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CELSE 2010 – Conference of Epidemiological Longitudinal Studies in Europe, Paphos, Cyprus

The 5th Conference of Epidemiological Longitudinal Studies in Europe (CELSE 2010) was held from 13th to 15th October 2010 at the Coral Beach Hotel in Paphos, Cyprus. The conference focused on longitudinal research, particularly on longitudinal methods to study aspects of human health and behaviour. A wide range of themes from the fields of medicine, psychology, sociology, biology, genetics, statistics, education, economics, as well as other topics covering various periods of the life course were presented.

The conference included seven keynote sessions, ten thematic sessions, three symposia sessions, one featured session and two poster sessions. In these thematic, featured and symposia sessions, lectures on various topics were given in four to six parallel sessions.

1. Keynote Presentations

- John Ioannidis from Stanford University, USA gave a talk on the false-positive to false-negative ratio in epidemiologic studies and exposure-wide epidemiology. He stated that both false positives and false negatives can be serious problems in (traditional) epidemiological research. However, in fields such as genetic epidemiology that have used large-scale measurements, former adjustments for multiplicity and stringent quality controls, false positives have become a negligible problem.
- Jorn Olsen (UCLA/USA, Aarhus University/Denmark) talked about his years of experience with the National Birth Cohort in Denmark. The presentation included details of follow-up, social conditions in the cohort and application to the data.
- Marcus Pembrey's (UCL Institute of Child Health, UK) keynote speech covered epigenetics, early life experience and the association between fetal/childhood experience and adult health and well being. The latter might be explained by the ongoing social patterning, inherited variations in your and your parents' DNA and the early experience which alters the activity of patterns. Marcus Pembrey concluded that the whole blood DNA reveals much variation in DNA methylation between individuals and that some of this variation is associated with early life experience even in adult DNA. But how directly these DNA methylation differences are involved in mediating early origins of adult health and disease is still unknown.
- Jay Belsky from Birkbeck University of London, UK gave a keynote speech on the differential susceptibility to environmental influences, a life course perspective. He considered e.g. prenatal smoking and ADHD, child maltreatment and antisocial behaviour in young adulthood.
- James Heckman's (University of Chicago, USA) talk on dynamic models of skill formation over the life cycle included theory, methods and evidence from longitudinal studies of human development. One major finding of his research is that self-productivity becomes stronger as children become older.
- Dorret Boomsma from VU University in Amsterdam, Netherlands gave a talk on genetic influences on behavioural development over the life course. She mentioned the individual differences across age, whether heritability differences could be presented as a function of age. Furthermore, she discussed the stability across age, i.e. to what extent it can be explained by genes or by the environment.
- George Davey Smith (University of Bristol, UK) discussed whether genetic epidemiology can help identifying environmentally modifiable influences on health over the life course (in the Women's Heart Health Study). He concluded that Mendelian randomisation can provide more reliable evidence of causal effects of modifiable exposures on health outcomes.

2. Thematic and Symposia Sessions

In the symposia and thematic sessions scientists also discussed the latest longitudinal research advances and contributions to science and society.

In the symposium session "Statistical methods for life course investigations of growth and health" statistical methods that can be used to study anthropometric change across the life course, i.e. growth, were introduced. Infant and childhood measures such as height and BMI are key indicators of human health and development and could be linked to chronic disease (also later in adulthood). This symposium demonstrated a variety of longitudinal methods such as multilevel linear spline models, latent growth curve models, growth mixture models, functional data analysis and compositional analysis. These presentations have been very informative for my future work as I will work on longitudinal analyses in our birth cohorts and thereby investigate the longitudinal development of specific sensitization. Furthermore, a number of issues for this research field, as e.g. autocorrelation and missing data, were discussed which are important for analysing longitudinal data.

Another symposium outlined how the early life origins of health and disease can be examined through a number of different approaches. These presentations demonstrated the potential of utilising genetic and non-genetic, intra- and intergenerational data, study approaches and strategies to enhance the understanding of how early life affects the rest of the life course. This symposium gave me an insight into this research area and a summary of already obtained results.

The thematic sessions focused on a wide range of topics related to epidemiological longitudinal studies including long-term benefits of breastfeeding, substance abuse during pregnancy, overweight and obesity, genetic determinants of health and disease as well as issues and challenges in longitudinal research methods.

Another topic discussed in these thematic sessions concerned the opportunities and difficulties in combining longitudinal survey data and register data. Some of the challenges are e.g. the discrepancy between survey and register data, identifying and combining the units of data, identifying the characteristics of the variable being measured and identifying the time sequence of the data collection. As I will work with two birth cohorts which will possibly be linked for some analyses, it was very helpful for me to get familiar with the different issues in this research area.

3. Publications

A publication about the investigation of the longitudinal development of specific sensitization against inhalant and food allergens is projected.

Prospective birth cohort data allow to study the natural course for allergic sensitization against inhalant and food allergy, its determinants and gender switch from birth to the age of ten. With respect to inhalant allergens, an increased sensitization is expected, whereas for food allergens, a decreased sensitization is assumed.

4. Summary

The conference offered me a great chance to meet experts as well as young scientists who are working in the area of epidemiological longitudinal studies and birth cohort studies. Furthermore, it provided an opportunity for me to learn about new statistical methods and research experiences relevant for my future research.