

# TEDS-Environment

newsletter - spring 2007

Issue 8

**W**e're back again, for another update from the TEDS environment team! Remember, we are the team who visit you at home. We've lots to report after a busy year of visits. Over half of all our families – 656 at the last count – have been seen, and we would like to thank you all for inviting us into your homes. If we haven't called you yet, don't worry, we will be in touch with you soon. Each visit during this phase is much quicker than previous phases, and we have some new computer tasks especially designed for the twins in our study now they are older. Our new high street vouchers offer you much more choice – you can spend them in Bhs, Boots, HMV, Iceland, JJB Sport, Wilkinson, Pound Stretcher and New Look amongst others.

Our next big challenge will be to raise funding for our next round of visits, which will take place in four years time when the twins will be nearing 16. In the meantime, we will stay in contact with you via these newsletters and birthday cards and you can always check our website for any news updates. We are so grateful for everyone's participation and continual interest in us, let's keep up the good work! We also feel very proud of Prof. Moffitt, who leads the study, for receiving this year's Stockholm Prize for Criminology in recognition of her discoveries about delinquent behaviour over the life course of boys.

We would like to express our sincerest apologies to those who had your vouchers refused due to a counterfeiting problem over the Christmas period. Please be reassured that the vouchers that you have in your possession are genuine; the issuer says they are happy to be called on the number printed on the voucher by the store manager in order to resolve any confusion. To all of you who have received your vouchers so far, we hope you have enjoyed treating yourself. Please remember that we like to hear from you so please feel free to contact us with any questions or comments. The address is:

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## In case you were wondering...

**I**dentical twins are at the heart of a great deal of scientific curiosity. What makes identical, or monozygotic twins so fascinating is that their DNA is almost indistinguishable, they share the same genetic make-up. But does this mean the fingerprints are also identical? The answer to this is no. Fingerprints are not entirely a genetic characteristic; they are an example of a phenotype (the observable characteristics of an individual) which means they are determined by how an individual's genes interact with the developmental environment in the uterus. Factors such as nutrition, position in the womb, blood pressure are believed to influence the pattern of the fingerprints. So whilst you may see similarities in the twins' fingertips, they will never be exactly the same.

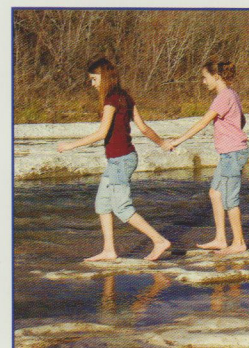


## In this issue...

**The effect of birth weight on cognitive development**

**The benefits of breastfeeding**

**The role of the neighbourhood**



# What effect does birth weight have on cognitive development?

**As a parent of twins, you would probably not notice any obvious difference in your twins' cognitive development. However, if you looked at all babies born in the UK, then those who were heavier would, on average, have a very slight improvement in their cognitive development.**

Researchers in the TEDS team have recently shown that birthweight has an effect on cognitive development; which includes skills like memory, problem solving and decision making.

The research used data collected, about single birth babies by our sister study in Dunedin, New Zealand as well as all the really important information we have collected from your twins throughout the UK.

Most previous research into this area has focussed only on very low birth weight babies (less than 3.3lbs) and low birth weight babies (less than 5.5lbs) and has shown a link between birth weight and cognitive development. Most past studies have also compared children born to different mothers in different families. The trouble with that is that the way different mothers bring up their children may have more of an effect than the birth weight of their babies. Therefore, their baby's cognitive development cannot necessarily be put down to birth weight alone.

Ideally, research into cognitive differences needs to use information collected about children growing up in the same environment (like siblings who are close in age) so that differences in upbringing are less likely to affect results. Of course, the best possible way of doing this is to talk to twins! As they were born at the same time, it is much more likely that they were brought up in the same way. Even more importantly, because we looked at identical twins in this research (born into the same environment and sharing 100% of their genes), any differences in cognitive development can be put down to differences in birth weight between the two twins. Our research showed that birth weight does have an effect on cognitive development (for both boys and girls). Babies who are born a little bit bigger, are more likely to do a little bit better in terms of their cognitive development during childhood.

This holds true not only for low birth weight babies since the

same effect is seen with children in the 'normal' birth weight range. Interestingly, these results were not affected very much by the way a child was brought up or the background of the family. Although mothers from more deprived backgrounds are more likely to have low birth weight children, it is the birth weight that has the effect on cognitive development, not the background of the family the child is born into.

These results even remained the same in the identical twin pairs where one baby was heavier than the other. Even though they are born into exactly the same environment, with exactly the same genes, having different birth weights will make the twins' cognitive development slightly different to each others'.

But many other factors also influence cognitive development. These things include: genes, education, birth order (whether the twins were your first children or not), physical and mental health, and diet.

This research shows that twin studies are incredibly important because they help us determine the effects of genetics and environment, as well as allowing us to see how differences in physical factors like birth weight can affect cognitive development. This research suggests there is a need to better understand how exactly birth weight affects cognitive development and to discover ways to reduce the number of babies born with a low birth weight.



## Breastfeeding benefits from a good gene

**Breastfeeding has been known to be good for children since the dawn of humanity but only now are we beginning to gain scientific insights into why this is so.**

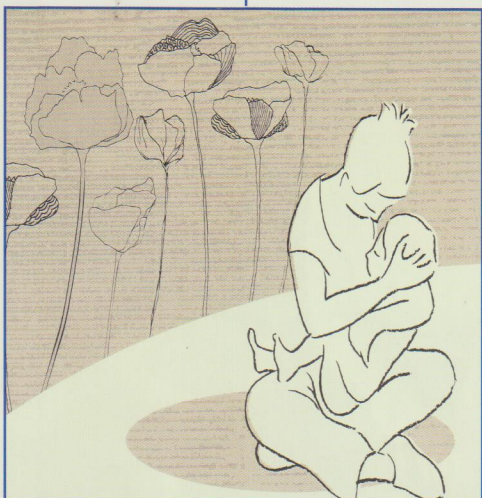
**O**ur work in the TEDS laboratory has uncovered a new gene which children inherit from their parents. This gene is thought to work by helping children benefit from the nutrients present in breast milk.

The rapidly developing brain of an infant requires good nutrition to grow. Breast milk contains a great variety of nutritious ingredients amongst which are the omega3 fatty acids. We decided to focus our study on this particular element because it is thought to be of great importance in brain development.

By using the DNA samples collected from both twins and mothers we were able to identify a gene that helps children take on board omega3 fatty acids. This natural process appears to be inherited in two forms. This means that our gene can boost the health giving properties of breast milk whilst also possibly protecting a child when there are insufficient nutrients present in the diet. This could have been particularly important at times in history when survival depended on making the most of what was available.

The combination of a beneficial gene and a form of nutrition such as breastfeeding is one example of an exciting new way of understanding the specific ways in which nature and nurture can combine to give positive outcomes. Thanks to the DNA samples you have given to TEDS we hope to be able to uncover many more findings like this one.

**Breast milk contains a great variety of nutritious ingredients amongst which are the omega3 fatty acids.**



## Is your neighbourhood bad for your kids?

**Children's health and development can be significantly affected by the kind of neighbourhoods where the children are growing up. Parents know this, of course!**

**T**hat is why parents try to find a home for their family in the very best local area they can afford. You may recall that when we visited your home when the twins were aged 5 years, we asked parents several questions about your neighbourhood. Examples are: "If you see a neighbour in the street, would you stop and greet them?", "If youngsters were misbehaving in the street, would neighbours do anything about this?", "If the local library or fire station were to be shut down, would neighbours write letters and work together to save them?". These kinds of questions allowed us to assess the social cohesion (neighbourliness, willingness to help each other) in the area where each TEDS environment family lived in the late 1990's.

Next, we looked closely at the twins' conduct problems, behaviours such as fighting, stealing, rule-breaking, truancy, and telling lies. We asked parents and teachers of TEDS twins about these behaviours when the twins were age 5, 7, and 10 years old. What did we find? Most TEDS twins improved a lot from age 5 to 10! Even the naughtiest children became more well behaved. However, on average, TEDS twins growing up in the poorest neighbourhoods had more conduct problems, and they improved less as they grew older. This contrasts with children in more well-to-do neighbourhoods, who on average had fewer conduct problems, and who improved faster as they grew older. What was surprising is that many well-to-do areas had very little social cohesion; neighbours did not know each other or act in a neighbourly way.

In contrast, some of the poorest neighbourhoods in terms of income were the richest in social cohesion and neighbourliness. We found that this social cohesion seemed to protect children in poor, deprived local areas, such that these children's behaviour improved to a healthy level by age 10. Why? Perhaps when neighbours care about their area, and care about each other, they help each other to raise their children in healthier ways. Parents who get more support from their neighbours may be more effective parents.

As the TEDS twins grow to be teenagers, they will spend more time away from home and out and about in the neighbourhood. We will keep asking questions about your neighbourhoods and about changes in twin behaviour. We hope to have more findings soon about 12-year-olds in the neighbourhood.

**"If you see a neighbour in the street, would you stop and greet them?"**

## The SGDP Centre

The SGDP (Social, Genetic & Developmental Research) was opened in 1995. It was the idea of scientists Professors Michael Rutter and David Goldberg. They aimed to show how the relationship between nature and nurture is involved in the development of health and behaviour. The centre is now home to 170 staff. It also plays host to numerous international visitors who are drawn by the potential for the sharing of ideas which are so essential to the work that goes on in the centre: work that has led to greater understanding of children's development as well as the development of pioneering new treatments.

Early studies at the Centre clearly demonstrated the benefits of a more integrated approach to developmental research. In particular, pioneering work on twins suggested the need to focus on underlying genetic mechanisms. Although research in child development at the time was strong, the study of how social causes relate to various health conditions was failing to keep pace and reliance on traditional methods was proving to be increasingly unsatisfactory. Making the connection between environmental influences and genetic factors is where the research at the SGDP Centre comes into its own.



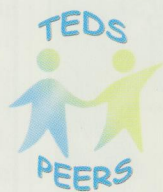
## A word from TEDS-Peers...

Hello to everybody and welcome from TEDS-Peers to this spring edition of the Newsletter.

Up until now you have all been kind enough to allow us to visit you in your homes. Now it is our turn! So over the forthcoming months TEDS-Peers will be inviting families to come and see us in our London research centre where you can see for yourselves where all the work takes place.

At TEDS-Peers we are interested in learning about how your twins have found the transition from primary school to secondary school. We have some questions we would like to ask you all, along with some computer tasks. We would also like to measure the twins' blood pressure, heart rate and collect some saliva samples. The reason for collecting saliva is so that we can examine more closely, hormones called cortisol and dehydroepiandrosterone (DHEA) which are both associated with growth.

We have already seen a number of families at our centre and are still contacting many more. We look forward to meeting you soon in London and showing you around our research centre.



**Pictures, (Top). Twins discover that visiting the centre is educational and fun. (Below) The TEDS-Peers team (from left to right) Sania Shakoor, Lucy Bowes, Jemma Hogwood and Louise Arseneault.**

