



**Merry Christmas from the
Lothian Birth Cohort 1921
Research Team**

Welcome to the 2012 newsletter. From all of the LBC1921 team, please accept our warmest wishes!

As usual, we would like to take this opportunity to tell you what has been happening in the study over the past year. We hope you are interested in hearing more about the recent results and other updates. It has been another productive year for the study, which began with the completion of the latest wave of assessments. We are already making plans to see you again from next year, and you can read more about that later in the newsletter.

Everything you read about in this newsletter is a result of your involvement. If you wish to get in touch for any further information, our contact details can be found at the end of the newsletter. We are always delighted to hear from you. Thank you again for your commitment and enthusiasm for the LBC1921 study.

From age 11 to 90, and beyond...

At the start of the year, we completed the latest wave of assessments. We were delighted that so many of you were willing

and able to attend the clinic at the Western General, or allow us to visit you at home. In total, almost 130 of you were able to take the tests or complete our questionnaires. The number of people taking part exceeded our expectations and we are very grateful for this, especially as so many of you came to see us near your 90th birthday!

As a reminder, the principal aim of the LBC1921 study is to find out how people maintain their health and thinking skills into old age. We are hoping to see as many of you as possible for a fifth assessment, beginning in Spring next year. By taking part, you will be ensuring the LBC1921 remains one of the longest projects of its kind in the world. We do appreciate the commitment you have made, and continue to make, to this work. We also hope you are proud of the contribution you have made to our understanding of how people's cognitive abilities change with age.

You don't need to do anything at the moment about the next assessment, except update your address if you have moved house or are about to do so. Alison will be in touch with you soon, and is already looking forward to seeing you again.

Latest results

Because of the very detailed information you have provided us with for over 11 years, the number of scientific publications we produce continues to rise. 2012 has been no exception. A couple of the main findings from this year are summarised below, followed by a

selected list of the scientific papers from throughout the year at the end of the newsletter. You have directly contributed to all of them and we hope you are interested to read about these latest results.

We particularly note a publication in *Nature*—the world’s top scientific journal—from January. In order to understand the degree to which cognitive change can be influenced in old age, it is important to know how much of that change is genetic and how much is environmental. In this study, analysis of data from three cohorts including the LBC1921 indicated that about 25% of cognitive change throughout life is linked to genes. This was the first study ever to quantify by genetic analysis the extent to which genes influence changes in intelligence from childhood to old age. It follows that environmental factors account for around 75% of cognitive change across the lifecourse – and are

therefore extremely important influences. We are working to identify what environmental factors are involved. Ultimately, modification of those that prove to be risk factors for cognitive impairment in later life will help people to protect their thinking skills in the future.

If you are interested in accessing the full research paper, the reference is given below, or you can contact the research team to obtain a copy.

Deary, I. J. et al. (2012). Genetic contributions to stability and change in intelligence from childhood to old age. *Nature*, 482, 212-215.

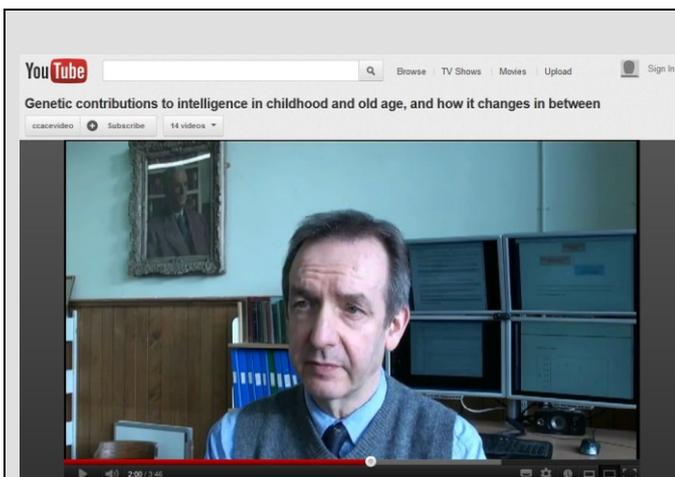
Another of the interesting findings from this year was produced by David Hope, a PhD student in the team. Using the measurements we took from your hands, the results showed that those with more curvature of the fingers performed less well on the tests of cognitive ability. It was suggested that the accumulation of these small deviations from normal, easily measured by looking at the fingers, might indicate the ageing process more generally. The full reference is:

Hope, D. et al. (2012). Minor physical anomalies, intelligence, and cognitive decline. *Experimental Aging Research*, 38, 365-278.

You can find a selected list of the other publications from this year, with short summaries, at the end of the newsletter.

Your stories

We have started an exciting new collaboration with the author Ann Lingard (www.annlingard.org). Ann has been working with the LBC team and participants to write about their lives and



If you want to hear Professor Ian Deary describing the *Nature* paper, you can view a video on YouTube at: http://www.youtube.com/watch?v=hCKXDzX1na0&feature=player_embedded

experience of the LBC studies. The short stories will be compiled and published online and may develop into a small publication about the studies.

On starting the project, Ann said, *"I have just met three of the volunteer participants from the LBC1921 and 1936 groups - and have been enchanted by their humour, their generosity with their time, and by the stories they have told me about their lives... I 'shadowed' one of the 1936 cohort volunteers through his test sessions at the WTCRF (of course with his consent) and was very impressed at the range of tests he participated in, not least because of the length of the whole session and the concentration required"*.

As well as these written life stories, the team are also currently collaborating with the renowned artist Fionna Carlisle on a project in which she is painting and drawing portraits of the LBC research team and participants. The plan is for this to be a public exhibition in Edinburgh and perhaps in Age UK's London building. As the two exciting projects develop we will update you in future newsletters.

Spreading the word

Throughout 2012, the LBC1921 team have continued to report the latest results coming from the study at international meetings and conferences. In addition, earlier this year, Study Director Professor Ian Deary met with David Willetts MP, the Minister of State for Universities and Science. The Minister had seen the *Nature* paper on the genetic and environmental contributions to lifetime cognitive change and wanted to know more, especially the implications for policy. Ian was able to speak with Mr

Willetts for well over his allotted time, updating him on our latest work within the LBC studies.

In July, Ian also spoke at a sell-out Royal Society of Arts event called 'The Long Run: Life is a Marathon'. The format was a series of presentations, followed by a discussion prompted by questions from the audience. Ian talked about the work being done on the LBC1921 and LBC1936 studies, with an emphasis on what can be done across the lifecourse in order to promote mental and physical health. Ian said, *"It was a real challenge to boil down over 100 scientific papers into eight minutes but it did not prove impossible!"*

The event was held to anticipate the start of the Olympic Games, and the final speaker was Simon Mason, an Olympic hockey player. The most evident things were the value of older people to society, and the great desire people have to know what might be done to promote better healthy ageing.



Ian with Olympian Simon Mason (pictured right) at the RSA 'The Long Run' event.

And finally...

Many of you will remember Dr Alan Gow who joined the LBC1921 team and saw a number of you at the clinic during the second wave of assessments. Alan will be starting a lectureship at Heriot-Watt University in the New Year, but will continue to collaborate with the team. You'll hear about this continuing work in future newsletters as it progresses.

Thank you!

We could not continue the LBC1921 study without your participation, so our sincere thanks for your ongoing support.

Merry Christmas, and best wishes for a happy New Year.

Yours sincerely,

Professors Ian J. Deary & John M. Starr, Study Directors;
Mrs Alison Pattie,
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Would you like to talk to us?

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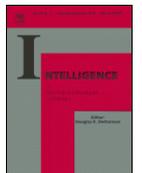
www.lothianbirthcohort.ed.ac.uk



Some of the many new research publications

Many new scientific papers have been published by the LBC1921 team across 2012. We know how interested you are in these findings so the references and short summaries of a few of these are given below. Do get in touch if you would like a copy of any of these.

There is a debate about whether individuals who begin with higher cognitive ability are protected from cognitive decline. We did not find this effect in the LBC1921 data from age 79 to 87, though there was some evidence of a protective effect earlier in the lifespan in another cohort. *Gow, A. J., Johnson, W., Mishra, G., HALCyon Study Team, Richards, M., Kuh, D., & Deary, I. J. (2012). *Is age kinder to the initially more able?: Yes, and no. Intelligence*, 40, 49-59.



Socioeconomic status can have an impact on health throughout life, but how this occurs is less well understood. Lower childhood socioeconomic status was associated with less symmetrical faces and bodies in later life. One route by which childhood status might lead to later health is therefore by affecting developmental processes. *Hope, D., Bates, T., Penke, L., Gow, A. J., Starr, J. M., & Deary, I. J. (in press). *Symmetry of the face in old age reflects childhood social status. Economics and Human Biology*.



A gene linked to a higher risk of Alzheimer's disease was tested for the effect it had on normal cognitive change. Those with a particular type of this gene showed greater cognitive decline over 8 years on verbal memory and reasoning. *Schiepers, O. J. G., Harris, S. E., Gow, A. J., Pattie, A., Brett, C. E., Starr, J. M. & Deary, I. J. (2012). *APOE E4 status predicts age-related cognitive decline in the ninth decade: longitudinal follow-up of the Lothian Birth Cohort 1921. Molecular Psychiatry*, 17, 315-324.

