



Welcome to the Summer 2017 edition of the Kent Child Development Unit Newsletter! We would like to share news about our research, projects you may have helped with, ongoing studies and upcoming opportunities.



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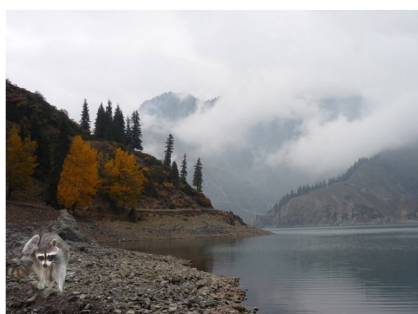
Infant research

In the infant research lab we conduct studies to help us understand what infants know about the world. To do this, we use a method called 'eye-tracking' that allows us to see where infants are looking when we show them pictures or videos. We have recently completed studies that reveal how sensitive infants are to biological form.

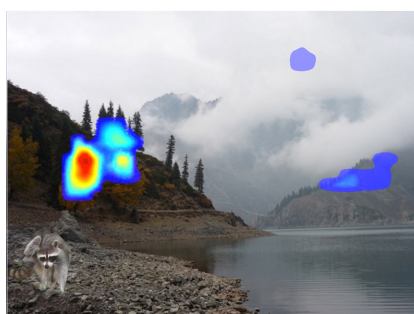
In a series of studies, we presented infants with complex visual pictures that could contain either a person or an animal. We first conducted 'Saliency Analysis' on our pictures in order to produce 'Saliency Maps'. This is a method that reveals which parts of the picture are the most visually salient. Salient areas are typically very bright, colourful or have high contrast (e.g., black and white close together). In some of the pictures that we presented to infants, the animal was salient and easy to find, but

in other pictures the animal was less salient and effectively camouflaged. In the figure below, you can see the original image, the saliency map and finally a 'heatmap' that shows where infants looked. We discovered that infants quickly found the animals, even when they were camouflaged, and would spend more time looking at them compared to any other part of the picture. Impressively, infants still did this when we showed them animals that they had never seen before (like the racoon below).

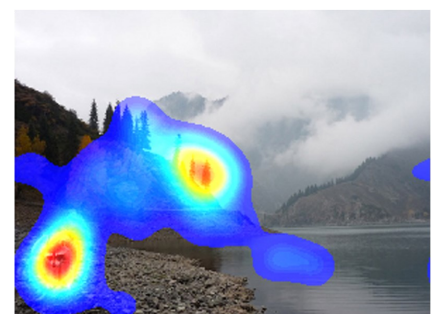
The study demonstrates that infants as young as 6 months of age already have an understanding of biological form and that their understanding of animals is not restricted to ones that they have seen before. We believe that this ability evolved to help our ancestors detect potential threats in the environment.



Original Picture



Saliency Map



Infant looking 'Heatmap'



Research Digest: Language Development

At the Child Development Unit, a team of undergraduate, Master and PhD students together with Dr. Kirsten Abbot-Smith conducted a multitude of exciting studies into typical and atypical language development.

Assessing bilingualism

Around 5% of monolingual children have a language or communication disorder. The prevalence rate is the same in bilinguals but there is currently no effective means of screening them, especially if these children are dominant in their home language. We found that the Polish translation of the Children's Communication Checklist (CCC2), a standardized parental questionnaire, correlates highly with a Polish vocabulary test which was directly administered to bilingual 4- to 5-year-olds. Their English vocabulary levels related to both parental CCC2 ratings and to the proportion of English in their input. Parent questionnaire completion may be a useful first step in determining whether a given child appears delayed in English because a) s/he has not been exposed to much English to date or because b) s/he has an underlying language or communication difficulty.

Conversational skills in 7- and 8-year olds ...



were the focus of a study exploring factors that are related to children's ability to alter what they talk about based on the interests of the listener. During a conversation, the researcher either showed an interest or disinterest in one of the child's hobbies previously listed by parents. When expressing disinterest, the researcher turned the conversation towards pets and families. Of interest was whether children elaborated on or asked questions about the researcher's conversational turn, maintained the researcher's topic, or failed to respond to the researcher, instead of continuing their own turn. The ability to consider another's mental state (or 'Theory of Mind') was found to be linked to an improved ability to follow the conversational turn of the researcher. Thus, the ability to consider the mental life of others is a key factor underpinning the ability to successfully engage in conversations in typically-developing children.

How 3-year-olds understand non-literal language: real world knowledge matters

This study explored how young children understand language based on conversational context. This is an important skill, as much of the language directed at young children goes beyond that of the literal combination of word meanings and sentence structures. For example, '*Dinner is ready soon*' can mean '*No*', as a response to the question '*Can I have an ice-cream?*' in certain conversational contexts.

Children aged 3.5- to 4-years old watched video clips of puppets. For each item, a puppet indirectly expressed which of two objects he or she wanted (as in '*Dinner is ready soon*') and children were required to infer the intended referent.

We found that the ability to understand non-literal language in this task was not related to sentence comprehension per se, but rather was significantly related to both real world 'general knowledge' and the ability to see the world from another person's perspective. Our study is the first to show that real world general knowledge is a critical bottleneck in the ability of children to understand implied meanings in conversations.



Example scene from the videos children watched:
The milk is all gone was used to mean '*I don't want cereal*' as a response to the question '*Do you want cereal or toast?*'.



He is drinking milk.

Example from language understanding test:
Children had to choose the picture that correctly depicted the meaning of sentences.



Making sense of what others say

For her PhD, Louise Malkin is exploring language development in children with autism spectrum disorder (ASD). Children with ASD frequently appear to either over- or under-estimate the knowledge of their conversational partner. No-one has previously investigated this phenomenon in terms of how children with ASD interpret conversation. She compared the ability of 5- to 8-year-olds with and without ASD to interpret ambiguous statements that could relate to one of two different activities. Both groups of children were able to use the experiences they had previously shared with an adult to identify the activity an adult was referring to. A control condition ruled out the possibility that a correct response could be selected based on mere co-presence rather than shared experience. This shows that verbally-fluent 5- to 8-year-olds with ASD are able to take shared experiences with specific individuals into account when interpreting potentially ambiguous utterances.



To find the fun crafts used in this study visit <http://madebyjoel.com/>

Research Digest: Social Development

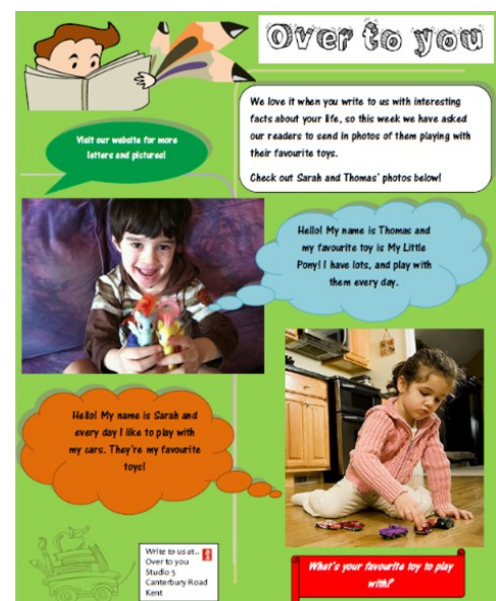
Children's prejudice

Kiran Purewal has been investigating children's prejudices towards peers who do not conform to the 'status quo' in one way or another. Specifically her PhD research examined what happens when children are faced with peers who are either disloyal to their school/friendship group, or overweight, or both. The research found that young children in particular can be very stigmatizing towards overweight children and even more so to those who are overweight and show disloyalty to their group at the same time. Findings suggest that it is not just children's attitudes that are affected, but also their intentions to include these other peers in a range of social activities. More recent research has designed an intervention to reduce these prejudiced attitudes and intended actions towards 'non-normative' peers. The effects of this intervention are currently being tested. We hope to have news about this in our next newsletter so stay tuned!

The impact of children's media on gender-typed attitudes

Lauren Spinner (a PhD student) has been exploring the impact of gender stereotypic content of children's media (e.g. girls play with dolls, boys play with cars) on gender-typed attitudes and behaviours. She investigated the impact of stereotypic images presented in children's magazines on gender flexibility around toy play, playmate choice, and social exclusion behaviour. Some children saw girl models with a toy pony and boy models with a toy car, whilst other children saw these toys reversed for the girl and the boy (see image opposite for an example).

Results revealed significantly greater gender flexibility around toy play and playmate choices among children who viewed children playing with toys not typically associated with their gender. However, there was no difference in children's own preferences for gender-typed toys based on the images they viewed. Children preferred more gender-typed toys overall. Lauren is now interested in the potential for media portrayals of toy play to shape the gender socialization of young children.



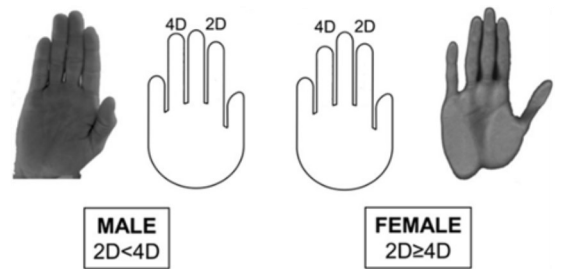


Digit ratios and personality in children and lemurs

Caroline Howlett, a PhD student in the School of Social Anthropology and Conservation, visited the KCDU last summer to run a study looking at how personality is related to levels of sex hormones before birth. This is part of a larger study exploring this question for both human children and for nonhuman animals (in this case, lemurs), so the experiment was designed with toys that could be used with children and with lemurs (you can see some lemurs at the Yorkshire Wildlife Park playing with the apparatus in the photo).

All mammals are naturally exposed to different levels of hormones before birth, and these can play a lot of roles during development. With respect to personality, more prenatal androgen has been linked to boldness (less inhibited), more exploration (more sensation-seeking), and less persistence (more prone to boredom). These three personality traits were measured by observing children (and lemurs) playing normally with new objects and seeing how confident they were at approaching the objects, how much they explored them, and how long before they got bored with the objects.

These tests give us a good measure of personality, but of course we are not able to directly measure the levels of prenatal hormones the children experienced. Fortunately, we have a physical marker of these hormones: Digit ratio (the length of the 2nd vs 4th fingers). Males have lower (masculine) digit ratios and females typically have higher (feminine) digit ratios (see image opposite). In this study, Caroline measured the digit ratios of all participants, and recorded how they played with the novel objects. As you can imagine, this has led to a large number of videos that she is still working through, but we are close to finding out the answer to her study and learning more about whether there is a link between the digit ratio and the personality traits.



Ring- tailed lemurs searching for treats in the explore box during the exploration tendency task.

THANK YOU so much

To all children and families who have supported our research by visiting the KCDU and taking part in our studies, or by joining our family database during the past year. To the following local Kent schools that participate in our **KCDU Partnerships School Scheme**. We would like to particularly thank *Boughton-under-Blean & Dunkirk Primary School* who helped with three different studies over the past year. Thanks to your support, our undergraduate students could carry out their exciting final year projects.

Ashford

Godington Primary School

The Wyvern School

Wye

Lady Joanna Thornhill
Primary School

Chatham

Bradfield's Academy

Canterbury

The Canterbury Primary
School

St Peter's Methodist School

St Stephen's Infants School

St Stephen's Junior School

Pilgrim's Way School

Faversham

Bysing Wood Primary School



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