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Materialien aus der Bildungsforschnung

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# Technical Report for the First Wave of the Berlin Aging Study

Field Procedures and
Sample Recruitment Strategy (1990–1993)

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**Contents**

# Technical Report for the First Wave of the Berlin Aging Study: Field Procedures and Sample Recruitment Strategy (1990–1993)


## Summary

The Berlin Aging Study (BASE) was initiated to contribute to gerontological research on advanced old age by assessing numerous aspects of old and very old people's life in a large city (former West Berlin), with an emphasis on their health as well as their psychological, social, and economic situation (Baltes & Mayer, 1999; Mayer & Baltes, 1996). This report describes the development and methodology of the first cross-sectional examination step—the *main study.*[1] In 1988/89 a broadly-based multidisciplinary empirical assessment schedule was conceptualized, consisting of 13 sessions and designed to study random samples stratified by age and gender. Although it was possible to make use of our own previous work and the experiences of gerontological and other empirical studies, several methodological, organizational, and research-ethical questions remained open. The main issue was whether enough old and very old people could be convinced to take part in the entire assessment schedule, and how best to do this. Therefore, this report first gives an account of the pilot studies, which were carried out from June 1989 to April 1990 in order to test the feasibility of the study and to optimize its design. Then we describe the methodology of the final 14-session intensive assessment schedule, which was implemented from May 1990 to June 1993. We report details of the sampling procedure and the use of the samples, followed by a description of the ways personal contact was made with the addressees of the study and the strategies used to motivate them to take part. We then concentrate on the steering of the field, sample


[1] Accordingly, the following steps of data collection within the study's longitudinal continuation are *not* described (but see www.base-berlin.mpg.de).

loss, and the three participation levels. We present basic data about these levels, which differed in intensity. After providing information about the research assistants' and project physicians' work, we conclude this report with a presentation of the Berlin Aging Study's concept of caring for its participants and research-ethical and legal procedures applied in the course of data collection.

# 1 The Conceptualization of Data Collection in BASE

## 1.1 Goals and Guidelines

The concept of the Berlin Aging Study was developed in 1988/89 by the (West-)Berlin Academy of Sciences and Technology's research group "Aging and Societal Development" (Spokesperson: Paul B. Baltes) and the study's four research units (Internal Medicine and Geriatrics, Psychiatry, Psychology, and Sociology and Social Policy). The steps taken in conceptualization, planning, and realization of the Berlin Aging Study are presented in depth in the annual reports of the former Berlin Academy of Sciences and Technology and the newly founded Berlin Brandenburg Academy of Sciences (Arbeitsgruppe "Altern und gesellschaftliche Entwicklung" [AGE] [Research group "Aging and Societal Development"], 1988, 1989b, 1990a, 1993, 1994, 1995; cf. Baltes, Mayer, Helmchen, & Steinhagen-Thiessen, 1993, 1999).

The following goals were formulated for the study's design and its realization (cf. AGE, 1989a):

(1) The target groups of the study were men and women aged 70–74, 75–79, 80–84, 85–89, 90–94, and 95+ years. They were to be won for participation from random samples drawn from the West Berlin population, which were stratified by age and gender.
(2) An intensive multidisciplinary examination schedule *(Intensive Protocol)* assessing a broad range of aspects formed the main focus. A sequence of 13 sessions was devised for the examination of participants.
(3) As it was clear that there would be sample loss on contact with the randomly drawn persons, we decided to gather basic information about each potential participant on initial contact to allow description of sample attrition, analysis of selectivity effects, and an estimation of the generalizability of the study's findings.
(4) Furthermore, dropout was to be compensated for in the field, thus achieving equal representation of completed Intensive Protocols in all of the study's target groups (see 1, above) in order to be able to make statistically sound statements for subgroups when analyzing the Intensive Protocol data.
(5) Certain medical examinations were to be carried out by staff of the Internal Medicine and Geriatrics and the Psychiatry Units (project phy-

sicians). All other sessions were to be performed by specially recruited research assistants, who were employed for the period of data collection and were to be trained by the research units and project coordination center for their various tasks (convincing the participants to take part, using different assessment instruments, looking after the participants, see 7).

(6) The design of the study also took into account several ethical and legal issues relevant to medical and social science research projects (American Psychological Association [APA], 1990, 1992; Berliner Datenschutzgesetz [BlnDSG] [Berlin Data Protection Act], 1983, 1991; Bundesdatenschutzgesetz [BDSG] [Federal Data Protection Act], 1990; cf. Helmchen, 1990; Helmchen & Lauter, 1995; Helmchen & Winau, 1986; Max-Planck-Gesellschaft [MPG] [Max Planck Society], 1984; Metschke, 1994; Mittelstraß et al., 1992). On the one hand, it was necessary to make provisions to avoid physical, psychological, or social strains on the participants during the assessment phase. On the other hand, existing procedures ruling the information of participants and their giving consent to take part, the discontinuation of examination in cases of strain, the handling of pathological examination results, and the protection of collected data needed to be adapted to the special requirements of the target population.

(7) Finally, research-ethical considerations taking account of old people's needs and habits led to the decision to carry out most of the sessions at their residence (private household or home) and to restrict the examinations in a hospital setting to a minimum. In order to avoid strain on the participants through constantly changing personnel, one research assistant was assigned to each participant for liaison from the first contact until the last session. In addition to motivating the old people to take part in the study and carrying out the sessions that did not have to be performed by physicians, these assistants were responsible for looking after the participants' needs in connection with the study.

The assessment schedule was planned based on these requirements, making use of the research units' previous work (cf. AGE, 1989a, 1989b, 1990a) and experiences of other multidisciplinary gerontological studies (cf. Berkman et al., 1993; Deeg, 1989; Lehr & Thomae, 1987; Rowe & Kahn, 1987; Schaie, 1983; see also Busse & Maddox, 1985; Costa & McCrae,

1993; Joukamaa, Saarijärvi, & Salokangas, 1993; Mossey, Havens, Roos, & Shapiro, 1981; Steen & Djurfeldt, 1993) and several larger social science studies in Germany (cf. Bundesminister für Arbeit und Sozialordnung [Federal Minister for Labor and Social Affairs], 1988; Esser, Grohmann, Müller, & Schäffer, 1989; Hanefeld, 1987; Infratest Sozialforschung, 1985; Mayer & Brückner, 1989; Mayer & Schmidt, 1984; Wagner, Schupp, & Rendtel, 1994). Nevertheless, several questions remained open. For instance, there were only few indications of how many old and very old people would indeed be prepared to take part in the intensive assessment schedule. Furthermore, it was necessary to examine whether the data collection would be strenuous for the participants and whether it would be possible to look after them adequately. It was also unclear whether the selected measures would work in the field. Another issue was the methodologically and practically optimal sequence of examination sessions. Questions of organization, practicality, cooperation among research units, the staff needed for fieldwork, and research assistant recruitment, training, and work also required clarification.

## 1.2 The Pilot Studies and Their Results

In order to obtain empirically based answers to these questions, two consecutive pilot studies were carried out, using smaller representative samples that matched the study's intended design. Pilot study I ($N = 49$) took place from June to September 1989, and pilot study II ($N = 65$) was performed from October 1989 to April 1990 (cf. AGE, 1990a, 1990b, 1992, 1993).

The most important finding of these pilot studies was that the Intensive Protocol of the Berlin Aging Study was empirically practicable and that the strains on old and very old participants were ethically defensible. Research assistants and project physicians not only bore the responsibility for data collection, but also had an important function in motivation of the participants, taking care of them, and early recognition of signs of strain.

On the whole, the assessment schedule and the selected measurement instruments proved to be useful in the pilot studies. Changes made thereafter were mainly aimed at coordinating the assessments among research units, avoiding double measurement of certain aspects, and tightening up the

schedule. Some instruments were also modified in order to improve their usefulness for very old or health-impaired individuals.[2]

The sequence of the Intensive Protocol sessions was also decided during the pilot studies. It became clear that varying the intended order of sessions (cf. Table 1), that is, beginning with the medical sessions rather than the social and behavioral-science sessions, did not have an effect on participation in the entire protocol. However, starting with the sociological interviews about the participants' history and their life course gave the research assistants a

Table 1
Typical Sequence of Data Collection in the Berlin Aging Study (BASE) at the First Occasion of Measurement

| Session | Content |
|---|---|
| *Multidisciplinary Intake Assessment (Session 1)* | |
| 1 | Short Initial Assessment/Baseline protocol/Observational protocol |
| *Intensive Protocol (Sessions 2–14)* | |
| 2 | Sociology I (Family of origin and employment history) |
| 3 | Sociology II (Family history and family relationships) |
| 4 | Sociology III (Economic situation and activities) |
| 5 | Psychology I (Intelligence and intellectual functioning) |
| 6 | Psychology II (Social relationships) |
| 7 | Psychiatry I (Neuropsychological tests) |
| 8 | Psychology III (Self and personality) |
| 9 | Psychiatry II (Yesterday Interview and psychiatric scales) |
| 10 | Internal Medicine and Geriatrics I (Medical anamnesis) |
| 11 | Internal Medicine and Geriatrics II (Physical examination) |
| 12 | Psychiatry III (Psychiatric examination) |
| 13 | Internal Medicine and Geriatrics III (Dental examination) |
| 14 | Internal Medicine and Geriatrics IV (CT, ultrasound imaging) |

*Note.* Sessions lasted an average of 1.5 hours. Except for sessions 11, 13, and 14 (see text), all sessions were conducted at the participants' residence (adapted from Baltes et al., 1999).

[2] Not only were questions simplified, but also the layouts of scales and questionnaires shown to the participants made clearer and more legible. In some cases, written versions of tests were prepared for hearing-impaired participants. These versions were also employed for cognitively-slowed persons who needed visual support. The cognitive test battery was usually presented on the touch-sensitive screen of a computer. Although this medium was completely new for most participants, it was generally very well accepted (cf. Lindenberger & Reischies, 1999).

good opportunity to enter into a dialogue with the participants and to build up the trust necessary for the continuation of assessments. The positioning of the Psychology and Psychiatry Units' cognitive and neuropsychological tests in the middle of the schedule also proved to be advantageous. The reservations some participants harbored against these tests had generally declined by then because of the level of trust built up over the first sessions. At the same time, training effects due to some of the preceding assessments remained limited. Finally, placing the social and behavioral-science sessions before the medical ones made it easier to coordinate the project physician and clinic appointments for each participant and to make full use of the restricted times available for clinical examination. In some cases, variations of the sequence of sessions were allowed in order to react flexibly to participants' needs.

The pilot studies showed that only about one third of people approached in the field was prepared to take part in the Intensive Protocol. However, as a larger number of people was interested in participating in a shorter and less thorough examination, a multidisciplinary *Intake Assessment* was developed and tested during the pilot studies. It preceded the Intensive Protocol and consisted of 100 questions providing basic information for all four research units (see Table 1; cf. Baltes et al., 1999, Table 1.3). The first 16 questions of the Intake Assessment referred to variables specifically selected by all four research units, so that these could be posed in a brief personal contact or in a written questionnaire as a multidisciplinary *Short Initial Assessment* if necessary.

The Intensive Protocol, the Intake Assessment, and the Short Initial Assessment define different levels of participation in the study. The successful completion of the Intake Assessment and the 13 parts of the Intensive Protocol constituted the primarily intended and most comprehensive participation level. If persons were not prepared or able to take part at this level, participation in the Intake Assessment on the level below was possible. The least intensive level, the Short Initial Assessment, remained as an option for those who did not want to take part in the Intake Assessment or whose health was too compromised.

This design made it possible to compare participants on the different levels and to analyze selection processes (cf. Baltes et al., 1999; Lindenberger et al., 1999). Further data for these analyses resulted from an *Observational Protocol* during the contacts with potential participants (cf. Table 1; Baltes et al.,

1999, Table 1.3; Webb, Campbell, Schwartz, & Sechrest, 1966). This instrument gathered information about living conditions, environment, setting of the contact, health impair ments, and needs for help and care, if they could be observed. Its purpose was to register the context of initial contacts with potential participants in a standardized way (cf. Section 4.2.2).

## 2 The Samples of the Main Study

### 2.1 Drawing the Samples

The data collection phases in the cross-sectional main study, which began in May 1990 and ended in June 1993, were carried out with four samples stratified by age and gender and randomly drawn (see below) by the city registry of West Berlin in March 1990, March 1991, July 1991, and January 1992.[3] The West Berlin population of all people aged 70 and over listed in the obligatory city register provided the basis for all four samples.[4] The sequential sampling procedure was supposed to reduce sample losses through death. Also, it was supposed to decrease the likelihood of addresses becoming invalid over the three-year phase of fieldwork, for example, because people had moved or could no longer be contacted under the available address for other reasons (cf. Section 4.2.1).

The required number of addresses for men and women were drawn from the birth cohorts relevant to the study's design. Thus, men and women born in 1920 ("70-year-olds") to 1886 ("104-year-olds") were included in the sample drawn in 1990. In order to achieve equally distributed stratification of the sample, the same number of addresses was drawn for every birth cohort. If drawing a random sample of the desired size was not possible

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3 We are indebted to the staff of the Berlin city registry, who drew the samples and have regularly updated mortality data on the samples since 1991, for their excellent cooperation.

4 Even a well-kept (obligatory) register is not free of errors because, for example, changes of address are not or only belatedly communicated or not yet entered at the time of sampling. Moreover, the German registration laws (e.g., Meldegesetz des Landes Berlin [MeldeG] [Registration Law of the State of Berlin], 1985; Melderechtsrahmengesetz [MRRG] [Law on the Framework of Registration Rights], 1994) allow people to demand that their address is "blocked" and not passed on if that transfer would endanger themselves or others. Such addresses were not included in the sampling pool and are not part of the parent population. According to the city registry, the proportion of blocked addresses only made up about 0.04 percent of the male and 0.02 percent of the female parent population.

because there were no longer enough people of a certain cohort, all available addresses were selected.[5]

This procedure was maintained for the later drawings of samples. However, the target number of addresses varied. At the first occasion in March 1990, 40 addresses (as far as possible) were randomly drawn from the relevant birth cohorts of men and women. In 1991, two smaller samples were drawn in order to reduce sample loss in the field because of wrong addresses: 20 addresses per birth cohort were sampled in March, then 10 in July. In 1992 the required number was again increased to 30.[6]

Every one of the four samples was drawn according to a controlled random procedure. First, "step sizes" determining the addresses to be selected from the register were calculated. They differed between birth cohorts and between men and women and were computed from the entire number of addresses available for each cohort, which were divided by the number of addresses to be drawn for the study.[7] Furthermore, the "starting point," that is, the number of the address at which counting began, was varied.

Sampling from the city register had the advantage that the sizes of the parent populations and their distributions were always provided so that there was no need for estimates.[8] Another advantage was that, in accordance with German registration law (see MeldeG, 1985; cf. MRRG, 1980, 1994), some basic demographic characteristics of the selected individuals could be made available before contact. Based on an application by the study, the following information about selected persons was provided by the city registry in addition to their names and addresses: date of birth, gender, marital

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5 For example, this solution led to the addresses of all men born in 1886–1892 and all women born in 1886–1887 being included in the sample drawn in 1990.

6 As work with this sample again lasted a long time, the addresses were later given back to the registry for confirmation of their validity.

7 For example, 13,943 addresses of women born in 1920 were listed in the register when the first sample was drawn in 1990. This number was divided by the required number of addresses (40), resulting in a step size of 348.6 and the selection of every 348th address.

8 Of course the reported parent population sizes only approximate the true population—if it is possible to obtain a complete representation of a population at all. See Footnote 4 for some of the possible errors in the register that need to be considered among other aspects.

status, administrative district of the city of Berlin, and a code number for the "statistical region" of the address that enables a finer geographical distinction. The names and addresses included in this basic data set were detached from the other information and stored separately. After this anonymization, it was possible to use this basic data set for the study's selectivity analyses (cf. Baltes et al., 1999; Lindenberger et al., 1999).

However, working with four samples also had a disadvantage. The repeated sampling procedure led to each of the study's age groups spanning more than five birth cohorts. For example, according to the study's design, the first age group only included 70- to 74-year-olds, but to achieve this, new birth cohorts, that is, 1921 and 1922, had to be added when sampling in 1991 and 1992. Therefore some birth cohorts "overlap" across the age groups. For example, the 70–74 age group consists of people born in 1922–1916, and the 75–79 age group of individuals born in 1917–1911, thus overlapping for the birth dates 1917 and 1916. Such overlaps continue into the following age groups (cf. Maas, Borchelt, & Mayer, 1999).

## 2.2 Working and Reserve Samples

After receiving the samples from the city registry, they were randomly spilt into working and reserve samples in order to have additional addresses from the same sample available for later controls and more in-depth studies. From the second sampling onward (March 1991), recurrence of previously drawn and already used addresses was possible despite variations of the sampling "starting point" (see above). These "doubles" had to be sorted out before splitting the samples. This mainly applied to the older age groups and particularly to men for whom the sampling pools were much smaller due to the demographics of the parent population. However, the drawn addresses were not completely equally distributed across the working and reserve samples in order to be able to compensate for the greater address loss of very old people (aged 85 and over) resulting in the field.[9]

[9] Sometimes addresses from the reserve samples had to be included in the field because the initial working samples, for the older men in particular, proved to be too small and were too quickly used up (cf. Table 2).

Table 2
Drawn Addresses, Working Samples, and Addresses Used in the Field by Age Group for Men and Women With the Mean Sizes of the Four Samples Drawn by the Registry as References

| Age groups (Birth cohorts) | Mean sizes of the four parent populations[1] | | Drawn addresses[2] | | Working samples | | Addresses used in the field | |
|---|---|---|---|---|---|---|---|---|
| | | | | Men | | | | |
| 70–74 | 22,694 | 100.0 % | 498 | 2.2 % | 245 | 1.1 % | 119 | 0.5 % |
| (1922–1916) | | | | 100.0 % | | 49.2 % | | 23.9 % |
| | | | | | | 100.0 % | | 48.6 % |
| 75–79 | 20,895 | 100.0 % | 496 | 2.4 % | 245 | 1.2 % | 137 | 0.7 % |
| (1917–1911) | | | | 100.0 % | | 49.4 % | | 27.6 % |
| | | | | | | 100.0 % | | 55.9 % |
| 80–84 | 18,020 | 100.0 % | 495 | 2.8 % | 245 | 1.4 % | 175 | 1.0 % |
| (1912–1906) | | | | 100.0 % | | 49.5 % | | 35.3 % |
| | | | | | | 100.0 % | | 71.4 % |
| 85–89 | 8,765 | 100.0 % | 496 | 5.7 % | 265 | 3.0 % | 182 | 2.1 % |
| (1907–1901) | | | | 100.0 % | | 53.4 % | | 36.7 % |
| | | | | | | 100.0 % | | 68.7 % |
| 90–94 | 2,306 | 100.0 % | 460 | 20.0 % | 265 | 11.5 % | 197 | 8.5 % |
| (1902–1898) | | | | 100.0 % | | 57.6 % | | 42.8 % |
| | | | | | | 100.0 % | | 74.3 % |
| 95+ | (357)[a] | | | | | | | |
| (1897–1883) | 422 | 100.0 % | 405 | 96.0 % | 239[b] | 56.6 % | 239 | 56.6 % |
| | | | | 100.0 % | | 59.0 % | | 59.0 % |
| | | | | | | 100.0 % | | 100.0 % |
| Total | 73,102 | 100.0 % | 2,850 | 3.9 % | 1,504 | 2.1 % | 1,049 | 1.4 % |
| | | | | 100.0 % | | 52.8 % | | 36.8 % |
| | | | | | | 100.0 % | | 69.7 % |

Continued on next page

Table 2 (continued)
Drawn Addresses, Working Samples, and Addresses Used in the Field by Age Group for Men and Women With the Mean Sizes of the Four Samples Drawn by the Registry as References

| Age groups (Birth cohorts) | Mean sizes of the four parent populations[1] | | Drawn addresses[2] | | Working samples | | Addresses used in the field | |
|---|---|---|---|---|---|---|---|---|
| | | | Women | | | | | |
| 70–74 | 50,851 | 100.0 % | 499 | 1.0 % | 245 | 0.5 % | 136 | 0.3 % |
| (1922–1916) | | | | 100.0 % | | 49.1 % | | 27.3 % |
| | | | | | | 100.0 % | | 55.5 % |
| 75–79 | 55,398 | 100.0 % | 491 | 0.9 % | 245 | 0.4 % | 178 | 0.3 % |
| (1917–1911) | | | | 100.0 % | | 49.9 % | | 36.3 % |
| | | | | | | 100.0 % | | 72.7 % |
| 80–84 | 55,582 | 100.0 % | 498 | 0.9 % | 245 | 0.4 % | 197 | 0.4 % |
| (1912–1906) | | | | 100.0 % | | 49.2 % | | 39.6 % |
| | | | | | | 100.0 % | | 80.4 % |
| 85–89 | 31,282 | 100.0 % | 496 | 1.6 % | 265 | 0.8 % | 227 | 0.7 % |
| (1907–1901) | | | | 100.0 % | | 53.4 % | | 45.8 % |
| | | | | | | 100.0 % | | 85.7 % |
| 90–94 | 11,398 | 100.0 % | 495 | 4.3 % | 265 | 2.3 % | 194 | 1.7 % |
| (1902–1896) | | | | 100.0 % | | 53.5 % | | 39.2 % |
| | | | | | | 100.0 % | | 73.2 % |
| 95+ | 2,646 | 100.0 % | 688 | 26.0 % | 391 | 14.8 % | 316 | 11.9 % |
| (1897–1883) | | | | 100.0 % | | 56.8 % | | 45.9 % |
| | | | | | | 100.0 % | | 80.8 % |
| Total | 207,157 | 100.0 % | 3,167 | 1.5 % | 1,656 | 0.8 % | 1,248 | 0.6 % |
| | | | | 100.0 % | | 52.3 % | | 39.4 % |
| | | | | | | 100.0 % | | 75.3 % |

[1] We calculated the mean sizes of the four parent populations for each age group in order to compute the percentages.
[2] After sorting out "doubles" (see text).
[a] As the mean size of the four parent populations is smaller than the total number of drawn addresses, we use the size of the fourth parent population ($n$ = 422) as the reference number.
[b] Initially, only 175 addresses were entered into the working sample before another 64 addresses from the reserve were added.

In all, 6,017 addresses were drawn for the four samples, of which 2,857 (47 %) remained in reserve and 3,160 (53 %) were used in the working samples of the study. Of the 3,160 working sample addresses, 2,297 addresses (73 % of the working samples) were used in the field. We regard $N$ = 1,908 of these 2,297 addresses as the verified parent sample of the study (cf. Section 4.2.1).

Table 3
Addresses Used in the Field, Persons who Could not be Reached, Members of the Verified Parent Population, and Completed Intensive Protocols for Men and Women by Age Group

| Age groups (Birth cohorts) | Addresses used in the field | Persons who could not be contacted[1] | Members of the verified parent population[2] | Completed Intensive Protocols | Addresses needed to achieve one Intensive Protocol[3] |
|---|---|---|---|---|---|
| | | | Men | | |
| 70–74 | 119 | 10 | 109 | 43 | 2.8 |
| (1922–1916) | 100.0 % | 8.4 % | 91.6 % | 36.1 % | |
| | | | 100.0 % | 39.4 % | |
| 75–79 | 137 | 18 | 119 | 43 | 3.2 |
| (1917–1911) | 100.0 % | 13.1 % | 86.9 % | 31.4 % | |
| | | | 100.0 % | 36.1 % | |
| 80–84 | 175 | 23 | 152 | 43 | 4.1 |
| (1912–1906) | 100.0 % | 13.1 % | 86.9 % | 24.6 % | |
| | | | 100.0 % | 28.3 % | |
| 85–89 | 182 | 25 | 157 | 43 | 4.2 |
| (1907–1901) | 100.0 % | 13.7 % | 86.3 % | 23.6 % | |
| | | | 100.0 % | 27.4 % | |
| 90–94 | 197 | 56 | 141 | 43 | 4.6 |
| (1902–1898) | 100.0 % | 28.4 % | 71.6 % | 21.8 % | |
| | | | 100.0 % | 30.5 % | |
| 95+ | 239 | 70 | 169 | 43 | 5.6 |
| (1897–1883) | 100.0 % | 29.3 % | 70.7 % | 18.0 % | |
| | | | 100.0 % | 25.4 % | |
| Total | 1,049 | 202 | 847 | 258 | 4.1 |
| | 100.0 % | 19.3 % | 80.7 % | 24.6 % | |
| | | | 100.0 % | 30.5 % | |

Continued on next page

Table 3 (continued)
Addresses Used in the Field, Persons who Could not be Reached, Members of the Verified Parent Population, and Completed Intensive Protocols for Men and Women by Age Group

| Age groups (Birth cohorts) | Addresses used in the field | Persons who could not be contacted[1] | Members of the verified parent population[2] | Completed Intensive Protocols | Addresses needed to achieve one Intensive Protocol[3] |
|---|---|---|---|---|---|
| | | | Women | | |
| 70–74 | 136 | 5 | 131 | 43 | 3.2 |
| (1922–1916) | 100.0 % | 3.7 % | 96.3 % | 31.6 % | |
| | | | 100.0 % | 32.8 % | |
| 75–79 | 178 | 18 | 160 | 43 | 4.1 |
| (1917–1911) | 100.0 % | 10.1 % | 89.9 % | 24.2 % | |
| | | | 100.0 % | 26.9 % | |
| 80–84 | 197 | 19 | 178 | 43 | 4.6 |
| (1912–1906) | 100.0 % | 9.6 % | 90.4 % | 21.8 % | |
| | | | 100.0 % | 24.2 % | |
| 85–89 | 227 | 23 | 204 | 43 | 5.3 |
| (1907–1901) | 100.0 % | 10.1 % | 89.9 % | 18.9 % | |
| | | | 100.0 % | 21.1 % | |
| 90–94 | 194 | 41 | 153 | 43 | 4.5 |
| (1902–1898) | 100.0 % | 21.1 % | 78.9 % | 22.2 % | |
| | | | 100.0 % | 28.1 % | |
| 95+ | 316 | 81 | 235 | 43 | 7.3 |
| (1897–1883) | 100.0 % | 25.6 % | 74.4 % | 13.6 % | |
| | | | 100.0 % | 18.3 % | |
| Total | 1,248 | 187 | 1,061 | 258 | 4.8 |
| | 100.0 % | 15.0 % | 85.0 % | 20.7 % | |
| | | | 100.0 % | 24.3 % | |

[1] Persons who had died, moved to an unknown address, moved away from Berlin, could not be found at the given address or could not be contacted despite several attempts (cf. Section 4.2.1).
[2] Persons who could be contacted directly or indirectly (through a third party) leading to a decision on participation or nonparticipation (cf. Section 4.2.1).
[3] Number of addresses used in the field divided by the number of complete Intensive Protocols achieved.

Table 2 shows how the addresses initially drawn, those selected for the working sample, and those employed in the field were distributed across the age groups for men and women as well as indicating the extent to which the working samples combined from all four draws were used. One reason for the incomplete utilization of working sample addresses is that addresses

remaining from an earlier sampling that were already in the field continued to be used even after a new sample had been drawn, but that unused addresses from the older sample were then no longer employed and only new addresses were handed out by the field coordinator. Moreover, different attrition and participation rates among the men and women in the six age groups led to unequal use of addresses.

Table 3 illustrates this by showing the numbers of addresses used in the field by age group and gender, the numbers of people who could not be contacted (cf. Section 4.2.1), and the numbers of those who could and thus form the verified parent sample (see Section 4.2.1). In each case, the number of achieved complete Intensive Protocols is related to the number of addresses used in the field and to the number of contacted persons. This reveals that women were less easily convinced to take part in the study than men, and that age also played a role (cf. Section 4.1). Regarding the individuals contacted, the participation rates for men varied between nearly 40 percent of the 70–74 age group and over 25 percent of the 95+ age group. For women, participation rates lay between 33 percent of the 70–74 age group and just over 18 percent of the 95+ age group. In order to make the differences between men and women and the age groups even clearer, Table 3 additionally shows how many addresses needed to be used to achieve one complete Intensive Protocol.

# 3 Convincing People to Take Part in BASE

## 3.1 Procedures to Motivate Participants and Their Interaction Partners

First of all, individuals who were to be won for participation were sent a letter with information on the study suggesting a date for a first appointment. This approach was taken to preclude the worries of old people living alone about answering the door to unannounced visitors. We also expected to encounter several disabled or bedridden people who would or could not react to a knock on the door. We hoped that the written announcement and enclosed information would make these addressees interested enough to arrange some familial or professional help to enable a first visit from a research assistant. Furthermore, the pilot studies had revealed that contacts with persons living in institutions were difficult without previous announcement and preparatory information. In addition, we wanted to avoid trying to make personal contacts with people whose address was no longer valid (cf. Sections 3.2 and 4.2.1).

The letter included statements on old age and aging chosen to present some of the topics and aims of the study appealingly. The request for participation in BASE followed, but the voluntary nature of taking part was emphasized. At the end of the letter, which also mentioned the institutions and head scientists involved in BASE, a date was set on which a named BASE research assistant would visit the addressee and talk to him/her about the study and potential participation.

The additional information consisted of an encouraging letter signed by the Berlin Senator for Social Affairs and the Senator for Health, a color brochure about the study with short texts, pictures, and newspaper articles as well as an enclosure with photographs of the research assistants and project physicians to allow the addressees to form a mental image of the study's staff. The photographs also helped the addressees to recognize the research assistants in person on their first visit so that they did not have to rely only on written documentation (project identification card, copy of the letter).

If the letter led to an initial contact face-to-face or on the telephone, the research assistants introduced themselves and asked for a chance to present the study in more detail. The emphasis of these conversations was on communication of the study's aims and motivation to take part. During

face-to-face contacts, the potential participants were given an additional information sheet which was helpful for detailed discussion of typical questions about the study and worries about participation. They were also told that participants were to be looked after by the research assistants over the entire assessment schedule. As compensation for the effort of taking part in the study, payments of up to 500 DM were offered.[10]

The research assistants usually had to involve people from the addressees' environment in the process of convincing them to participate. When the letters were sent out, the addresses were compared with available directories in order to find out whether potential participants lived in a home. If so, the institutions' directors were contacted on the telephone four to six days after the initial letter was posted. Sometimes research assistants had to involve spouses, children, grandchildren, or friends whom community-dwelling old people had invited to the first meeting.

The addressees' physicians also played an important part as confidants. Some people not only discussed the medical examinations with them, but also asked them for advice about the decision to take part in the study at all. Sometimes the physicians were asked to find out more about the study before a research assistant was allowed to visit. Because of the family physicians' important role, a special information sheet with a general presentation of BASE and more detailed descriptions of the planned medical examinations had been designed for them. If addressees wanted to talk to their doctor before taking any decision, they were asked to give him/her this sheet. Likewise, it was sent to physicians inquiring about the study on their patients' behalf. A copy of an article about the study that had previously appeared in the Berlin Medical Council's journal was also enclosed.

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[10] Data on the influence of this payment on participation were not collected systematically. According to the research assistants, the money only played a role for about half of the participants. Some even refused payment and asked for it to be donated to a charity. The money was paid out in rates according to the level of participation. 50 DM were paid for the completed Intake Assessment. If participants agreed to take part in the Intensive Protocol, they received further 250 DM before the medical sessions and the final 200 DM after completing the schedule. Almost all participants were happy with this form of payment in rates.

## 3.2 Field Routines for Contact Initiation

The initial letter and information package was usually sent off about five to seven days before the date suggested for the first appointment. The contacts with the addressees were always carried out according to a standardized routine. If the recipient did not answer, the interviewer tried to make a personal visit at the announced time. For contacts with addressees known to live in a home, the routine described above was used.

If no one answered the door at the first attempt to make contact, research assistants were required to try again half an hour later. If this attempt was also unsuccessful, the research assistants left a letter announcing further contact attempts, but also asking the recipients to call the field coordinator or the interviewer on the telephone. Both telephone numbers, which were also mentioned in the first letter, were repeated. If further contact attempts were equally unsuccessful, the interviewer tried to find the potential participant's telephone number in the directory and to ring him/her up at varying times. If this did not lead to a conversation either, a new letter was sent off with a new appointment about four or five weeks after the first. Finally, if no contact could be made at that time (or half an hour later), the address was given back to the field coordinator. In all, *no less than six contact attempts* were made before the address could be given back. Usually research assistants tried to make contact more often, even though this was very time-consuming.

As mentioned above, research assistants also called potential participants on the phone. However, the experiences made with telephone contacts were not that positive. First, it was often difficult to find the correct number in the directory. Second, it was obviously much easier for people to decline participation in the study on the phone than during a face-to-face conversation. It also became clear that old people with hearing impairments did not like to talk to strangers on the phone. Nevertheless, in many cases, being able to refer to the previously sent letter and information package did make telephone contacts easier. Sometimes a specially designed version of the Intake Assessment (or at least the Short Initial Assessment) could be conducted on the telephone. In these cases, of course, tests such as the measurements of grip strength and visual acuity or the Digit Letter test could not be carried out.

# 4 Steering the Field, Sample Loss, and Participation

## 4.1 Steering the Field

The pilot studies had already indicated different rates of sample loss and participation among men and women. For better evaluation, the developments in the field were closely observed during the first year of the main study. The following tendencies became evident: Taken together, the losses due to unsuccessful contact attempts and during first contacts were quite high among men and women (see Sections 4.2.1 and 4.2.2 as well as Table 3). Moreover, women were less likely to be motivated to take part in the Intensive Protocol than men. However, a slightly higher proportion took part in the less intensive assessment levels (i.e., the Short Initial Assessment or the Intake Assessment). In addition, clear differences between age groups emerged: Sample losses among the very old were higher than among the younger age groups; it was more difficult to convince them to take part in the Intensive Protocol; and the assessments were more likely to remain incomplete.

These developments made it necessary to steer the field in order to achieve one of the main goals of the Berlin Aging Study—equal numbers of completed Intensive Protocols for men and women in all six age groups (see Section 1.1). The aim was to specifically target the men and women in age groups that were harder to motivate for participation in the Intensive Protocol. Thus, sample loss and dropout over the course of the assessment schedule was increasingly compensated by using more addresses in the field.

Using these steering tactics, it was possible to realize the equal distribution of $n = 43$ participants across the twelve design cells by the end of the main study in June 1993. At the end of fieldwork, 516 complete data protocols were available, thus surpassing the goal of 500 Intensive Protocols that was internally set in view of the available resources. However, this success demanded great financial and organizational effort and time as well as personal commitment and professional and social competence on the part of the research assistants and the project physicians.

## 4.2 Sample Losses

### *4.2.1 Contacted Persons (Verified Parent Sample) and Persons who Could not Be Contacted*

As mentioned above, a total of 2,297 persons received letters asking them to take part in the study from May 1990 until 1993. In all, 1,908 persons could be contacted (83 % of $N$ = 2,297; see Table 4, Part 1) and thus constitute the *verified parent sample* of BASE. This sample includes all those with whom it was possible to make direct or indirect contact—in person, via a written response or via relatives or others (e.g., directors of homes, nursing staff, friends, or helping neighbors)—and from whom we obtained some form of information about their participation or nonparticipation. This verified parent sample provides the basis for the differentiation of participation on the study's different levels of assessment.[11]

Before in-depth description of the verified parent sample and participation rates, we turn to the 389 *persons who could not be contacted* (17 % of $n$ = 2,297). The majority were men and women aged 90 and over. Moreover, more men than women could not be reached. The following subgroups could be distinguished:

In 194 cases (approximately 8 % of all 2,297 persons who were sent the initial letters or 50 % of those who could not be contacted), the letters were returned marked "addressee has died." In most cases, this information was provided by the post office and only rarely by relatives or others. A further 109 persons (almost 5 % of persons who were sent letters or 28 % of those who could not be contacted) had moved to an unknown address. Again, the notification most often came from the post office, which also provided the information about the 15 persons who had meanwhile moved away from Berlin (less than 1 % of persons who were sent letters or 4 % of those who could not be contacted). These notifications almost always returned within a few days of sending the letter off.

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[11] For discussion of the definition of the verified population sample, see Esser, Grohmann, Müller, & Schäffer (1989, Part 5, pp. 95 ff.).

Table 4
The Field at the End of the Cross-Sectional Assessments—
Participation and Dropout by Participation Level

| Categories | *n* | % |
|---|---|---|
| 1. | | |
| Addresses used (number of letters sent) | 2,297 | 100.0 |
| Persons who could not be contacted (in total) | 389 | 16.9 |
| • Died | 194 | 8.4 |
| • Moved to unknown address | 109 | 4.7 |
| • Not to be found under the stated address or not to be reached there | 71 | 3.1 |
| • Moved away from Berlin | 15 | 0.7 |
| Verified parent sample (contacted persons) | 1,908 | 83.1 |
| 2. | | |
| Verified parent sample | 1,908 | 100.0 |
| Reasons for dropout | | |
| • Refusal to take part | 610 | 32.0 |
| • Assessment impossible because of bad health | 45 | 2.3 |
| • Assessment impossible for other reasons | 13 | 0.7 |
| • Incomplete data: Collection of further data impossible | 21 | 1.1 |
| Dropout in total | 689 | 36.1 |
| 3. | | |
| Verified parent sample | 1,908 | 100.0 |
| Verified parent sample without nonparticipants | 1,219 | 63.9 |
| • Participation in Short Initial Assessment or Intake Asessment only (in total) | 584 | 30.6 |
| – Short Initial Assessment only | 233 | 12.2 |
| – Incomplete Intake Assessment | 58 | 3.0 |
| – Complete Intake Assessment | 293 | 15.4 |
| • Participation in Intensive Protocol (in total) | 635 | 33.3 |
| – Complete Intensive Protocols | 516 | 27.0 |
| – Dropout during Intensive Protocol | 119 | 6.3 |
| 4. | | |
| Verified parent sample | 1,908 | 100.0 |
| Usable data from | | |
| • At least Short Initial Assessment | 1,219 | 63.9 |
| • At least Intake Assessment | 928 | 48.6 |
| • Completed Intensive Protocol | 516 | 27.0 |

Furthermore, there were 71 persons (3 % of persons who were sent letters or 18 % of those who could not be contacted), who could neither be reached at the address available from the city registry nor contacted, despite repeated attempts. Research assistants always tried to find a new address for these people, for instance, by giving the address back to the registry for

a check-up. In addition, many more attempts than usual (cf. Section 3.2) were made to reach persons who could not be contacted at their address. In several cases this approach was successful, but some people's whereabouts could not be clarified (see Table 4).

### *4.2.2 Dropout of the Verified Parent Sample During the Initial Contact*

Approximately 84 percent of contacts with members of the verified parents sample ($N$ = 1,908) were *direct contacts* with potential participants. Most of these were face-to-face meetings (79 % of direct contacts), and some were telephone conversations (21 %). Sixteen percent of members of the verified parent sample could only be *contacted indirectly:* Some people refused participation in writing, and sometimes partners, children, caregivers, or others did not allow the research assistant to make personal contact to ask about participation.

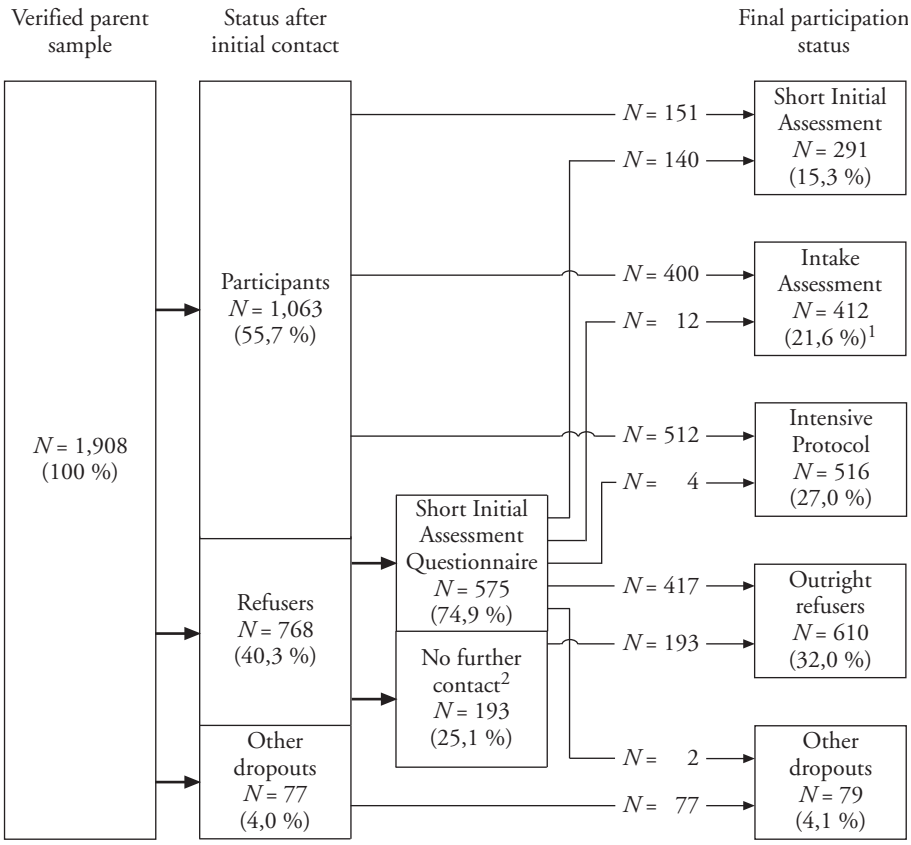
In 36 percent of direct contacts, other persons were present, whereas 46 percent could be carried out with the potential participant alone. For the remaining 18 percent, which were conducted on the telephone, it was not possible to determine whether someone else was present. In private households, only 31 percent of contacts took place with others present. In contrast, 59 percent of direct contacts in institutions were conducted with others, mostly room-mates, listening. This made it difficult to convince people to take part in the study and to carry out the assessments if they agreed.

Addressees' participation status (a decision on participation and its level) could be determined in direct or indirect contacts within an average of 19 days after sending off the first letter. However, this average is biased by several outliers: 25 percent of addressees took a decision on their participation level within seven days. Further 25 percent needed nine days, and another 25 percent up to 16 days. In these cases, several attempts to make contact were usually necessary to find out about addressees' willingness to take part in the study. For the remaining addresses it took even longer and even more contact attempts to clarify their participation status.

As the second part of Table 4 shows, these contacts resulted in further *sample dropouts on the level of the verified parent sample,* mainly due to refus-

als to take part (for more information on this problem in gerontological studies, see Carp, 1989; Deeg, 1989; Herzog & Rodgers, 1988; Jay, Liang, Liu, & Sugisawa, 1993; Wahl & Richter, 1994; for more on this issue in social-scientific studies, cf. Esser et al., 1989). In the following, we call these sample losses *"dropout during initial contacts."* The development of the field and dropout is shown in Figure 1.

Persons who refused outright to take part in the study despite several attempts to convince them otherwise made up the largest part of these drop-




[1] Including 119 discontinued Intensive Protocols.
[2] For ethical or other reasons; see text for details.

*Figure 1.* Participation status changes for the verified parent sample from initial contact to their final decision.

outs (610; 32 % of the verified parent sample or 89 % of all dropouts during initial contacts). At first, there were even 768 rather than 610 persons who refused participation (but also 1,063 persons who at once agreed to participate; cf. Fig. 1). Three or four weeks after the initial contact, letters were posted asking 575 of these 768 refusers to at least answer the 16 questions of the Short Initial Assessment in writing (see Section 1.2). Those persons with whom another contact would have been unethical because of their poor health and those who had explicitly stated that they did not want another contact remained excluded from this procedure. 377 of the 575 posted questionnaires were not sent back to us, 40 came back without answers, and 158 were filled in. Thus, the 610 people who refused to take part shown in Part 2 of Table 4 consist of 193 persons who did not receive the Short Initial Assessment questionnaire, 377 persons who did not react to the questionnaire, and another 40 who sent it back without filling it in (see Fig. 1, in which the 377 and 40 persons are combined to make $n = 417$).

Of the 158 questionnaires sent back, only two could not be used because hardly any questions were answered (see below). Of the 156 remaining cases, 17 decided to take part in more intensive assessments after all. After direct contacts with the research assistants, 1 Intake Assessment could not be completed and 11 could. Five persons even began the Intensive Protocol, with four finishing the entire schedule. The person who did not finish the Intensive Protocol was included in the "complete Intake Assessment" group. Including the person who did not complete the Intake Assessment after a direct contact, 140 cases remained for whom the data were restricted to that of the Short Initial Assessment questionnaire (cf. Fig. 1).

The *remaining dropout during initial contact* was much less significant, with only 79 persons affected (4 % of the verified parent sample or 11 % of the entire dropout during initial contact). They can be described as follows (see Table 4, Part 2): The 45 persons (2 % of the verified parent sample or almost 7 % of the entire dropout during initial contact) who could not be interviewed *for reasons of bad health* were often no longer responsive to questioning. More than 90 percent of them were aged 85 and older, almost 90 percent lived in a home, and two thirds were women.

Some of these 13 persons (less than 1 % of the verified parent sample or 2 % of dropout during initial contact) who could not be interviewed *for other reasons* were foreigners whose German—in contrast to others'—was

not good enough for an interview. However, most of these 13 cases of dropout were due to contact being lost after an initial meeting during which the interview was not begun.

Finally, there were 21 people (1 % of the verified parent sample or 3 % of dropout during initial contact) for whom *initial data remained incomplete.* These were mainly persons who agreed to take part in the study but could not even finish the Short Initial Assessment. In addition, two persons who returned the posted questionnaire with only two or three answers (see above) were included in this group.

Further dropout took place later. 58 people (3 % of the verified parent sample) continued participation after the Short Initial Assessment but did not complete the Intake Assessment, 293 (15 %) only took part in the Intake Assessment, and 119 (6 %) began the Intensive Protocol but did not finish it (dropout during Intensive Protocol). In the following, participation is distinguished by level (see Section 1.2), that is, by participation in the Short Initial Assessment, in the Intake Assessment, and in the entire Intensive Protocol, and the subgroups of participants are more closely described.

## 4.3 Participation Levels of the Study

In this section, participation in the study is regarded from two perspectives. On the one hand, we report *the entire number of participants* for whom data *on a certain participation level* could be collected. Thus, on the level of the Short Initial Assessment we include all those participants who went on take part in the higher levels of measurement. On the other hand, we also describe the participants for whom *information exists on that level only,* for example, because they could not or did not want to continue. These perspectives result in the picture described below (cf. Table 4, Parts 3 and 4).

### *4.3.1 Participation in the Short Initial Assessment*

This level was reached by 1,219 participants (64 % of the verified parent sample), with 291 (15 %) ending participation there and 928 participants (49 %) continuing for the Intake Assessment (cf. Section 4.3.2; see also Fig. 1).

This subgroup of 291 participants includes 93 persons (5 %) with whom no more than the Short Initial Assessment could be carried out in direct contacts with the research assistants. The reasons given for ending participation in the study were usually "not interested in continuing" (40 % of $n$ = 93) or "too much mental and physical strain" (29 % of $n$ = 93). On average, the interview took 14 minutes ($SD$ = 8.5 min.). Further 58 participants (3 %) wanted to take part in the Intake Assessment but could not finish it ("incomplete Intake Assessment"; see Table 4, Part 3). These incomplete Intake Assessments took 36.1 minutes on average ($SD$ = 20.3 min.). The participants said that they were "no longer interested in continuing" (40 %) or that they felt "too much general strain" (18 %) or "too much mental and physical strain" (18 %). As the Intake Assessment remained incomplete, these 58 persons were assigned to the Short Initial Assessment level. Finally, the 291 participants include the 140 persons (7 %) who only provided written responses to the Short Initial Assessment questionnaire (see Section 4.2.2).

### *4.3.2 Participation in the Intake Assessment*

In all, 928 persons (49 %; see Table 4, Part 4, "at least Intake Assessment") took part in the Intake Assessment. Again there were different subgroups. The first consists of 293 participants (15 %) who completed the Intake Assessment but were not able to continue (it includes the 12 people who first only gave a written response to the Short Initial Assessment questionnaire but then went on to complete the Intake Assessment; cf. Fig. 1). Among the reasons for ending participation after the Intake Assessment, if given at all, "no longer interested in continuing participation" (41 %) and the more succinct statement "refuse further interviews" (21 %) dominated. Furthermore, two participants died during the interval between the Intake Assessment and the intended Intensive Protocol, and in 31 cases continuation of data collection was stopped by the project coordination center as a precautionary measure. These decisions were taken in order to avoid straining those participants too much during the Intensive Protocol.

The 928 persons who completed at least the Intake Assessment also include those 635 (33 %) who then began the Intensive Protocol. As 119 of

them (6 %) did not complete the entire schedule, they had to be counted on the level of the Intake Assessment. The reason given for ending participation was mainly mental, physical or general strain (37 %). In 29 of the 119 cases ending participation at this stage (24 % of $n$ = 119), relatives or third parties (mostly in institutional settings) took the initiative. In 23 cases (19 % of $n$ = 119) participants fell ill and died in the course of the assessment schedule, and in 7 cases (6 % of $n$ = 119) the project coordinator decided to end the interviews to avoid straining the participants concerned. After the dropout on this level, 516 persons remained with complete Intensive Protocols providing data for all four research units (cf. Table 4, Parts 3 and 4; see also Section 4.3.3).

On average, the Intake Assessment took 61 minutes ($SD$ = 23.4 min.) with the 928 who completed at least the Intake Assessment. The extremes were as follows: In one case it was possible to carry out the assessment in 20 minutes, and in another it took several sessions lasting 198 minutes altogether. If one adds the average duration of the conversations beginning and ending the sessions, participation in the entire Intake Assessment took about 90 minutes in all. The majority of the 928 participants (685 or 74 % of $n$ = 928) only required one session for the assessment, 204 (22 % of $n$ = 928) needed two sessions, and 39 (4 % of $n$ = 928) even took three or more.[12]

### *4.3.3 Participation in the Intensive Protocol*

For the 516 participants (258 women and 258 men with $n$ = 43 in each age group) who completed the Intensive Protocol, the Intake Assessment took 59 minutes ($SD$ = 20.3 min.) on average, only a little less than for the 928 participants in the Intake Assessment. 77 percent only needed one session, 22 percent needed two, and 1 percent three, again similar to the Intake Assessment group. The following sessions were then usually carried out in a certain sequence (see Section 1.2 above). However, some variations were

[12] One of these cases even required seven sessions. This was a person who could only take short strains, but nevertheless wanted to take part in the Intake Assessment and was prepared to make several efforts to complete it.

allowed. On the one hand, the sequence of medical examinations in the last third of the schedule was sometimes altered in order to avoid a bottle-neck due to the limited number of clinic appointments available to BASE. On the other hand, if some assessments could not be carried out within a certain session they were sometimes completed in another.

The redistribution of parts of the assessment sequence over several sessions was always carried out according to criteria set by the research units. For example, interruptions became necessary if participants took longer on a measurement than intended or if they wanted to stop or seemed strained. However, in some cases measurements could be completed very quickly. If the participants were willing and able to carry on, a short break was made before beginning the next part of the assessment. Finally, the schedule was sometimes begun with the medical sessions rather than the social-science ones, mainly if participants wanted to know the results of the medical tests quickly or if continuation of participation depended on their health status.

It was suggested to the Intensive Protocol participants that they should not take more than one session per week (see Section 5.1). Thus, the Intake Assessment and the entire Intensive Protocol normally lasted at least 14 weeks or 3.2 months.[13] However, in 70 percent of cases the final conversation between research assistants and participants which was intended for the end of the 14th session took place on another occasion, resulting in an anticipated assessment period of 3.5 months. The durations actually achieved in the field are shown in Table 5.

In fact, only 25 percent of the 516 participants completed the entire sequence from the Intake Assessment to the final session within 3.3 months. The mean duration was 4.5 months (*SD* = 1.9 months), and the median shows that 50 percent of participants needed up to 4.1 months. The third quartile indicates that up to 5.1 months were necessary for further 25 percent of participants. The remaining 25 percent required even longer periods. Comparing the times taken by different groups shows that the very old and

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[13] The duration of the entire sequence was calculated in days from the beginning of the Intake Assessment (or the first face-to-face interview [cf. Section 4.3.2] to the end of the Intensive Protocol [last session of the sequence]). The number of months taken was calculated as follows: x days × 12/365 (see Table 5).

Table 5
Time Taken (in Months) to Complete the Intensive Protocol
($N$ = 516) by Age and Gender

| | *M* | *SD* | 1st quartile | 2nd quartile (median) | 3rd quartile | Minimum | Maximum |
|---|---|---|---|---|---|---|---|
| *Total* ($N$ = 516) | 4.5 | 1.9 | 3.3 | 4.1 | 5.1 | 1.2 | 15.5 |
| *Age groups* | | | | | | | |
| 70–84 ($n$ = 258) | 4.4 | 1.9 | 3.3 | 4.0 | 4.9 | 1.2 | 15.5 |
| 85+ ($n$ = 258) | 4.5 | 1.9 | 3.2 | 4.2 | 5.3 | 1.2 | 13.1 |
| *Men* | | | | | | | |
| ($n$ = 258) | 4.3 | 1.8 | 3.1 | 3.9 | 4.8 | 1.2 | 12.4 |
| *Women* | | | | | | | |
| ($n$ = 258) | 4.6 | 2.0 | 3.4 | 4.2 | 5.3 | 1.2 | 15.5 |

women had a slight tendency to require longer periods, but on the whole, the differences were small.

Longer periods of assessment were in part caused by conditions of fieldwork, for instance, unavailability of research assistants (illness or vacation), bottle-necks because of limited clinic appointments, or temporary failure of equipment needed for certain measurements.[14] However, the participants themselves also caused longer periods of assessment. For instance, the Intensive Protocol could sometimes only be begun long after the Intake Assessment because of illness or a stay in the hospital. Some participants postponed sessions by a certain period because of other activities (e.g., travel, visits from relatives) or unforeseeable events (e.g., a death in the family, serious illness of a close friend, or own illness). Finally, some participants did not want more than one appointment in two weeks (or could not find time for

[14] Two examples: Sometimes the test computers did not work because they were sensitive to variations in the Berlin electricity supply; if this could not be remedied, participants had to be asked to come to the Max Planck Institute for Human Development for an extra session.—The CT at the Steglitz University Clinic of the Free University of Berlin (now Charité Universitätsmedizin, Campus Benjamin Franklin) was only available to the study at certain times. If it was needed for emergencies or general patient care, appointments with participants had to be canceled, sometimes at very short notice, and rearranged for a later date.

more). However, the schedule could indeed be completed relatively quickly with some participants, for instance, if they were not available for longer or did not want to bind themselves over a long time.

On average, the 516 participants required 13.3 sessions to complete the schedule, with the median at exactly 13 sessions (cf. Table 6). The first quartile only needed up to 12 sessions—in some cases, different parts of assessment were combined (see above) and in others the computer tomography (CT) or ultrasound examinations could not be carried out.[15] The third quartile required up to 14 sessions, and the fourth needed more (even up to 19). On average, the very old tended to require 14 rather than 13 sessions. There was no large difference between men and women (see Table 6).

Based on experiences during the pilot studies, the individual parts of the Intensive Protocol were designed to take about 60–90 minutes. Table 7 shows that these times were more or less achieved even if some assessment parts were carried out over two or more sessions. In particular, the medical anamneses and examinations sometimes took longer. This was hardly ever a problem because—according to their reports—the participants felt safe in the project physicians' care and confident that they would receive help if necessary. And as participants usually had good relationships with "their" research assistants, they also accepted longer sessions for the other parts of the Intensive Protocol (see Section 6.1).

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15 Only 45 percent of participants were examined by CT and ultrasound. Several did not want to make the trip to the clinic despite the offer of accompaniment and assistance, some could not be transported. Furthermore, the CT examination involved participants overstretching their back for a short time, which the physicians did not want to impose on some participants. As the CT and ultrasound examination were linked, this CT-specific problem often resulted in both examinations being canceled—the relevant scores were then treated as "missing values." However, if possible, an attempt was made to at least carry out the ultrasound examination. If not otherwise possible, the physical and dental examinations were performed at the participants' residence. This also led to some missing values (foremost because of omission of the jaw X-ray). Dental examinations were carried out at home in about 40 percent of cases and the physical examination in about 33 percent.

Table 6
Number of Intensive Protocol Sessions in Addition to the Intake Assessment and *Excluding* the Final Conversation, by Age and Gender

| | *M* | *SD* | 1st quartile | 2nd quartile (median) | 3rd quartile | Minimum | Maximum |
|---|---|---|---|---|---|---|---|
| *Total* (*N* = 516) | 13.3 | 1.7 | 12 | 13 | 14 | 10 | 19 |
| *Age groups* | | | | | | | |
| 70–84 (*n* = 258) | 12.7 | 1.3 | 12 | 13 | 13 | 10 | 18 |
| 85+ (*n* = 258) | 13.9 | 1.9 | 13 | 14 | 15 | 10 | 19 |
| *Men* | | | | | | | |
| (*n* = 258) | 13.2 | 1.8 | 12 | 13 | 14 | 10 | 19 |
| *Women* | | | | | | | |
| (*n* = 258) | 13.4 | 1.6 | 12 | 13 | 14 | 10 | 19 |

Table 7
Duration of Intensive Protocol Sessions in Minutes (*N* = 516)[1]

| | *M* | *SD* | 1st quartile | 2nd quartile (median) | 3rd quartile | Minimum | Maximum |
|---|---|---|---|---|---|---|---|
| Sociology in total[2] | 196.6 | 76.1 | 145.0 | 185.0 | 240.0 | 25.0 | 515.0 |
| Intelligence and intellectual functioning | 86.7 | 23.3 | 75.0 | 85.0 | 100.0 | 20.0 | 175.0 |
| Social relationships | 57.9 | 25.3 | 40.0 | 55.0 | 70.0 | 15.0 | 220.0 |
| Neuropsychological tests | 53.8 | 17.7 | 43.0 | 50.0 | 63.0 | 10.0 | 148.0 |
| Self and personality | 78.0 | 25.4 | 60.0 | 75.0 | 90.0 | 25.0 | 180.0 |
| Yesterday Interview and psychiatric scales | 56.4 | 18.7 | 45.5 | 53.5 | 65.0 | 20.0 | 135.0 |
| Medical anamnesis | 92.8 | 30.1 | 75.0 | 90.0 | 110.0 | 15.0 | 325.0 |
| Physical examination | 92.3 | 21.7 | 75.0 | 90.0 | 105.0 | 15.0 | 210.0 |
| Psychiatric examination | 86.0 | 35.4 | 60.0 | 80.0 | 105.0 | 25.0 | 270.0 |
| Dental examination | 74.9 | 20.6 | 60.0 | 73.5 | 90.0 | 30.0 | 180.0 |
| CT, ultrasound imaging | 44.6 | 16.6 | 35.0 | 41.0 | 55.0 | 10.0 | 115.0 |

[1] Excluding "combination" sessions (see text).
[2] Usually three sessions.

# 5 The Work of the BASE Team During the Assessment Schedule

## 5.1 Research Assistants

As mentioned above, all contacts with participants convincing them to take part, all assessment sessions that were not performed by physicians as well as the duties involved in looking after the participants' needs (see below), were carried out by research assistants. They all had temporary contracts for the assessment phase of BASE. Apart from two employees of the Max Planck Institute for Human Development who helped during the pilot studies and the first year of the study, all research assistants were newly recruited for BASE after advertising the posts.

In total 19 people—13 women and 6 men—were recruited as research assistants from 1989 to 1993. At the beginning of the main study the research assistants were aged 25 to 46, with most in their late 20s or early 30s. It was not possible to represent men and women equally. Female applicants were in the majority, they were more likely to have experience in looking after old people, and men were more likely to withdraw their applications once they had heard more about the work they were expected to do. Most of the research assistants had a university qualification, which proved to be advantageous for their understanding of the measures used in BASE. However, the "disadvantage" was that fluctuation was relatively high. This was usually owing to attractive offers of more long-term positions, sometimes at a university, rather than to dissatisfaction with the job.

In order to prepare research assistants for the different aspects of their work, the research units carried out a training course lasting several weeks. It was devised to provide information about the study's aims as well as basic knowledge of geriatrics and psychiatry, but also to practice the use of the measures (questionnaires of various types, tests, rating scales, etc.) and involved repeated checks of procedures. Concrete experiences made in the field during the pilot studies and, subsequently, the main study were used for practicing initial contacts and further fieldwork. When recruitment of new research assistants became necessary because of personnel fluctuation in the course of assessments, the research units' intensive training had to be repeated for these new assistants. In addition, experienced research assistants

were assigned to them as "mentors" who accompanied and advised them on their first sessions (if participants agreed).

During the assessment schedule, the research assistants were instructed and supervised by the research units and the project coordination center. In particularly difficult assessment situations, the research assistants were accompanied and supported by scientists from the research units or the project coordination center (if participants and/or their caregivers agreed). Furthermore, the research units regularly carried out training sessions based on concrete examples in order to optimize the research assistants' methods. In addition, the project coordination center held weekly team meetings with the research assistants where organizational questions were clarified and interesting cases were presented and discussed. If necessary, scientists from the research units also took part. Problems in the field and difficult assessments could also be discussed individually with the project coordinators, the research unit scientists or project physicians. Finally, specifically arranged external supervision by experienced clinical psychologists was available to research assistants to help them deal with problems associated with dissolving the close ties with participants and other strains such as confrontation with serious illness, dying and death, or conflicts between the necessities of data collection and personal care for the participants.

As described above, the research assistants' fieldwork began with initial contacts using the addresses distributed by the field coordinator. When the research assistants had convinced eight or nine addressees to take part in the Intensive Protocol, they concentrated on the relevant assessment sessions. After participants had completed or dropped out of the Intensive Protocol, the assistants began new initial contacts in parallel to their ongoing assessments in order to reach their target of eight or nine persons in the Intensive Protocol. This number resulted from the fact that participants lived all over the area of (former) West Berlin so that driving to and from their homes and carrying out a session usually took half a day. Planning more than eight or nine sessions per week was not practicable because the assessments had to be prepared in advance and then worked on afterwards, and extra time was required for case presentations, training, and team meetings. The initial contacts, Intensive Protocol sessions and medical appointments had to be organized independently by the research assistants and coordinated with

the participants' wishes, but also with the project coordination center which received the appointments provided by the clinics and the physicians.

## 5.2 Project Physicians

The project physicians, who were usually financed by the study, had two roles. On the one hand, they were members of the BASE project group and thus participated in the study's planning and research work during and after data collection. On the other hand, they were responsible for medical examinations in the Intensive Protocol which could only be performed by doctors. Although the project physicians were accustomed to working in nonclinical settings, they were additionally trained by the Internal Medicine and Geriatrics Unit and the Psychiatry Unit to prepare them for specific situations with old participants and for the use of the standardized assessment procedures. Like the research assistants the project physicians played an important role in motivating and taking care of the participants. Several participants who initially worried about the medical examinations could be convinced to continue participation after all because the physicians—like the research assistants—made an effort to respond to their needs and wishes and always tried to carry out the examinations in a way that was as pleasant as possible for the participants.

The project internists usually offered six or seven appointments per week for anamneses and physical examinations. In addition, they were available for check-ups to see whether (further) assessment was possible with certain participants (cf. Section 6.3). If the physical examination could not be performed at the clinic as planned, it was carried out at the participant's residence (private household or home) together with functional assessment.

The dentists offered five or six appointments a week. Appointments were usually not restricted to certain days, and dentists tried to conform to the participants' time schedules. The project psychiatrists offered eight appointments per week for the psychiatric anamnesis which took place at the participants' residence. They were also readily available for checks of potential participants' ability to give consent to take part (cf. Section 6.3). They were also responsible for the *interviews with family physicians,* which were only performed if participants gave their consent, and in which the participants'

doctors were asked about psychiatrically and medically relevant results on their patients (see Helmchen et al., 1999; Steinhagen-Thiessen & Borchelt, 1999). Finally, the psychiatric and internist project physicians regularly met for so-called "consensus conferences" where the individual findings on the participants were presented to each other and brought together to provide a more complete picture than the separate results from the research units could (cf. Helmchen et al., 1999; Steinhagen-Thiessen & Borchelt, 1999).

# 6 Research-Ethical Procedures

## 6.1 Taking Care of the Participants

We tried to take account of participants' needs, wishes, strains, and particular personal situations as much as possible. Each participant was assigned a research assistant who took special care of them during the Intensive Protocol assessments (cf. Section 1.2). That one research assistant carried out all assessments except for those that had to be performed by the project physicians. When the medical examinations were due, the research assistants introduced the project physicians in order to reduce fears about strangers. They also accompanied the participants to the clinic appointments. Usually, the trip was made in a taxi, but sometimes a car was sent by the Max Planck Institute, and some participants made use of so-called "Tele-buses" (a Berlin transport service for people with physical impairments). Many of the health-impaired or anxious participants only agreed to undergo these examinations under the condition of the research assistants' accompaniment. In some cases, this arrangement even made it possible for persons to travel who had not left their home for a long time.

Another aspect of looking after the participants were the conversations held with them at the beginning and end of each session. They led to longer session durations than those reported above (cf. Section 4.3.3, Table 7). The research assistants were able to use the conversations at the beginning of each session to check the participants' ability to undergo assessment so that, if necessary, the session could be shortened, postponed to a later date or participation could even be ended altogether after consultation with the project coordination center. In addition, the research assistants kept contact with participants between sessions (mostly on the telephone), and in cases of illness or a stay in the hospital they offered to visit. On birthdays or other special occasions, they brought participants flowers or a small gift.

Because of the close ties that often resulted, participants increasingly talked to the research assistants about everyday experiences, pleasures, but also worries and fears. This sometimes led to research assistants being faced with requests for additional contacts and assistance from participants when they were feeling low or were in difficulties. Because of the intensity of the relationship that developed, the dissolution process at the end of the Inten-

sive Protocol was not always easy for the participants.[16] Therefore, contacts were sometimes continued at growing intervals in order to phase them out slowly.

Finally, it should be mentioned that after finishing the assessments, participants were regularly invited for information afternoons with coffee and cake at the Max Planck Institute for Human Development. Again, the journey was made easier for them by organizing taxis. Participants were very interested in coming to these afternoons. On the one hand, they served to inform participants about the study's progress and to maintain a certain level of contact with them. On the other hand, they provided an opportunity for them to exchange their thoughts and experiences with other participants. In all, about 70 percent of participants in the Intensive Protocol took part in these information afternoons.

## 6.2 Procedures Concerning Participants' Information and Their Taking Part in Assessments

Like other medical and social science research projects, the Berlin Aging Study was faced with the following questions: Could knowledge be gained without putting more than moderate, ethically justifiable strain on the participants? And would the anticipated risks involved reach beyond those one would expect under normal circumstances (e.g., during routine medical examinations)? It was clear that assessments which are not directly useful for those concerned and medical examinations which are not based on a need for treatment always affect the personal sphere. Therefore, it was necessary to inform participants about all assessment procedures, to emphasize the voluntary nature of participation, and to work with them on the basis of documented declarations of intent only.

When conceptualizing the study, participation in assessments was estimated as representing acceptance of a so-called "minimal risk" in terms of

[16] Of course, the research assistants also experienced difficulties dissolving the ties to participants. These problems could be discussed with colleagues in the research units or the project coordination center and with the independent external supervision (cf. Section 5.1).

valid research-ethical criteria (cf. Section 1.1). We also anticipated that the strains or risks associated with taking blood samples and carrying out radiological examinations during the medical assessments would not be greater than those experienced during routine medical investigations. Nevertheless, as a precaution taken before beginning the pilot studies and again before the main study, we asked the Ethics Commission of the Berlin Medical Council for a statement about the medical assessments, at the same time informing it about all other measures used in the Intensive Protocol. In accordance with standard research practice in Germany, an explicit vote of confidence for the psychological and social-science parts of the study was not requested. Still, potential ethical implications of these parts of the sequence were also considered and discussed in depth. The Berlin data protection officer and his counterpart at the Max Planck Society were also involved and gave advice on research-ethical and legal aspects of convincing addressees to participate and then carrying out assessments with them. These discussions resulted in the following procedures concerning participants' information and their taking part in the study.

In the first letter sent to them and at initial contact, the participants were made aware of the voluntary nature of participation and informed about the study and the potential (usually minimal) risks and strains involved. At initial contact, research assistants pointed out that it was possible to end participation at any time and that data previously supplied could be withdrawn. Before the individual sessions of the Intensive Protocol, the participants were provided with more specific information. Furthermore, they were asked to give written consent to participation in the Intake Assessment, in the nonmedical and medical parts of the Intensive Protocol. With a view to extending BASE to become a longitudinal study (see Baltes et al., 1999), participants were also asked for a written declaration agreeing that they could be contacted again and allowing their address to be stored separately for this purpose.

Information and consent of the participants always occurred in two steps. First, before beginning the Intake Assessment, the research assistants had to give all relevant explanations and information and to confirm this in writing in the participants' presence. In a second step the participants were asked to verify that their participation in the study was voluntary, and to give their written consent to the tape-recording of assessments (of course this

could be declined) and to the use of their data in anonymous form for the scientific purposes of the study. If someone was willing to take part, but did not want to put this down in writing, the research assistants were required to make a protocol of the oral agreement and to tape-record it if possible. Before beginning the Intensive Protocol, participants were asked for their written consent to take part in the nonmedical parts of the schedule. Again, the research assistants had to sign a declaration that they had fulfilled their duty to inform the participants about the assessments of the Intensive Protocol.

At the beginning of the medical sessions, the necessary written consent was sought by the project physicians who provided detailed information on the potentially involved strains and risks. The statement had several parts: consent (1) for participation in the examinations, taking two blood samples, and up to three X-rays, (2) for relevant results to be passed on to the participant's physician (and/or dentist), (3) to relieve family physicians of their duty to maintain confidentiality so that BASE could obtain additional medical information from them, and (4) for medical data to be used within the study beyond the realm of the medical research units. Physicians went through all these parts of the declaration of consent which were combined in one form. Of course, individual components such as the transferal of medical results to the family physician could be declined by participants.

## 6.3 Procedures for the Exclusion of Participants and for Dealing With Pathological Findings

The procedures for obtaining the necessary consent as described above presupposed that the study's addressees had a relatively high degree of understanding for the assessment situation. However, the nature of the specific sample of the Berlin Aging Study meant that we also encountered people who did not refuse contact, but whose comprehension, memory, and ability to judge were restricted or whose health was impaired. In these cases a decision had to be taken whether participation in the study was ethically defensible. Together with the Psychiatry Unit and the Internal Medicine and Geriatrics Unit, specific procedures were developed and practiced to test potential participants' ability to give consent and the feasibility of assessments in the face of health impairments.

If research assistants noticed mental problems during the initial contact or in the course of the schedule, the project psychiatrists were asked to check those persons' ability to give consent. First, they examined whether they understood the interview situation and whether their behavior was conclusive. In order to establish the type and extent of mental impairment and to ascertain a psychopathological diagnosis, parts of the structured interviews utilized in the psychiatric examinations of BASE were carried out (cf. Helmchen et al., 1999). The psychiatrists also clarified the extent to which pertinent interaction with the individuals concerned was possible despite psychopathological symptoms and whether further examinations, for example, completion of the Intake Assessment, beginning or continuing the Intensive Protocol, were ethically justifiable (cf. Geiselmann & Helmchen, 1994; Geiselmann, Helmchen, & Nuthmann, 1996; Helmchen & Lauter, 1995).

In some cases, the research assistants were confronted with participants whose physical health was so impaired that it was doubtful whether beginning (or continuing) the assessment was possible. For instance, doubts could arise if participants were very weak, if they could hardly speak, if interviews had to be very short, or if they repeatedly mentioned physical complaints. If participants agreed, the research assistants tried to collect some data without straining them too much; sometimes assessment parts were distributed over several short sessions (see Sections 4.3.2 and 4.3.3). If this was not viable, research assistants advised that a project physician should examine the participants and counsel them about further participation.

In their training, research assistants were prepared for the decisions involved in these procedures. Of course, these could only be laypersons' judgments based on observation of behavior. The evaluations and decisions were regularly discussed with the project physicians and project coordinators. In addition, research assistants received basic training in dealing with medical emergencies.

In total, 89 examinations of ability to give consent were carried out, with 54 (61 %) leading to the discontinuation of assessments. In 33 of these cases, the doubts about ability to give consent already arose at initial contact so that assessments were not even begun. These included two people for whom relatives or others prohibited further contacts anyway. In 16 cases, the Intake Assessment had been begun but was discontinued on the basis

of the procedure described above. Two participants were excluded from further participation after finishing the Intake Assessment. In three cases, the Intensive Protocol was broken off because the participants' mental state had declined so much that a continuation of assessment would not have been defensible.

In 21 cases, project physicians were involved in testing the inability to take part because of physical health impairments. One person ended the examination of the project physician and further contacts with the study on his/her own accord. Seven (35 %) of the remaining 20 examinations led to participants' exclusion from the study. Two persons did not even begin the Intake Assessment, in two other cases, it was discontinued, and the other three were excluded for health reasons during the Intensive Protocol.

During the medical sessions of the Intensive Protocol, project physicians also checked whether the trip to the clinics for the medical examinations there was manageable for the participants. If there were medical objections or if participants did not feel able to make the journey accompanied by the research assistants, the CT and ultrasound examinations were not carried out (cf. Footnote 15).

If the participants had allowed it, family physicians were notified of treatment-relevant findings from the internist-geriatric examination. Relevant psychiatric findings were usually passed on to the participants' physicians during the interview carried out with them by the project psychiatrists (cf. Section 5.2). If the participants could not name their doctor or had not consented to the information being transferred, the project physician informed them of the results of the medical examinations. In case of pathological findings that did not require the project physicians' immediate attention as ruled by their professional code of conduct, they emphatically recommended that the participants should go to see a doctor as soon as possible.

## 6.4 Procedures for the Protection of Collected Data

Everyone working in the Berlin Aging Study is obliged to maintain discretion and to observe the legal requirements for the protection of data. The data do not include names, addresses and so on, only identification numbers. As the participants were promised, it is ensured that reidentification

of individuals is not possible when results are published. Moreover, all data collection material is stored in special rooms and is additionally protected, and only authorized persons have access.

Data from the research units are stored in separate data banks and are carefully protected by access routines. In addition, there is a hierarchy of access rights so that the research units decide who can use which data and to what extent. Links and exchanges of different parts of the data are thus only possible under controlled conditions, in mutual agreement, and for the examination of specified topics.

# 7 Conclusion

Although the Berlin Aging Study could build on its scientists' previous work, on several other studies, and the experiences made in the pilot studies, carrying out the extensive assessment schedule with randomly selected old and very old people presented a methodological and practical challenge. Achieving equal numbers of completed Intensive Protocols for men and women in six age groups (from 70 to over 100 years) was only possible in a very long phase of fieldwork and at considerable expense in terms of finances and personnel. Despite the careful preparations in advance, methodological decisions had to be tested, organizational concepts had to be altered and optimized, and fieldwork routines had to be adapted to unforeseeable conditions encountered during assessment. The successful accomplishment of extensive data collection in BASE is due to the intellectual and institutional context, the financial background, but also the committed work of the research assistants, the project physicians, and the research unit scientists who supported the assessments—and, of course, to the many participants who made the most important contribution toward the success of the study. We are very grateful to them for their cooperation.

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