

ECDC RESEARCH RESULTS

January 2016



All of us at the ECDC would like to sincerely thank you for participating in our studies during 2015. 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.

We hope you enjoy reading about our recent research results and look forward to your return to the ECDC in 2016. If the study you participated in doesn't appear in this newsletter, then it is still ongoing and results will be available as soon as testing is complete.

We have studies running all year round; visit our facebook page to find out more. Also, if you know anyone who may be interested in participating with their child in our world-class research, they can register online at www.psy.uq.edu.au/ecdc

Thank you and see you back in the labs, Sally.

Parents play a very important role in newborns' social development

Past research argues that newborns are born with the ability to imitate parents' gestures. However, infants may instead learn this skill in the first few weeks of life. To understand more about whether imitation is innate or learned, the study involves parents modelling different gestures to their newborns to see if they are more likely to imitate the gestures they are exposed to.

In this study, 48 babies' imitation levels were tested at 1-week-old. Parents then modelled tongue pokes, mouth opening or hand grasps or did no modelling at all. After modelling, babies' imitation levels were tested again at 3-weeks old. Babies in the tongue-poking group imitated tongue poking at a significantly higher level after their parents modelled this gesture to them.

There were no changes observed for babies in the other groups. One reason for this might be that tongue poking is a clear and obvious gesture for babies to observe. Mouth opening on the other hand, could be confusing as babies often see wide-open mouths when adults are yawning, talking and when making facial expressions. Copying is one way we affiliate and connect with others.

This research thus demonstrates that parents have a very important role to play in the social development of their newborn infants.



Young children's interaction with technology

Over the past several months we have been pilot testing our latest adventure, a social robot for children. The robot we are currently designing, in collaboration with the School of Information Technology and Electrical Engineering, will be deployed in studies in the ECDC by early next year. This version will be a full functioning robot designed to play and educate children through a touchscreen tablet located in the robot's belly. This could lead to exciting alternative teaching methods for young children.

This year children from the ECDC have met four different versions of our prototype robot, made out of foam, cardboard and touchscreen tablets. The robot plays various games including animal sounds, letter naming, counting tasks and colour naming. Children have enjoyed meeting and playing with our robot and have helped us to guide the final design of our robot arriving mid 2016.

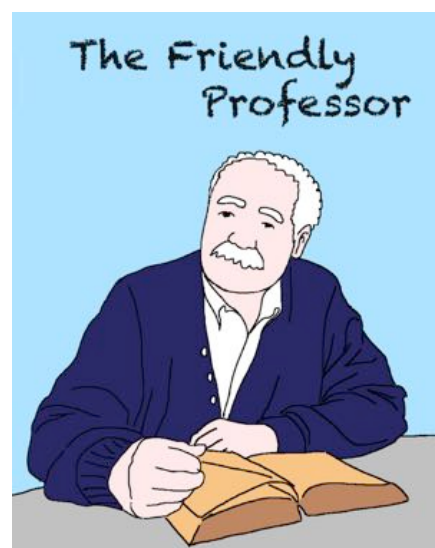


Do 4-6 year-olds behave differently when they know Santa is watching?

Have you ever told your children that you know what they're up to because you have eyes in the back of your head? Are you relieved, as Christmas approaches each year, that Santa can maintain a little order in your household? Do your children believe in non-real agents who are concerned with their behaviour? We know that children can believe imaginary things, but does this change how they act? Research suggests that they *might* change their behaviour when they're alone if they believe they're NOT being watched.

Our research addresses two questions: First, can we make children believe in magical characters, and second, do children treat magical characters as if they have a meaningful social role to play. While children might believe in both the Easter Bunny and Santa, only one of these characters is concerned with their behaviour.

Our research has implications for how (and why) real, non-real, imaginary, and religious beings are so pervasive in culture, and how their 'presence' may keep society functioning. Data collection is ongoing and we expect to finish in the middle of 2016.



The moral actions of others does not influence young children's prosocial behaviour

Children are incredibly helpful, sometimes even at high personal cost. Young children often use social information to guide their pro-social behaviours.

In this study, children were presented with a puppet that acted nicely, naughtily or neutrally toward another puppet. Children were given two boxes, one that contained 1 sticker, and the other, 3 stickers. Children were asked to open one box for the nice, naughty or neutral character and told that they could keep the stickers in the remaining box.

This is the first study that allowed children the option to help a little or help a lot. Also, because the puppet was unaware of the contents of the boxes, children were not acting out of a need to appear good.

We were interested to see whether the moral behaviour of the puppets would influence the amount of stickers children allocated to them, and particularly whether they would be more prosocial (by donating more stickers to the puppet than themselves) to the nice puppet than the naughty puppet. Contrary to expectations, children allocated similar numbers of stickers to the puppets, regardless of how the puppets had behaved. This suggests young children don't routinely base their prosocial behaviour on their impressions of others and possibly don't consider that how someone behaves in one domain should be used to evaluate how to treat them in another.



5 year-olds are better at predicting happiness than adults

Adults tend to exaggerate both how happy and how sad they will be in the future. Exaggerating future emotion impacts decision making in the present. If we think something is going to make us happy, we put in more effort to achieve that happiness. Similarly, if we think something will make us sad, we are more motivated to avoid that outcome. Therefore, overestimating future emotions may be beneficial if it helps motivate us towards (or away from) certain outcomes. This study looked at whether 5-year-olds estimate future emotions in the same way as adults.



We asked children to predict how they would feel if they won or lost an iPad game. Then, each child played 4 games and after winning *or* losing each game, they were asked how they actually felt.

Like adults, children overestimated how sad they thought they would feel if they lost. However, unlike adults, children accurately predicted how happy they would feel when they won. These results give insight into how children develop an adult-like understanding of emotions.



2-3 year-olds don't think about the future like adults do

As adults, we consistently and accurately prepare for multiple possible futures. For example, when getting ready for work, you might pack your lunch but also bring your wallet in case you want to buy food. Furthermore, if there is a particular outcome we desire, we work to achieve it by behaving in particular ways, like saving up to go on a holiday.



This study looked at how and when young children begin to understand that one event can have more than one possible outcome. We had 2- and 3-year-olds participate in a game that required them to catch bouncy balls and to help Thomas the Tank Engine through a tunnel. These games tested whether the child understood that the ball could come out of either end of a forked tube, or that the train could come out of either end of a forked train track.

We found that most 2-3 year-olds tend to just prepare for a single future. For example, they would cover one opening in the forked tube, when a ball had equal chance of coming out of either opening. This indicates that children under 3-years may not represent the future in the same way as adults do and lack the basic understanding to act insightfully to bring about desired future outcomes.

When do children learn to respect other people's belongings?

In our society, understanding and respecting the ownership of objects is an important social skill. Children begin to talk about ownership early and learn that toys belong to people but may be shared. However, it is not yet clear when children first begin to show other aspects of an adult concept of ownership.

This study tracks the development of ownership concepts in children and compares ownership behaviour of typically developing children with that of children with Autism Spectrum Disorder (ASD).

The current study involves playing general games with a variety of objects/toys. Children are then given a drink bottle to take home, as a reward and as part of the experiment. After several weeks, the parents and children return and we play more games and observe the child's actions in detail using motion capture cameras. As children interact with the drink bottle, cameras track reflective markers on the bottles, allowing us to see with increased precision and identify behaviour that is not apparent through observation alone.



Early results suggest that children as young as 24 months old show subtle differences in how they interact with their bottle compared to someone else's. However, we are still in the testing phase of this study. If you would like to be involved in this research and have children aged 3-6 years, or a child with autism aged 4-10 years, please contact Jessica at j.lister@uq.edu.au

6 year-olds understand that practise makes perfect

School-aged children know that they should study and do their homework because the information learned will be useful in order to do well in a test. This study examined children's ability to seek information with a specific future event in mind.



Preschool and school-aged children were shown some blue cards and red cards with characters on the front and information about the characters on the back. The children were told that, in the future, they would have to guess what was on the back of the blue cards or the red cards. Before this, however, they were given the chance to study the information on the cards for one minute. Both preschool children and school-aged children studied the appropriate cards more than the inappropriate cards.

Only the school-aged children, however, improved their performance the second time they did the task.

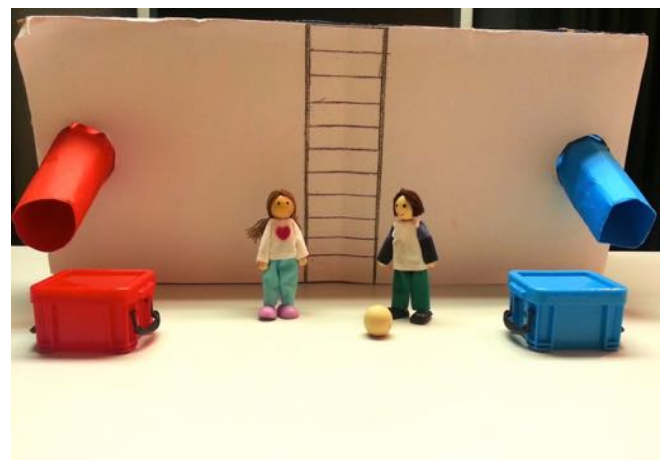
These results suggest that even preschool children have a preference for correct information, but school-aged children can learn from past mistakes to improve their information seeking performance the second time around.

Do 3-4 year-olds predict actions based on what other people think?

In order to get on well with others it's important to be able to predict other's actions based on their intentions, desires, beliefs, or knowledge. Children start to understand others' beliefs and desires around 4-years-old. However, the age at which they can explain this is dependent on language ability, so we designed our study to see whether children could understand others' minds and anticipate their actions implicitly.

We showed children a doll that had the option of going down two slides (in each scenario, the doll had a desire or belief that was different to the child's). We observed their anticipation of which slide the doll would choose to go down by following the children's eye gaze and their verbal predictions.

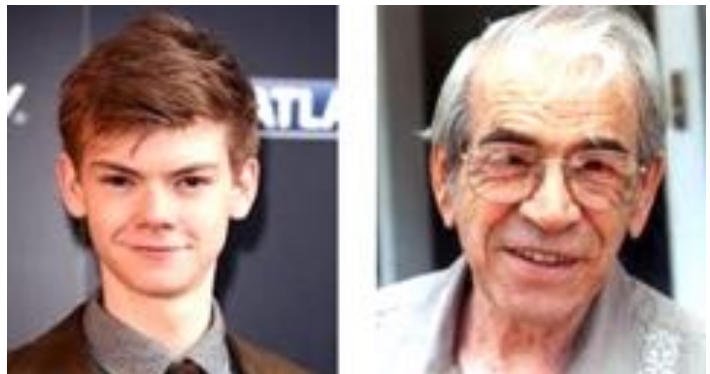
Our findings suggest that children first understand that people can have different desires about the same object and behave differently. Next, they understand that people can have different beliefs about the same object and behave differently.



Later, they realize that if people do not have all the information, they can have false beliefs that do not match reality. Children begin to anticipate others' actions based on their mistaken beliefs even if they may not have conscious access to this information.

Characteristics of faces: do infants & adolescents judge faces differently?

We use facial characteristics to make many kinds of judgments about others. For example, we may use someone's face to judge how old, strong, or masculine they are. Much is known about how adults use facial characteristics to make these judgments, but less is known about how these judgments develop, and whether children view faces as conveying the same information that adults do.



In this study, we ask children (2- to 15-years-old) to judge the traits present in several pairs of faces. Children are asked to select the face of the pair that looks stronger, or older, or more masculine.

This data will help us determine the underlying structure of the judgments adults make about others' faces: if children's responses are similar to adults, these judgments may stem from a biological predisposition to view facial characteristics as informative, and if children's responses are different from those of adults, then these judgments may stem from cultural norms surrounding appearance.

Currently, this study is ongoing, and results will be available as soon as testing is complete.

Do parents influence children's feelings about germs?

Disgust is a useful emotion because it helps us avoid things that are harmful. However, we all have different levels of sensitivity to things we find disgusting.



Children develop a sense of disgust around 3-4 years old, but we don't know how it develops and or why it develops to different degrees. We wanted to know if parents might influence the way disgust develops in children.

We tested children aged 3-5 years. We took measures of parent disgust sensitivity, hygiene encouragement and their discussion of illness information by having parents read a storybook to their children. Child disgust sensitivity was measured through their facial reactions to disgusting videos and child pathogen avoidance was assessed by asking children if they would tidy up "used" tissues.

Very few children refused to move the tissues, with about half using a brush to sweep them up, and half using their hands, showing there is some variation in children's avoidance of pathogens. We also found that parents' disgust sensitivity was related to their children's sensitivity but whether parents encouraged hygiene and discussed illness was not related.

Look me in the eye: how eye contact affects trustworthiness for 7-9 year olds

Past research has shown that adults use indicators, such as whether a person is looking directly at them or whether that person is looking away, when judging whether they trust that person. However it's also been found that direct or averted gaze has no impact on trust judgements made by elderly adults.

The current study aims to look earlier in development to see whether children also use gaze to determine whom they trust. We test this by having children aged 7-9 use an eye-tracker to track their eye-movements when assessing how much they “want to be friends” with a variety of people pictured on a computer screen.

The people pictured were both young adults and elderly adults and had their gaze either averted or directly looking at the camera, whilst holding a variety of facial expressions. After this, the children were tested on how well they were able to read expressions from pictures of just peoples' eyes and how well they were able to recognize emotions from a whole face.

Currently, the research is still in progress, and results will be available as soon as testing is finished.



At what age do children start to practise without having to be told?

Practising skills from a young age can have huge benefits, from helping a children's self-control, to contributing to success in later life, and even influencing brain development. But getting children to practice isn't always easy. Our research aims to discover when children start to practise skills without needing to be told.



In this study, children aged 4- to 7-years-old were introduced to three motor skill games, one of which they were to be tested on later to win stickers. Children were then given 5 minutes of free play with the games. Without telling them to practice, we wanted to see whether children chose to use this free playtime to practice in anticipation of the test.

We found that the 5-, 6-, and 7-year-old children on average spent more time playing their test game than the other games, and that the amount of time they spent practising increased with age. Four-year-olds, on the other hand, did not seem to practise. Most of the 6- and 7-year-olds, and a third of the 5-year-olds, also reported that they chose to play the test game so that they could practise for their test.

This shows that by this age, children are starting to think ahead about what skills they may need in the future and prepare by practising.

2 year-olds are showing an understanding of correct counting in a different language

Children are often exposed to counting through parents, siblings, and television shows. But when do they understand counting principles themselves?

This study is currently examining whether 2 year-olds prefer to listen to a counting sequence with a stable order (i.e., 1, 2, 3, 4, every time) instead of a counting sequence with a randomised order (e.g., 3, 1, 4, 2, changed every time). The children choose which counting sequence to listen to by pressing one of two buttons connected to a TV, which then shows a hand counting fish in Japanese numbers.



We do not use English numbers because we are interested in whether children understand that ALL counting sequences are meant to be in the same order, instead of just the counting sequence they hear all the time.

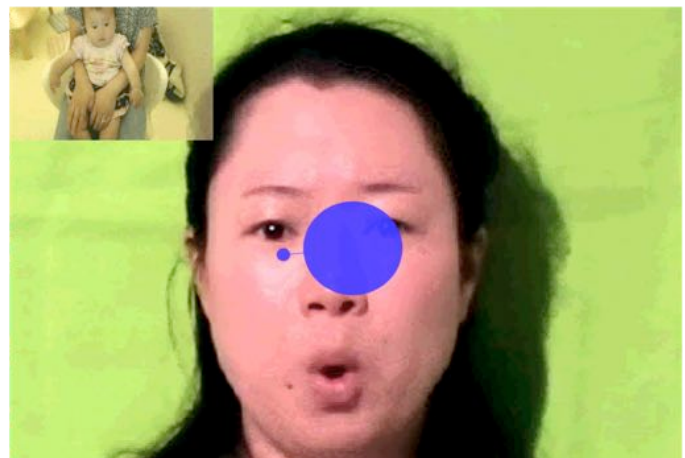
We are still running this study, but early results are promising. The children are showing a strong preference for listening to the stable order Japanese counting sequence instead of the randomised counting sequence. So it seems that 2 year-olds really might understand that counting sequences are suppose to be the same every time!

Where do babies look when learning to “babble”?

How do babies go from making the simple “ooooo”s and “aaaa”s in the first few months of their lives to producing the “mama” “dada” and “aaa-pulllll” [apple] by around 12 months of age?

To investigate this question, we are in the process of finding out where babies look when they see someone talking, and if this looking behaviour changes with their babbling ability. For example, babies typically first start trying to produce the sounds of their language(s) around 6 to 8 months of age—so do babies at this age focus intently on a speaker’s mouth to help them learn the appropriate mouth movements? Also, how does their ability to hear the different sounds of languages affect their looking behaviour and babbling development?

We are using the latest eye-tracking technology to observe where babies are looking and what they hear. This study is looking at whether babies can tell apart the different sounds of native and foreign languages, therefore giving us more insight into how babies develop their babbling through the first year of their lives.



The blob tells us where your baby is looking on a speaker’s face!