SUMMER SCIENTIST NEWSLETTER

2012: news and feedback from the 2012 University of Lincoln Summer Scientist Event

THANK YOU TO THE 220 CHILDREN....

...their parents, the student volunteers and the academics who made Summer Scientist Week 2012 such a great success! We hope to see you again!

Summer Scientist Week 2012 saw over 200 children from all across Lincolnshire bring much delight, fun and curious questions (from them and their parents) to our week-long Summer Scientist event. Children took part in a wide range of research games to help us to find out more about the ways in which children develop the amazing abilities of language, sharing, controlling their emotions, planning movements, taking risks and many more. We will tell you more about what we found out in each of the games in this newsletter.

The feedback we received from all taking part in Summer Scientist Week was resoundingly positive - and there were some great suggestions for how we can make things even better and more fun. So, come to this year's event and discover the many fun games and activities we have on offer!

what we found...

The week was a great opportunity for us to find out more about how children develop and learn. We had lots of fun and hope you did, too! Here is what we discovered with your help.

THANK YOU!

How many stickers can you get?

Altruistic behaviour can occur through three types of reciprocity: 1) direct reciprocity (individual A acts altruistically towards B and B reciprocate the altruistic act to A), indirect reciprocity (individual A acts altruistically towards B and receives an altruistic act from C), and generalised reciprocity (individual A acts altruistically towards B and B acts altruistically towards C). In this game, we used the distribution of stickers as a measure of altruistic behaviour and we analysed what rules children follow when acting altruistically. We found that stickers are distributed according to direct reciprocity but not according to indirect or generalised reciprocity. Age of the children did not have an effect on the occurrence of the three types of reciprocity. These findings suggest that direct reciprocity may be the most important and basic form of reciprocal altruism, and that indirect and generalised reciprocity may only appear in adults.

Would you share your stickers?

People tend to avoid individuals who are not willing to share resources (e.g. toys or food) with them. We aimed to understand more how this avoidance develops by finding out if and how children decide to share valuable resources (i.e. stickers!) with people who have previously proved to be willing to share or not. Children had to play a game in which they observed a series of images depicting human faces, received some stickers and then had a chance to give some of these stickers to the images. During the experiment, children were told which images depicted the face of person who was usually good a sharing and which images depicted the face of images who were not good at sharing. We found that children made decisions on whether or not to share their stickers on the basis of the information on the images that was given to them: children were more likely to share with images of persons that were good at sharing than of those who were not. These results indicate that the capacity to discriminate between altruists and non-altruists develops early in life and it is crucial to choose social partners and friends.

Pulling faces

In this game we asked children to mimic different facial expression (happy, sad, surprise, anger, fear disgust). We first asked children to show these expressions without any help or guidance, and then we showed some typical examples before they had to express the emotions again. We took a picture of the children in both conditions. After the Summer Science week, we showed these pictures to a group of volunteers to investigate

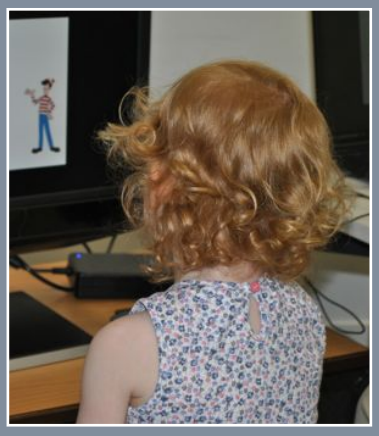
if adults are able to recognise children's expressions as well as adult expressions. We also wanted to find out how good children are in mimicking facial expressions. Happy and sad expressions were easy to mimic for children, as indicated by high levels of correct recognition by the adults, whereas disgust and surprise were recognised a lot better when these emotions were expressed by oldest children (age 10) than by the youngest children (age 6). Our findings suggest that both recognition and production of facial expressions develops gradually in childhood, and that this development varies for different emotions.

Spot the dot

In this game we asked children to move their hands to two locations positioned on one of three coloured bars on a touch screen. At the same time, two letters appeared at different positions on the three coloured bars. Children were asked to detect whether these two letters were the same or different. The aim of this game was to investigate the development of 'bimanual movements' and how important the focus of spatial attention is in this development. The findings show that only the oldest children can attend to the letters and perform the movement time task at the same time, but bimanual movements were the similar for all age-groups (6-10 years of age). The interaction between attention and the planning of bi-manual movements will be investigated further with more 'attention grabbing' stimuli (e.g. emotional faces) in SSW 2013.

Pull your finger

Our game was looking at how children attend to their hands when moving to targets, do they pay more attention to one hand than the other? Do they use vision, or the felt position of their hands to guide their movements? We haven't yet managed to find definitive answers to these questions but thanks to the children and parents that participated last year, we've made a good start. It seems that children use vision of their preferred hand (the one they write with) much more than their other hand. When we used mirrors and cameras to make one hand look like it was moving more slowly than it really was, this was often not even noticed when it was the non-preferred hand that was altered. Whereas we tried this illusion on the preferred hand the children generally told us off for doing "something weird" to their hands! Understanding the importance of different types of information during simple movements, will allow us to start to understand what can go wrong in different motor disorders, such as developmental coordination disorder.



Control a computer with your eyes!

We investigated how children's vision is affected by where someone else is looking or pointing. We asked children to follow a cartoon bee with their eyes as it jumped randomly to the left or right of a computer screen whilst ignoring pictures of eyes, fingers or eyes presented in the centre of the screen. We were surprised how much the children enjoyed this simple "Busy Bee" game! We found that children aged 6-7 years and 8-10 years were always slower to respond with their eyes when, arrow or eye pointed in the opposite direction to where busy bee jumped. But 4-5 year old children were only affected by pointing fingers and showed no effect of eyes or arrows on how quickly they looked at Busy Bee. This suggests that finger pointing is an influential visual "cue" in young children, but as children get older they get better at responding to arrows and where other people are looking. As well as having implications for existing scientific theories of how vision develops in children, the findings might also have something to say about road safety. For example, where young children are concerned it might be better to use pictures of pointing fingers to direct their attention at road crossings.

Taking your fears away!

In this game children listened to stories about a character who was in different situations which might have made them them angry, sad or scared. Children were asked which emotion the character might be feeling and how the character might be able to make themselves feel better. In some situations it was possible for a child to change what they were doing to make themselves feel better, whereas in other situations it was easier to think about the situation in a different way to make themselves feel better. Older children were more likely to describe different strategies dependent on how much behavioural control they had in the situation, compared to younger children who were less likely to alter their suggestions dependent upon the situation. Children identified similar strategies to cope with their emotions even when presented with scenarios that evoked different emotions. Regulating our emotions is a very important part of everyday life and understanding how children develop this skill is an important step in helping children who have trouble with emotion regulation.

What happens next?

As adults we are remarkably good at working out what other people are thinking and using this information to predict their actions. This is an incredibly useful tool enabling us to navigate effortlessly through the social world. To find out more about how this ability develops children played a game on a touchscreen computer in which they tried to predict what a character would do next. Children viewed a number of scenarios in which a character saw an object in one location, but did not see it move to another location. To correctly predict where the character will look we have to ignore what we know (the true object location) and only take into account the outdated knowledge of the character. This is quite a feat and may be something that only humans but no other animal can do! We added an extra layer of difficulty to the task by having the character look for some items that we all might like (e.g. chocolate) but also for items that most of us are not that keen on (e.g. spiders). This means that children did not only have to repress what they know about the location of the object but also have to take into account the different likes and dislikes of the character. Children of all ages did extremely well in all the different scenarios and were very good at predicting what the character would do next. Understanding more about how children solve this task is an important step in understanding the development of interpersonal empathy and communication.

Imagine that!

In this game children had to try and remember the locations of 4 objects which were placed in a room. They did this task twice, once remembering 4 objects located around a boy in the middle of the room and a second time when 4 different objects were located around a camera in the middle of the room. Once they had learned the location of the objects they were then asked to imagine that the central person (or camera) had moved and their task was to picture the updated locations of all the objects. We know from our earlier work that children easily slip into the perspective of a central person in this layout and imagine the scene through their eyes. What we wanted to know with this task is whether it is just as easy to slip into the perspective of an object as a person (hence the camera as the central 'character'). What we found is that children did not find it as easy to do the task when the task did not involve a person.

This tells us something important about the way we take perspectives: it is much easier to do when there is a person whose perspective we can take. This suggests that the mechanism of perspective-taking – even for spatial object memory – is at least partly driven by empathy.

Balloon Puffers!

When we are faced with risky decisions we tend to make choices influenced by our emotional response – which can be a positive response (e.g. buy lottery ticket) or a negative one (e.g. buy insurance). What we wanted to find out with this game is whether the feelings associated with risk change when we make decisions not for ourselves but for someone else. We know from our work with adults that making decisions for others has a complex effect on the type of decision we make. In this game children blew up virtual balloons on the computer - the bigger the balloon got the more points they got, but if the balloon popped they got no points at all. Children played this game for themselves and for another child. We found that all children played the game differently for themselves or for another child – some children were a lot more risk seeking when they played for someone else and some were a lot less risk seeking (as measured by the size of the balloons). The task for this year's Summer Scientist event is to find out why this difference occurs. To find out we will ask children to play the game whilst we measure their level of excitement through skin conductance – this will tell us how they perceive risk differently. Understanding how we feel about risk and how it drives our decisions is important in understanding risky behaviour in all situations in life.

A University Award for the Summer Scientist Team

The Summer Scientist team, staff and students, one and all, are totally delighted to have been awarded a University Team Award! We were nominated by the Head of Psychology, Professor Harriet Gross, for this university wide award competition and are thrilled to have won!

There was a presentation ceremony on the 13th November where we were presented our prize by the Vice-Chancellor, Professor Mary Stuart.

The winning Summer Scientist team are: Alison Wilson, Emma Jubbs, Laura Duffy, Rebecca Punter, Sophie Freeman, Katy Smith, Emma Belton, Mirena Dimolareva, Madaline Stanworth, Shelley Gwyther, Rosie Findlater, Rachael Kuerten, Hannah Baily, Amy Hobbs, Samantha Petty, Daniel Shepherd, Jessica Thurlow, Chelsea Sawyer, Aisling Mcfadden, Chris Luke and Fenja Ziegler.

We were only allowed to take 6 people to the awards ceremony. Here are Hannah, Amy and Aisling from our delegation posing with the award.

Thank you to all the children and parents who make this event so wonderful!

Summer Scientist 2013

Summer Scientist 2013 takes place from **19th - 23rd August** in the Business and Law building, Brayford Campus, University of Lincoln.

You can book your children's place now: http://summerscientist.blogs.lincoln.ac.uk/book-a-place/

More Games and More Fun

- some popular research games are back this year
- a whole host of new games to play
- new (and more activities!) in between the research games
- free WiFi
- tea and coffee for parents
- drawing competition
- gifts for all participating scientists

Any questions or comments?

- If you have any questions about this event, the newsletter or a particular study then please get in touch with the organising team on summerscientist@lincoln.ac.uk or with the lead organiser Dr Fenja Ziegler on fziegler@lincoln.ac.uk