EUROPEAN SCIENCE FOUNDATION

SETTING SCIENCE AGENDAS FOR EUROPE

QUANTITATIVE METHODS
IN THE SOCIAL SCIENCES 2 (QMSS 2)

Standing Committee for the Social Sciences (SCSS)

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• Social Sciences
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• Nuclear Physics
• Polar Sciences
• Radio Astronomy Frequencies
• Space Sciences

Introduction

The need to ensure that European social scientists are working at the cutting-edge of quantitative methods is becoming of increasing importance. In many countries there is concern over a shortage of younger social scientists with the necessary training and skills in quantitative methods. The network will provide a focal point for methodological innovation and advancement and ensure that we develop a new generation of European researchers able to use advanced quantitative methods across the social sciences. The programme represents a continuation of the very successful work carried out under Quantitative Methods in the Social Sciences, led by Chris Skinner at the University of Southampton.

The programme will focus on five areas of critical importance in quantitative methods. It will bring together, through annual seminars, leading European experts with unprecedented expertise across a wide range of methods and discipline areas. Cutting-edge methods will be disseminated to the new generation of European researchers through theme-based summer schools. The seminars will provide a focal point where specialists from different disciplines and different countries will share their experience – not just amongst themselves but also with younger researchers. These seminars will provide both the vision and the framework for planning the summer schools designed to train young European researchers in specific methods. These activities will be supplemented by short visits between junior researchers to promote collaboration in developing joint research projects.

The running period of the ESF QMSS 2 Research Networking Programme is for 4 years from April 2008 to September 2012.

Aims

The aims of the programme are to:
- increase the level of knowledge of advanced statistical methods in the European social science community;
- develop strong interdisciplinary and international networks around selected research themes:
- increase the capacity of European social science in the analysis of large and complex datasets;
- disseminate cutting-edge methods to the new generation of European researchers; and
- promote collaboration in developing joint research projects.

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The research groups and the topics to be covered

1. Social interactions

The study of social interactions, or social networks, is central to understanding the dynamics of the relations between social actors, as well as their behaviour and performance. 'Social actor' as used here can refer to individuals, companies, associations, countries, etc. Basic to the study of social networks is the insight that a dyadic focus is not enough for understanding social interactions, but indirect ties, third-party effects and other more complex patterns of ties between multiple actors have profound consequences for their behaviour. Furthermore, interactions between social actors lead to feedback patterns and phenomena that can be studied only longitudinally. Some examples of such patterns are peer relations between adolescents and the interrelation between peer networks and developments of lifestyle behaviour, social or antisocial behaviour, various health-related practices, etc.; cooperation and competition between employees in a work setting; ethnic relations and attitudes of individuals with respect to religious and ethnic groups; and strategic alliances between companies. The feedback patterns between interactions and attitudes or behaviour can in some cases lead to fast-occurring changes in aggregate opinions, polarisation, etc. The relevance of these topics to Europe is evident.

The focus on ties between actors distinguishes the methodology of social network analysis from other methodologies in the social sciences, both with respect to data collection, construction and measurement of variables, and data analysis. The standard assumption of independent cases is not adequate here. In the past years, important advances have been made, and are still being made, in the methodology of social network analysis. Computers play a central and multifaceted role here: computer communication has revolutionary impacts on social interactions (chat rooms, computer-mediated friendships, discussion groups, email); the World Wide Web has led to many new possibilities for data collection and has itself become an object of investigation; and computer-intensive analysis methods enable simulation-based studies of social networks that would earlier have been unthinkable. Moreover, there has been a growing and fruitful collaboration between substantive social scientists and methodologists/statisticians in the study of social networks.

2. Analysing the lifecourse

Lifecourse analysis is vital to understanding the relationship between life events (e.g., migration, parenthood, partnerships, employment) and long-term outcomes over lifecourse trajectories. The lifecourse consists of repeated events (i.e., multiple episodes) and dynamic interrelated processes with a focus often on the frequency, timing and duration, sequencing, causality and status dependence of events. Topics addressed by the group include:

Data collection and research design
Lifecourse data are often collected retrospectively and suffer from problems of recall, autobiographic memory, misrepresentation of specific populations, and collecting information on attitudinal or affective states.
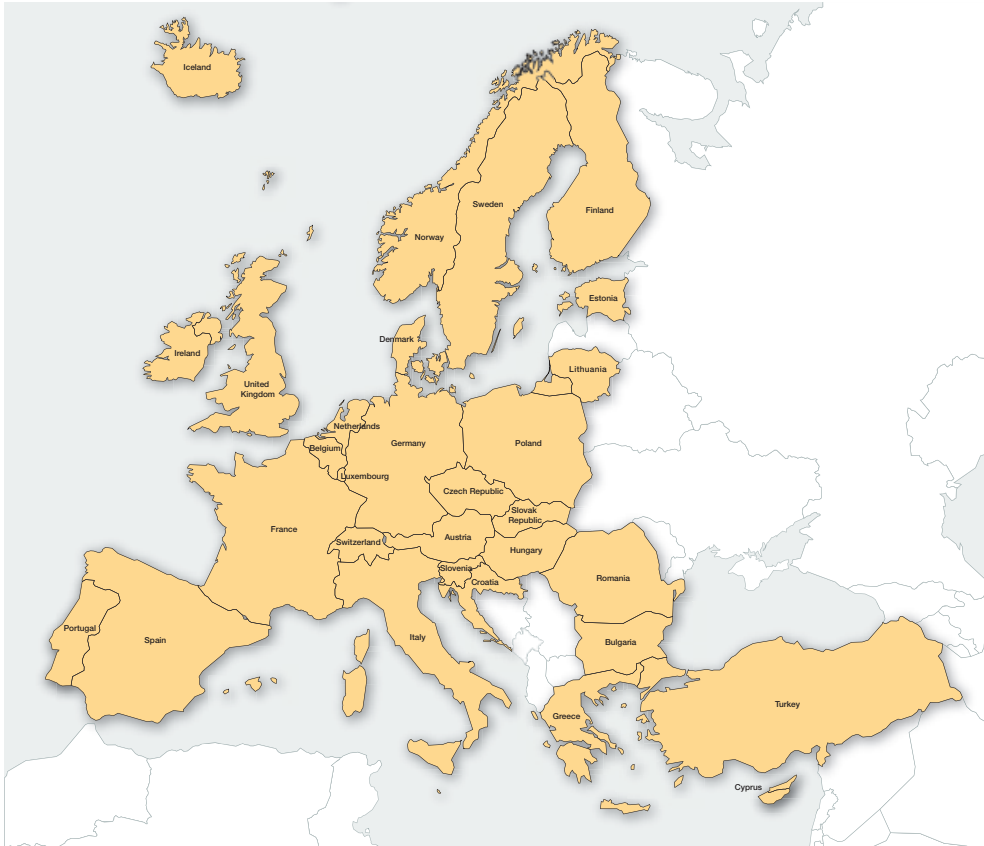
Descriptive methods
Methods are required that can illustrate multistate and multi-episode processes, including: descriptions of entire histories, sequence analysis, analysis of cumulative descriptions over time and graphical methods.

Lifecourse data and causal modelling
Lifecourse data offer an excellent opportunity to apply causal models, helping to identify:
- the direction of causality;

ESF member countries – 17 of which are currently supporting QMSS 2

- strengths of reciprocal effects;
- age, cohort and period effects;
- historical settings;
- multiple clocks, eras, and point-in-time events;
- contextual processes at multiple levels;
- duration dependence; and
- variability in state dependencies.

Multilevel event history models

Individuals may experience events more than once over the observation period. Repeated events data have a hierarchical structure and can be analysed using multilevel models, which can be extended to non-hierarchical structures.

Dynamic analysis of interdependent events

Most event history analyses focus on the timing of events in a single history or 'process'. However, outcomes of one process often influence the occurrence of events in another. Multiprocess or simultaneous equation models allow for the examination of interdependencies.

Using discrete and continuous time models

An important issue is the comparison of discrete and continuous time models and their estimation techniques.

Cross-national comparisons

Lifecourse data are available in many countries, but cross-national research demands standardised instruments, concepts and compatible data files. The group will develop and test appropriate methodologies for cross-national comparisons.

3. Cross-national comparisons

Cross-national comparative analysis is increasingly important for understanding particularities, communalities, and change in European societies and for testing theories in the fields of sociology, political science, and (social) psychology. A growing number of datasets (three waves of ESS, several waves of EVS, ISSP, WVS) designed to provide comparability over most European countries, open new opportunities for substantive and methodological research – but also raise challenges.

Cross-national surveys face all the methodological problems of national surveys, but then are multiplied by the number of nations that are studied (Almond and Verba, 1970). This is not a problem if surveys are treated and analysed independently, but raises interesting issues when researchers treat the surveys as comparable and concentrate on comparisons across nations. One methodological advantage of cross-national surveys is that many of the problems that are ignored in single-nation surveys must now be faced explicitly (Almond & Verba, 1970). This is especially so when the focus of comparative research is on attitudes and on social characteristics of individuals. These constructs are related to theoretical concepts (theoretical validity) that are measured by sets of observed indicators. These indicators may be both subjective states, e.g. opinions, or social background variables, e.g. level of education, social status, religious involvement. While the problem of comparability arises in each stage of a study, this group will focus on the analysis of survey data and will cover the following topics:

- the selection of comparable observed indicators for measuring concepts that are equivalent over nations, and that cover the intended concepts;
- aspects of data quality control, and dealing with measurement error in attitudinal variables in comparative settings;
- building theory-based empirical models;
- approaches to comparative data analysis (conditions for multigroup comparisons and how to do it, discovering clusters of countries and groups within countries, hierarchical models, and the introduction of relevant contextual variables).
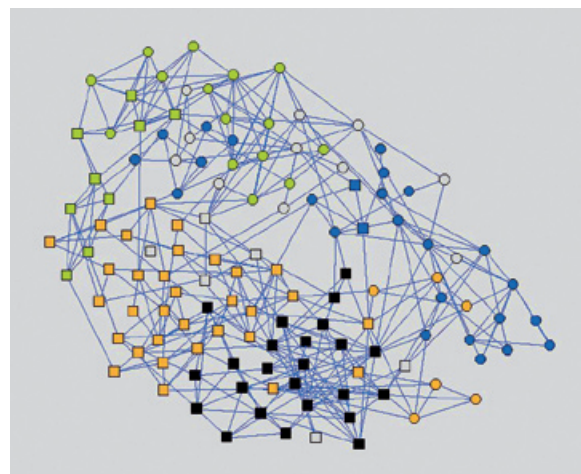
Summer schools will focus on the ESS datasets. Attitudinal variables in the datasets include: attitudes towards immigration, perceived ethnic threats, political efficacy, trust in politics, social trust, 'universal' basic values, citizenship, aspects of economic morality, religious involvement. The ESS website provides theoretical background papers.

4. Immigration and population dynamics

The research group focuses on methodological challenges related to the impact of world migration on European countries' population composition and distribution. Debates over segregation, integration and social cohesion make the study of the demographic consequences of immigration and the population dynamics of ethnic minorities a central concern of European social policy.

Challenges include:

- the separate specification of immigration and ethnicity, in order to measure each appropriately for social policy;

Social network model

- estimating international migration streams, both into countries of Europe and their destination within countries of Europe;
- the estimation of gross flows of internal migration, to investigate the competing explanations for changes in local population composition.

The seminars and training workshops will aim to answer these challenges with content on:

- Estimation and projection of international migration
- Multi-attribute analysis and projection of ethnic populations
- Projection methods for ethnicity and immigration status
- Measuring integration and discrimination
- Designs and methodological challenges of surveys on immigration and ethnicity
- Neighbourhood dynamics and contextual (neighbourhood) effects
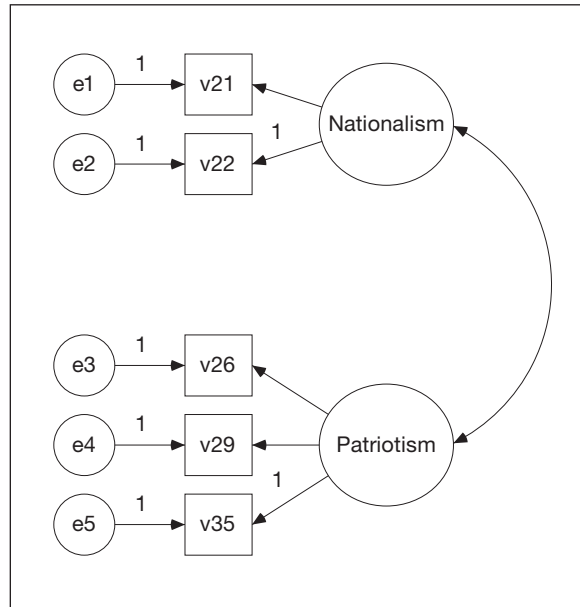
5. Survey design and quality

In terms of Total Survey Error (TSE) – sampling error plus non-sampling errors – error due to the design and low quality of surveys is much greater than sampling error. However, assessing the contribution of the major sources of non-sampling error (frame, non-response, measurement, or processing) plus sampling error is a major challenge inherent in the concept of TSE. If TSE is not known then substantive analyses are open to serious methodological criticism. Therefore an understanding of TSE should be part of the basic knowledge of all survey researchers and analysts.

For comparative surveys, the number of TSE sources is a multiple of the populations involved. With

a 20-nation survey such as the European Social Survey (ESS) there are many instances where serious errors may damage the overall comparability of the survey, but there is no body of previous quality control evidence. There is therefore an urgent need for an exchange between methodologists and capacity building via research seminars and training. The seminars will bring together specialists from such diverse disciplines as statistics, linguistics or quality engineering and will include experienced as well as young researchers. The seminars will feed back into surveys (ESS, SHARE and new comparative surveys). The research group comprises members of ESS and ISSP, who will consider official statistics and national surveys and will thus promote collaboration with other projects, such as the ESS Infrastructure project. The research seminars will target pressing research needs and identify the topics that need to be covered in the summer schools in order to create a critical mass of young European researchers with expertise in survey design and quality.

The research in this group relates closely to other topics covered by QMSS 2, particularly 'Cross-national Comparisons', and there will be close coordination of summer schools and seminars. The ESS will be the major source used in summer schools because it provides a wealth of design and quality information not available in surveys.

SEM model

Activities

QMSS 2 will run annual seminars and summer schools. It will also facilitate short visits between junior researchers to promote European collaboration.

Seminars

Each of the five groups will run an annual seminar. The seminars will provide a focal point where specialists from different disciplines and different countries will identify and promote cutting-edge methods. The seminars will also introduce new scholars and junior researchers to the network and thus stimulate lasting cross-European collaboration. These seminars will provide both the vision and the structure for planning the summer schools to train young European researchers in specific methods. Outputs from the seminars will include papers available on the Web and links to other on-line resources.

Summer schools

Each research group will also run two summer schools during the four years of the programme. Each school will last approximately eight days and will combine lectures with hands-on training to junior researchers, often using European comparative datasets such as the European Social Survey (ESS) and the EU Labour Force Survey. The summer schools will also include guest lectures from international experts. They will be held at venues around Europe that can offer the necessary facilities for lab-based work. The QMSS 2 website will hold training materials and methodological guides.

Short visits

The seminars and summer schools will be complemented by short visits between junior researchers to promote collaboration in developing joint research projects.

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For the latest information on this Research Networking
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