



How does the fetus respond to maternal drinking and smoking?

A grant to answer this question and study the acute effects of drinking and smoking on the fetus has been awarded to Professor **Peter Hepper** and Dr **Jim Dornan**, (Royal Maternity Hospital). The grant, £65,000, was awarded by the Northern Ireland Mother and Baby Appeal and will run for the next 3 years. The funding will enable **Jennifer Little** to continue her research examining how maternal drinking and smoking influence the neurobehavioural development of the fetus.

Despite the possible adverse effects of drinking and smoking during pregnancy being well known, many mothers continue to drink and smoke during their pregnancy (40% and 30% respectively in Northern Ireland.)

The team (with Jenny doing all the work!) previously examined the behaviour of the fetus in mothers who drank alcohol and/or smoked. Mothers were not heavy drinkers (3-4 drinks per week) nor were heavy smokers (5-8 cigarettes per day).

Even at these low doses the spontaneous behaviour of the fetus was affected. Fetuses of smokers and drinkers were less active. From about 26 weeks of gestation fetuses startle to a loud sound. If the mothers drank or smoked their fetuses were much less likely to startle. Habituation performance was also affected. If the mother smoked or drank, fetuses required many more stimuli before they habituated. All these results indicate an effect on the fetus's brain as this is responsible for controlling their behaviour.

Of greatest concern was that the effects



Jenny Little (right) and Peter Hepper (left) examining the behaviour of a fetus to sound stimulation.

were still evident 5 months after birth. When tested in an habituation task babies of mothers who smoked or drank performed differently to those who did not. This suggests a possible permanent long term neurobehavioural effect of drinking and smoking.

This new research proposes to look at the acute effects of drinking and smoking. That is what happens to the fetus when the mother smokes a cigarette or drinks a glass of beer or wine. By examining the fetus when it is exposed to these substances a greater understanding of the action of alcohol and cigarette smoking will be obtained. It may also be possible to use this information to design more effective programmes to help mothers quit smoking or drinking during their pregnancy.



Babies rally to the team's aim to help mothers stop drinking and smoking when pregnant

Christmas Closures

The General Office and Workshop will be closed from 23 December to 4 January inclusive.

Anyone wishing to access the building between 31st December and 2nd January should see Prof. Hepper immediately.

Congratulations

to **Ross White**, a postgraduate in the School, who has won the Northern Ireland Science Shop prize for best dissertation for his work entitled "Suicidal Behaviour in Gay Men: The Psychosocial Stressors and Associated Risk factors".

New Appointments

Heads of Divisions

Dr **Ian Sneddon** has been appointed as Head of Curriculum Development and Teaching.

Dr **Harry Rafferty** has been appointed as Head of the Centre for Applied and Professional Psychology.

Research

Dr **Rachel Jackson** has been appointed as Research Assistant to the Head of School, Prof. Peter Hepper, to work in the area of animal welfare and behaviour.

Dr **Liz Sproule** has been appointed as a Research Fellow to work on a grant from the Department of the Environment awarded to Prof. Noel Sheehy and Dr Judith Wylie.

Glenda McCartney has been appointed as Research Fellow to work on a grant from the Wellcome Trust awarded to Prof. Peter Hepper.

Jennifer Little has been appointed as a Research Fellow to work on a grant from the Northern Ireland Mother & Baby Appeal awarded to Prof. Peter Hepper.

Bill Byth & the McCollough Effect

Dr Bill Byth has spent the past ten years undertaking a series of experiments investigating the sensitivity of the McCollough Effect (ME) as an indicator of central neurotransmitter activity with particular emphasis on individual differences.

The McCollough Effect (named for Celeste McCollough who made the first report in 1965) is quite easy to establish and measure, makes few demands on the observer other than the patience required for ten minutes or so watching a screen and is non-invasive. In Bill's experiments observers adapt by looking for 10 to 15 minutes at a magenta and black vertical



Dr Bill Byth

square-wave grating and a green and black horizontal grating alternating at 5 second intervals. When asked to look at black and white test gratings, at least 10 minutes after adaptation, observers see a green 'McCollough Effect' phantom colour on the vertical and a magenta 'McCollough Effect' on the horizontal grating.

The work is cross-disciplinary as it involves visual perception, extraversion, drug studies and menstrual cycle effects and has been undertaken with post-graduate research students, Nicola Logue, Dennis McMahon, Moira Maguire and Prof. David King of Therapeutics and Pharmacology.

The results of this research have been published in a range of journals including: British Journal of Psychology, Psychopharmacology, Perception & Psychophysics, and Personality & Individual Differences. As well as providing a greater understanding of brain function and how this may be affected by extraversion-introversion,

the results also demonstrate the dangers inherent in generalising a well established effect in one population (men) to another (women). For example Bill's recent paper in *Personality and Individual Differences* 1999, 26:563-579 found extraversion differences in men, but not in women, in the strength of the McCollough effect.

PhD Success

Congratulations to the following students who have all successfully endured a viva after 3 years hard work as postgraduate students to be awarded their PhD:

Michael Gormley for his thesis examining the subliminal priming of association judgements, supervised by Dr Colin Cooper and examined by Dr Carol McGuinness and Prof. Howard Smith, Trinity College Dublin.

Mark Conachy for his thesis examining the perceptions of attachment and family: Young offenders in Northern Ireland, supervised by Dr Karen Trew and examined by Prof. Noel Sheehy and John Coleman, Director, Trust for the study of Adolescence.

Sarah Johnstone for her thesis examining gender, identity and academic subject choice at school and university, supervised by Dr Gerry Mulhern, and examined by Dr Karen Trew and Prof. Ann Colley, University of Leicester.

Jennifer Little for her thesis examining alcohol and smoking: effects on fetal behaviour, supervised by Prof. P Hepper, and examined by Prof. Ken Brown and Dr Leo Leader, University of New South Wales, Australia.