The ENABLE-AGE Project:  
Multi-Dimensional Quantitative and Qualitative Methodology for European Housing Research

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Purpose

The specific aim of this paper is to present a novel, multi-dimensional methodological approach to housing research, developed within a three-year project funded by the European Commission.

Project description

The main objective of the ENABLE-AGE project is to examine the home environment as a determinant for autonomy, participation, and well-being in very old age in a longitudinal perspective, exploring subjective and objective aspects of housing and their impact on health and ageing. The ultimate delivery of the project is a home assessment package, providing an optimised methodology comprising measures on objective and subjective dimensions of the home environment, and relevant measures of functional health. The ENABLE-AGE methodology is intended for use in individual case management, planning housing for subgroups at risk, management of housing issues on the societal level in different countries, and for providing data bases to underfeed consumer decisions and social policy decisions (see http://www.enableage.arb.lu.se).

The project involves five European countries: Sweden, Germany, the United Kingdom, Hungary, and Latvia. The ENABLE-AGE project comprises three major parts. A macro level update on housing policies (the ENABLE-AGE Update Review) supports the project process, integrated with the knowledge generated by the ENABLE-AGE Survey Study (N=1,918) (Table 1) and the ENABLE-AGE In-depth Study (N=200). The survey involves a wide range of well-proven measurements administered at home-visits with randomly sampled very old people who live alone in their private urban homes. A follow-up design is used, comprising two measurement points with a one-year interval. For the qualitative ENABLE-AGE In-depth Study, 200 in-depth interviews will be conducted, 40 in each of the participating countries. These will be followed by consultation interviews with a sub-sample (n=60). The three parts of the projects is integrated through the project process, underfeeding each other as concern conceptual definitions, research design, methodological development, analyses, cross-national comparisons, theory development, and dissemination of results.

The World Health Organization’s conceptual framework on disability and functioning (ICF) and Lawton’s ecological model on ageing constitute the basic conceptual and theoretical frameworks of the project, while a project-specific conceptual framework suitable for
research on housing and health in old age is under development. Concepts such as meaning of home, activity, functional health, accessibility, and usability are constructs necessary to define in this kind of research. Basically it is assumed that personal and social factors, objective as well as subjective environmental factors, and the structure of society contribute to autonomy, well-being, and participation in a differentiated manner. Forthcoming analyses will be based on the project-specific conceptual framework, and the empirical results will underfeed continuous theory development suitable for future housing research.

While the methodological approach in itself deserves attention, ultimately the results should contribute to research and application in order to enhance knowledge on the relation of housing and healthy ageing and to enable older persons to maintain independence as long as possible.

**Methods**

**Sampling Design**

The initial ambition was to draw participants at random from official registers, in a similar way in all five countries. However, for different cultural, ethical, administrative, and practical reasons, this was not possible in the UK and Latvia. In the UK, two different strategies were applied: the use of general practitioner’s patient lists and an already existing study population register created for a similar study. In Latvia, participants were recruited at social day care centres and through older people’s voluntary organisations. Sweden, Germany, and Hungary used official registers.

Based on mean age differences between West/Middle and East European countries, the target sample in each country was 400 very old adults (N=2000), stratified for two age groups (“older” and “younger”) and for gender (75% women, 25% men). Only persons living in single-person private households were included, following a joint sampling strategy (Figure 1). The raw database after T1 of the survey study included 2,013 participants, but after quality control and clean file procedures, the final sample size was 1,918 (Table 1). A sub-sample of participants involved in the survey was asked to take part in the in-depth interviews. Initially, the ENABLE-AGE In-depth Study will involve 40 in-depth interviews in each country, followed by eight consultation interviews.

**Multi-Dimensional, Integrated Quantitative and Qualitative Methodology**

One highly innovative aspect of the ENABLE-AGE project methodology is the successive, integrative design of the survey instrumentation, the in-depth interview studies and the policy review. The integration of quantitative and qualitative aspects of the project has been a key component of the research design. Typically, research including both quantitative and qualitative methodologies has attended to both in relative isolation. From the very start of the project process, the ENABLE-AGE Project consortium has attempted to integrate both quantitative and qualitative methodologies within several stages: the design stage, the data collection stage, the analytical stage and the cross national interpretation stage.

The design of the ENABLEAGE survey and in-depth studies has followed a model in which health and well-being have been conceptualised from a number of different perspectives such as:

- an objective perspective of housing focusing on housing conditions, housing standards, and environmental barriers;
- a subjective perspective of housing focusing on meaning of home, housing-related control beliefs, and housing usability;
• an objective perspective of housing accessibility, operationalising accessibility as an aspect of person-environment fit;
• a medical perspective of health in which participants self-reported their medical problems;
• an embodiment perspective of health characterised by symptoms;
• a functional perspective of health in which functional capacity and activity were objectively assessed as well as captured by self-reports, using different measurement levels;
• a psychological perspective in which coping with health and home, emotional well-being and mental well-being were all included;
• a social and community perspective in which social support and community participation were all seen as important aspects of relevance for the project.

The design underpins both the survey and in-depth interviews, keeping both survey and interview methodology closely related. This means that conceptually linked questions of measurement and frequency can be addressed through the survey while research questions concerning how and why people behave in the way they do, as well as social constructions of independence, autonomy, and participation are being elaborated in the qualitative work.

The data collection phase has been carefully planned to allow an integration of survey and interview methodologies. The first data collection occasion of the ENABLE-AGE Survey Study was conducted prior to the ENABLE-AGE In-depth study taking place. This ensured that comments made by survey participants were evaluated with respect to the In-depth interview schedule developed. Any issues arising during the survey that held potential for elaborating understanding of the relationship between health, wellbeing and home were included in the In-depth interview schedule. In this way, a feed-forward process was adopted from survey to in-depth interviews. Moreover, participants in the survey were asked if they would like to contribute to the in-depth study.

The analytical stage of the research also encourages close linkages between the quantitative and qualitative data. Because of the grounded theory approach to the in-depth studies, any important relationships emerging in the preliminary analyses of the extensive survey data can be examined within the interviews. In grounded theory, issues emerging in the interviews as relevant and important as data collection progresses can be included in the successively amended interview schedule for exploration. The same is true for the survey data, and relevant and important relationships emerging in the survey analysis can be explored further in the in-depth interviews. Moreover, continuing analysis of the in-depth interview data highlight areas that have not been sufficiently covered in the first data collection of the survey and so were included in the second data collection of the survey.

The first cross national interpretation stage of the research is in progress, and it promises to be both challenging and exciting. At a regular basis, we arrange workshops on the different parts of the ENABLE-AGE project, encouraging each national team to share their findings with each other, to discuss issues arising, and to listen to and evaluate e.g. the interpretations of qualitative interview data of other teams. Inevitably such discussions have drawn interpretations from the in-depth interview data together with interpretations of the preliminary analysis of the survey data. This ensures that not only the national teams work closely together but that the survey and in-depth interview interpretations progress hand in hand, data from each informing interpretations of the other.

By combining qualitative and quantitative strategies in such an integrated way within the project, information gained will cover personal, social, and environmental factors from both objective and subjective perspectives. Further, the results will promote an understanding of the ways in which very old people live their lives at home, taking account of their experiences of health, autonomy, and participation.
Methodological Development and Interviewer Training

An important methodological aspect is the need for revision of instruments and the interviewer training necessary in order to achieve sufficient reliability, validity, and trustworthiness for comprehensive, multi-disciplinary international research. Within the ENABLE-AGE project, this issue has been given special attention, and in each country interviewer teams have been trained and monitored as concern quantitative as well as qualitative methodology. In addition, much attention has been paid to translation of questionnaires, interviewer’s manuals, interview guides, and instructions; now available in seven different languages. Moreover along the project process, we arrange workshops targeting the different parts and stages of the project, allowing for discussions and interaction between the national teams. In addition, each national project leader regularly arranges team meeting involving all members of his or her national team.

Prior to the data collection within the ENABLE-AGE Survey Study, major endeavours were made as concern methodological development and interviewer training. The first phase of this process was integrated with the ENABLE-AGE Update Review, as a review of building regulations and norms for environmental design in housing was necessary in order to revise the Housing Enabler instrument for international use. Further, all instruments and questions had to be translated into the seven different languages involved, followed by iterative piloting in the five countries. Later on in the process, two three-day interviewer courses were held, focusing reliable administration of all instruments involved. Next, in each country the national project leader arranged team courses, instructing and training all interviewers in their own language and context. Finally a minor interrater reliability study was accomplished, involving the observational parts of the survey study instrumentation.

For the ENABLE-AGE In-depth study, in each country a team of four or five researchers conducts the interviews and data analysis. In order to maintain an integrated analytical approach throughout this work, we have created systematic and rigorous documentation of the grounded theory approach as well as instituted training sessions and procedures for data collection, data handling, and analysis. Such procedures ensure that each country approaches the work in a similar way. However, there is a further step during the interpretation of the interview data that underscores the importance of maintaining close collaboration, not only within the teams but also between the different national teams.

The ENABLE-AGE Survey Study

The ENABLE-AGE Survey Study is based on a comprehensive, project-specific questionnaire, administered at two occasions by means of interviews and observational assessments (Figure 2). Besides descriptive questions, the questionnaire comprises several standardised instruments measuring different psychological variables, activity, autonomy, housing accessibility, usability, etc. Further, information on assistive devices, aspects of health and well-being, social participation, etc. is collected by means of project-specific questions designed by the multi-disciplinary ENABLE-AGE research team. Although objective aspects of the home environment are assessed in great detail (e.g., while walking through the home and administering the Housing Enabler instrument), several subjective facets of the perceived home environment are also addressed in the survey (e.g., usability, meaning of home, housing-related control beliefs).

The Housing Enabler instrument is a novel, multi-dimensional assessment tool rendering very detailed assessment of housing accessibility possible. This approach distinguishes the ENABLE-AGE Project from other projects in housing research where the aspect of accessibility seldom is thoroughly assessed; to the best of our knowledge few if any research
projects have used accessibility assessments based on scientific methodology. The Housing Enabler makes a predictive, objective, and norm-based assessment and analysis of accessibility problems in the physical home environment possible, and allows for analysis from individual as well as group/population perspectives. Inter-rater reliability and content validity have been established, reported in several publications. The assessment is administered in three steps. In the first and second steps the assessment is conducted according to checklists for functional limitations and dependence on mobility devices as well as for physical environmental barriers. In the third step an analysis of accessibility problems is undertaken, by relating functional limitations and dependence on mobility devices to environmental barriers. The result of this analysis is a quantification of the accessibility problems anticipated in each case, in terms of a total score:

I. Assessment of functional limitations: This first step of the assessment is a combination of interview and observation, in order to dichotomously assess the person’s functional limitations (13 items) and dependence on mobility devices (2 items). Thus, the personal component of accessibility is operationalized primarily in terms of physical functional capacity, while four of the items concern perception or cognition. Alternatively, if the assessment targets societal level and not individual cases, i.e. if the description of the personal component is based on epidemiological data instead of assessments of specific persons, the items are marked as present or not present based on epidemiological knowledge of the user group at target.

The result of this step is expressed in terms of profiles of functional limitations, i.e. the significant characteristic of this assessment is that it takes simultaneous occurrence of several different functional limitations into account. In this kind of profile the presence as well as the absence of any of the functional limitations is crucial, since the result of the quantitative analysis (see III below) takes both aspects into account.

II. Assessment of physical environmental barriers: A detailed on-site observation of physical environmental barriers in the home and the immediate outdoor environment (188 items). Thus, the environmental component of accessibility is operationalized in terms of the presence of physical environmental barriers. The housing environment is divided into four sections: outdoor environment (33 items), entrances (49 items), indoor environment (100 items), and communication features (6 items). In the original instrument, approximately 70% of the items were defined according to official Swedish norms or guidelines. The remaining items were defined and assessed based on professional experience, primarily occupational therapy expertise. The 188 items constitute a valid source of information, and they are subsequently entered into the quantitative analysis (see III below).

III. Calculation of accessibility score: This step is a quantitative analysis of accessibility. It is a calculation of a total score predicting the demand caused by a particular combination of functional limitations in an individual or a group and physical environmental barriers (environmental design features), i.e. the degree of objective, norm-based accessibility problems in housing. For each environmental barrier item, the instrument comprises predefined points (1 to 4) quantifying the severity of the problems predicted to arise in the specific case. Based on the rater’s dichotomous assessments in steps I and II of the administration procedure, the predefined points 1–4 already fixed in the instrument format yield a score summing up the degree of accessibility problems anticipated, i.e. predictive physical environmental demand. In cases where no functional limitations or dependence of mobility devices are present in the person, the score always is zero. In cases where the person has functional limitations and/or is dependent on mobility devices, higher scores mean more accessibility problems and higher environmental demand. A computerized tool for more efficient data analyses, on individual as well as group level, is available (see http://www.enabler.nu).
At the first measurement occasion (T1), the extensive data collection requires two home visits with each participant. Based on the methodological experiences and preliminary results from the first measurement occasion, for the second measurement occasion (T2) a shortened version of the questionnaire has been developed. Thus at T2, the data collection will be accomplished at one visit with each participant.

The ENABLE-AGE In-depth Study

The qualitative work aims to provide a deeper understanding of key themes by revealing the inner perspectives of older peoples’ home lives in relation to healthy ageing. In addition, the work will contribute to developing a theoretical framework within which the relationship between home and healthy ageing may be located. As such, the qualitative design is driven by a grounded theory framework in which the key concepts of health and well-being, autonomy and social/community participation are explored together and in relation to older persons’ experiences of their quality of life in their home setting.

In each participating country 40 semi-structured interviews with men and women in this very old age group will be conducted. Moreover, as the grounded theory framework develops, eight participants in each country will be investigated in further depth in a case study design. This includes follow-up consultation interviews (to clarify issues, elaborate interpretations and extend the data into relevant related areas), together with a consideration of their specific survey data for these eight participants. Taken together this will constitute an extremely rich qualitative database at the national level and enable an exploration of cross-national issues.

Prior to each in-depth interview, the interviewer has access to the survey data of the participant. Any interesting comments, apparent discontinuities in answering survey questions and recurrent topics of relevance for the person are noted and these are clarified and explored during the interview. Such information should be extremely useful in gaining insights into the older persons’ way of living at home. As an example from one of the first in-depth interviews, one older lady in the UK had revealed that she was virtually housebound, with very poor mobility, hearing, and sight. She continued to live alone, yet indicated a high level of community participation. During the interview, this apparent paradox was clarified when the lady described how the community “came to her” in constant visits from family, friends, and neighbours and asked her advice on community matters or simply included her in all the local gossip. She felt that she played an important role in the community in bringing people together, providing “a listening ear and a word of advice”.

The project design includes the generation of a limited number of case studies (n=8) in each country. It is at this point that survey and interview data from particular individuals are brought together in a single analysis. This analysis and resultant interpretations will be taken together to the older person for them to comment on, evaluate and contribute to the analytical process. Such consultation interviews will provide one final opportunity for the integration of the qualitative and quantitative data, analysis and interpretations in a reflexive process with researchers and participants both integrally involved.

The ENABLE-AGE Up-date Review

The ENABLE-AGE Up-date Review implies a five-country macro level update of current housing policies and legislation, based on a sociological approach but also involving architectural aspects of housing. Common housing policies, legislation, norms and regulations, relevant types of housing, and typical pathways of housing decisions for older adults will be reviewed, mainly based on relevant existing databases available at European and national levels and consultation with relevant experts, e.g. architects.
As mentioned earlier, the first phase of the Up-date review was a review of building regulations and norms for environmental design in housing, accomplished by means of a template based on the environmental part of the Housing Enabler. Each national team searched national data sources and filled out the template. Next, the data collected were reviewed by a Swedish architect with extensive experience of accessibility issues and universal design. Finally, the results were used for developing the ENABLE-AGE Project version of the Housing Enabler.

The second and main phase of the Up-date review targeted housing policies, legislation, relevant types of housing, and typical pathways of housing decisions for older adults as well as general information on the parts of the national welfare system considered relevant for the ENABLE-AGE Project, i.e. aspects of importance for very old people’s living situation. Another template was developed and filled out by each national team. Based on the data thus collected, national reports is in progress, to be followed by across-national analysis and report. The main role of the Up-date review is to provide information on background variables, viz. macro-level contextual/environmental factors.

**Ethical Considerations**

The ENABLE-AGE Project fulfils all legal or ethical requirements of the countries where it is carried out. That is, in countries requiring formal ethical approval and approval for the storage of electronic data, such procedures are managed under the responsibility of each national project leader. Guidelines for this work were drawn up from project start and refer to nationally accepted guidelines in each participating country or best practice where these do not exist nationally. Examples of guidelines to follow are for Sweden the Guidelines of the Swedish Medical Research Council, for Germany the Guidelines of the German Research Foundation and the German Society of Psychology, and for the UK the Standard Guidelines including the British Psychological Society Guidelines.

During the different phases of data collection, a substantial number of very old people will be visited in their homes. A positive and proactive ethical approach is adopted. Informed consent is gained from all participants and they are assured of their anonymity. All person related data are handled in a strictly anonymous way. Participants are informed that they can withdraw from the interviews if they wish, including a withdrawal of their data at any stage up to publication of results. Participants are informed that data will be anonymised and that extracts from interviews may be used in reports and publications. The interviews could touch on sensitive issues for the older people, especially where decisions of moving due to ill health or declining functional capacity are involved. The interviewers have been trained in dealing with sensitive issues and will be able to give advice at the end of the interview session if participants request this.

For very good reasons, we expect to come upon situations calling for social and medical interventions. The data collectors are all well trained, and several of them are occupational therapists or other health care workers with professional responsibilities. That is, they are instructed to offer participants in such situations the information needed in order to be able to contact local health and social service authorities for advice as concerns their personal situation.

Safety Provisions considered are mainly in respect to third party liability and injury and accidents of workers involved in data collection. Health and safety at work acts of the partner countries have been complied with and all employees are notified of the provisions of current legislation in this respect.
Table 1. Final sample for the ENABLE-AGE Survey Study at the first measurement point (T1), N=1,918.

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<tr>
<th>Country</th>
<th>Age group</th>
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<tr>
<td></td>
<td>75-79 years old</td>
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<tr>
<td></td>
<td>80-84 years old</td>
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<td></td>
<td>85-89 years old</td>
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<tr>
<td>Males</td>
<td>Females</td>
<td>Males</td>
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<td>Sweden</td>
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<td>United Kingdom</td>
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<td>Hungary</td>
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<td>145</td>
</tr>
<tr>
<td>Latvia</td>
<td>21</td>
<td>176</td>
</tr>
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</table>

*In order to reflect differences in life expectancy among the five countries involved in the ENABLE-AGE Project, in Sweden, Germany, and the United Kingdom, the “younger” age group consisted of persons 80-84 years old and the “older” of persons aged 85-89 years. In Hungary and Latvia, the “younger” age group consisted of persons 75-79 years old and the “older” of persons aged 80-84 years.*
The ENABLE-AGE Survey Study T1

Sampling list

Persons not fulfilling the inclusion criteria or impossible to

Persons meeting initial inclusion criteria:
Living alone
Aged 75-84 years (Latvia & Hungary)
Aged 80-89 years (Germany, Sweden, & United Kingdom)

Drop-outs:
Drop-out Questionnaire

Persons not fulfilling additional inclusion criteria:
Necessary housing functions absent in the sheltered housing dwelling unit.

Exclusion from Visit 2
National team-leader decision based on SOP¹ and interviewer questions.

Respondents
ENABLE-AGE Survey Study T1
(Visit 1 Questionnaire)

Respondents
ENABLE-AGE Survey Study T1
(Visit 2 Questionnaire)

¹ Standard Operation Procedure = Document prescribing data collection quality control.

Figure 1. Sampling definition flowchart for the ENABLE-AGE Survey Study, first measurement occasion (T1).
Visit 1

Contents

General information
Housing Enabler, descriptive part
Demographic questions
Assessment of Housing conditions and Housing adaptations
Assistive Devices/Technical Aids
Symptom List
Positive And Negative Affect Schedule (PANAS)
Modified Mini-Mental State Examination
Neighbourhood services and Place attachment
The Meaning of Home Questionnaire
Health Services
Perceived Health, Mobility, Vision, and Hearing
Geriatric Depression Scale
Housing Enabler, environmental assessment
The ADL-Staircase, and ADL performance difficulty items
Life Satisfaction
Questions for the interviewer to answer (reliability, quality of data, interview situation)

Visit 2

Contents

Perceived Functional Independence
Psychological Well-being Questionnaire
Visual Acuity
Housing Enabler, functional limitations and dependence on mobility aids
Usability In My Home
Adapted version of HOOP Questionnaire
Housing-related Control Beliefs Questionnaire (HCQ)
Leisure time activities
List of diseases
Coping Patterns Schedule (CPS)
Support
Home-related type of person
Participation in qualitative study
Questions for the interviewer to answer (reliability, quality of data, interview situation)

© The Enable-Age Project Consortium. Questionnaire with project specific questions, in combination with standardised instruments/assessments.

Figure 2. Contents of the ENABLE-AGE Survey Questionnaire, first measurement occasion (T1, Visit 1 and Visit 2).
Selected Methodological References


