options for solving it instantly in the same room. However, only the 4-year-old children tended to succeed on this task when there was a 15-minute delay. We conducted a second study that built on these results and aimed to find out whether children's difficulties in the delay condition were because of the time delay or the room shift. We tested this by asking children to choose the correct tool either instantly in a different room, or after 15 minutes in the same room.

Results revealed that children's difficulties were indeed due to the delay and not the room shift. Together, the findings of our studies imply that children start to act with the future in mind at the age of 4.

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Can Children Anticipate Their Physical Needs for Entering a Cold Room?

Humans often act to take care of their future needs (e.g., taking a drink with you when going for a walk). In this study we wanted to examine when children begin to display the foresight to take a jacket with them to a cold room.

We tested children across a number of tasks, and we found that 4 and 5-year-old children showed a good grasp of how to address needs in others, by selecting the appropriate object in response to a picture book that told stories (e.g., of children needing something warm to wear). They also performed very well in a task in which a hand puppet was in need of a cup or a bowl. However, they did not select a jacket to keep themselves warm in a cold room. We will need to conduct further studies to identify exactly why children did not look after their own needs.

Fantasy versus Reality:

Do Television Programs Influence Imitation and Creative Ability in Young Children?

This study looked at whether different types of television programs affected young children's imitation of functional and pretend acts, as well as their expression of creative responses.

To investigate this issue, we tested 39 children (21 boys and 18 girls) individually in their own homes. Children were shown a series of three short television clips from programs either containing elements of fantasy (Finley the Fire Engine, Little Robots and The Save-Um's), semi-fantasy (Sesame Street, Dorothy the Dinosaur and Bananas in Pyjamas) or reality (Playschool, Backyard Science and Bindi the Jungle Girl). After viewing one television clip, children watched two short videos of an adult demonstrating both functional and pretend actions with objects that children were then given copies of.

Children then engaged in a creativity task and were asked to name all the things that they could use a series of objects for. We expected children who were shown the fantasy clips to engage in more acts of pretence and produce more creative responses than the other children. However, we were surprised to find that children performed similarly regardless of the style of TV show that they were shown. This might have been because of the short amount of time that children were shown the television clips, a possibility that we can address in future research.

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Young Children's Ability to Integrate Story Information over Time

This study examined children's growing ability to remember and update information. 4 and 5-year-olds were read stories about fictional characters and asked whether that character was happy or sad. Next children were told another story that, when considered in isolation, would create the same impression of each character's emotion, but when taken in light of the earlier story, would reverse their impressions. Children were told the second story either immediately following the first, or after a delay. We wanted to examine at what age children can remember the previous story well enough to adjust their judgment.

Results showed that 5-year-olds were better at re-evaluating their impressions in the delay condition than four-year-olds, whereas, in the instant condition, performance across age groups was equal. This study's findings support other research results suggesting that children's memory undergoes considerable change over the preschool years.

Do Newborns Resemble One Parent more than the Other?

A study was conducted to determine whether newborns resemble one parent more than the other.

Parents were recruited from St Andrews Private Hospital, Ipswich and were asked whether they thought their baby resembled themselves or their partner more. In order to determine whether parents were biased in stating resemblance to one parent more than the other, their extended family were also asked. We also had external judges rate the resemblance of photos of the babies to their parents to gain a more comprehensive view of resemblance.

We found that mothers are more likely to state that their baby resembled the father than any other groups, regardless of the gender of the baby.

Extended family and external judges did not think that newborns resembled one parent more than the other.

These findings suggest that newborns do not resemble one parent more than the other, but the mothers' are biased towards stating resemblance to the father.

Fathers cannot be as sure as the mother about whether the newborn is his offspring or not. It may hence be in the mother's and infant's interest to affirm paternity, as this would ultimately increase the likelihood that he will provide resources to the mother and the newborn.

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Inventiveness in Infants

Inventiveness is an important aspect of human behaviour, yet little is known about how it develops in humans. Response diversity, or the range of responses produced in relation to an object, can be viewed as a prerequisite of inventiveness. The broader the number of responses produced the more options for flexible responses to the environment.

The purpose of this study was to investigate the response diversity of young infants. Surprisingly, the results indicate that response diversity of infants does not increase between the ages of six and twelve months. However, the way infants interacted with the target objects did differ and these results suggest that the quality, rather than the quantity of responses develops during this period.

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We currently have some studies in progress involving children aged from newborn to 5 years. If your child/ren or your friend's children fall into any of these ages, we would love to have you participate in our studies again. If you would like more details, please call us on (07) 3365 6323.

You can also register your interest on:
http://www2.psy.uq.edu.au/research/ecdu/

36-month-olds' Imitation of an Adult: Investigating Conformity and Causality

Past research has shown that children will copy how an adult does something, and they will even include actions that seem unnecessary.

We conducted a study that investigated whether children would change their copying behaviour, depending on whether irrelevant actions were made by 3 different adults (thereby making a majority) or just 1 (effectively a minority). Children were presented with adults who demonstrated how to open a box. The methods modelled by the majority and the minority involved actions that were either relevant or irrelevant to getting the box open. Contrary to expectations, it was found that children almost never copied the irrelevant actions that were demonstrated, regardless of whether the minority or majority used them. This indicates that children's imitation of functional object-directed actions is not affected by conformity and, moreover, that having seen how irrelevant actions are unnecessary children no longer copy them.

In a second study, we wanted to see if children would copy irrelevant actions even if the demonstrating adult told them that the actions aren't useful in achieving the end result. Children were presented with a series of three unfamiliar boxes that they were shown how to open to get a toy out, with all demonstrations including irrelevant actions with a random object. In one version, the adult simply demonstrated the actions without commenting on the utility of the object, in another she communicated being unaware of the function of the object, while in another she established how the object was causally irrelevant. Contrary to our expectations, children responded the same in all three versions – rarely producing the irrelevant actions. We are continuing to explore why this happened, including the possibility that the actions we used were too unconnected to getting the box open.

As often happens in research, neither study turned out as planned. However, both were the first of their kind and provide a basis for ongoing research into how children acquire new skills and what sorts of information are important to them when they learn by watching others do things.

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