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Foreword

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This issue of *Behavior Genetics* contains the fruits of the International Workshop on Twin Methodology held at the Catholic University of Leuven, Belgium, August 24–29, 1987. It is not the proceedings of the workshop, because none of these papers was even contemplated before it took place. The week proved so stimulating to both teachers and students that many stayed back after the formal sessions of the day were ended to write programs and analyze their own data. Thus, all the papers in this issue have their beginnings in that week. When we dispersed to our own institutions we continued working on them, but the collaborative links begun in Leuven also continued through electronic mail. Bitnet made possible the rapid exchange of data sets, programs, output files, and drafts of manuscripts. Later drafts with figures and "lots of Greek" were exchanged by Fax. The world really is becoming a global village, and in our field it can be as convenient to collaborate with someone on another continent as with someone in the next building.

The workshop grew out of the alarming perception that the gulf between those expert in the collection of twin data and those expert in analyzing them was widening, not closing. Twin studies are growing larger and more complex every year as workers from a wide variety of biomedical and behavioral disciplines realize the power of twin designs. Yet many of these studies are analyzed in no more depth than could have been achieved in 1929 when Holzinger formalized the intuitive argument put forth by Galton in 1875. The hypothesis testing revolution in human behavior genetics sparked by Jinks and Fulker's seminal paper in 1970 has simply passed by many of the people in the field. This is not altogether surprising; to a newcomer it is difficult stuff, requiring a reasonable grasp of statistics and polygenic inheritance as well as at least a smattering of calculus and matrix algebra. Most difficult of all, perhaps, is the concep-

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tual leap required in formalizing one's verbal hypotheses into falsifiable mathematical models.

Yet it is not all that difficult and a number of us have felt for a long time that a short, concentrated course on the concepts and mechanics of model fitting would help to overcome the fear of these techniques and introduce twin researchers to the pleasures of rigorous hypothesis testing. Our attempt to do so took place shortly after the untimely death of John Jinks in June 1987. The workshop was taught by his students (Eaves and Fulker) and "F_2's" (Heath and Martin taught by Eaves, Boomsma and Neale taught by Fulker). The teaching sessions had much of the flavor of John Jinks' own lectures and practicals. They were not always as lucid or inspiring as his, but we like to think he would have approved.

In recent years a number of workers have taken advantage of the multiple-groups option in the LISREL package of Jöreskog and Sörbom to fit genotype–environment models to twin data. Although cumbersome and limited for our purposes in some respects, LISREL provides a readily available, user-friendly way into structural modeling for the novice, and we therefore decided to base the course entirely around this package. Our decision was reinforced when we found that most of the examples we wanted to run could easily be handled on microcomputers using the newly available PC-LISREL, which has the added advantage of being comparatively inexpensive. An unexpected bonus came with the arrival of PRELIS halfway through the workshop. This is a preprocessor for LISREL which allows exploration of the raw data and computes and correlation matrices. Most impressive is its handling of mixed continuous and ordinal data and computation of matrices comprising Pearson, polychoric, and polyserial correlation coefficients. The class exercise we hurriedly put together to illustrate the use of PRELIS has now developed into one of the papers in this issue.

The course was taken by 22 people from seven countries. Lectures on theory and application were followed immediately by practical exercises with three or four students and a teacher to each microcomputer. Students took it in turns to modify and run LISREL and PRELIS programs and many, without previous experience, became proficient at an astonishing pace.

The papers in this issue are intended as substantive and methodological contributions to the research literature. But they also have the didactic aim of showing how LISREL and PRELIS can be used to tackle a variety of important methodological problems in the analysis of twin data. We believe that many of these methods are equally applicable to those working with other experimental designs, both human and animal. To this end, the methods sections of the papers are fairly detailed, and

in most cases the LISREL jobs and covariance matrices are printed as appendixes so that interested readers can run the analyses for themselves. Inquiries about LISREL and PRELIS can be made to Scientific Software Inc., 1369 Neitzel Road, Mooresville, Indiana 46158, or to Linda Budd at (317) 831-6296.

The workshop and this collection of papers would not have occurred without the efforts of our Belgian colleagues. We mentioned our idea of a workshop to them at the Fifth International Congress of Twin Studies in Amsterdam in 1986. We had been talking about it since the Third Congress in Jerusalem in 1980, but it was the Belgians who immediately grasped the idea and started organizing. To Drs. Robert Derom and Bob Vlietinck we owe a tremendous debt. Expenses for the workshop were covered by NATO Grant 86/0823, jointly held by Dr. Derom of the State University of Gent and Dr. Walter Nance of the Medical College of Virginia, Richmond; further assistance was given by the Belgian National Research Fund, the State University of Gent, and the Catholic University of Leuven. These sources are also heavily subsidizing the production of this issue of *Behavior Genetics,* and for this we are very grateful. The success of the workshop was due in large part to superb on-the-spot organization by Bob Vlietinck and his colleagues. Our every need was immediately catered to, and this enabled teachers and students to give their full attention to the scientific task. Before the week was over we were talking about doing it again. Another workshop is being planned for summer 1989.