



TwinLife Technical Report Series

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***TwinLife* survey methodology and fieldwork outcomes**

Telephone survey of wave 1 subsample b (CATI 1b)

v1.0.0

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Technical report

TwinLife Telephone survey of wave 1 2016-2017 Subsample b CATI 1b

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Preliminary remark

TwinLife, the research project funded by the German Research Foundation, is an ongoing 12-year representative behavior genetic study investigating the development of social inequality. Since the project started in 2014, approximately 4,000 pairs of twins and their families have been interviewed yearly at different stages of their lives.

During the first funding period (2013-2016), the 4,000 same-sex twins as well as their families had already been interviewed face-to-face (F2F 1a and F2F 1b) and in some cases by phone (CATI 1a). infas was then commissioned in May 2016 to conduct the interviews during the second funding period from 2016 to 2018. The second funding period includes the face-to-face interviews of wave 2 (F2F 2a and F2F 2b) as well as subsample b of the telephone interviews of wave 1 (CATI 1b) and subsample a of the telephone interviews of wave 2 (CATI 2a).

This technical report documents the stages of implementing and conducting subsample b of the telephone interviews of wave 1 (CATI 1b). The report describes the sample, the respondents and the survey instruments used. Chapters 4 and 5 provide a detailed description of the survey process and document the fieldwork results. Chapter 6 contains a description of the data processing steps. All fieldwork documents can be found in the annex.

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1 Study design

The sample of the twin family study “TwinLife” consists of 4,000 pairs of identical or same-sex fraternal twins who were selected using a probability-based sampling design and first interviewed in 2014. Only twins growing up together or having grown up together were selected for the study. The sample consists of four age cohorts. At the time of the first interview in 2014, the youngest age cohort (year of birth 2009/2010) was 5 years old while the oldest age cohort (year of birth 1991-1993) was 23/24 years old.

Each age cohort is divided into two birth sub-cohorts. The two birth sub-cohorts of each age cohort are interviewed one after the other over two consecutive years in order to guarantee that all twins of one age cohort are interviewed at the same age. The first birth sub-cohorts of each age cohort are aggregated in subsample a, while the second birth sub-cohorts of each age cohort are aggregated in subsample b. Thus, each data collection consists of the two subsamples a and b.

As part of the extended family design of the study, the twins, as well as their parents (biological and step-parents), a sibling¹ and the current partner of the older twins (18 years of age or older) were interviewed. Personal interviews (also called face-to-face (F2F) interviews) and telephone interviews (CATI) are conducted in alternate years.

The following overview shows the survey design of the second funding period.

Tabelle 1 Overview of the surveys of the second funding period

Wave	Data collection mode	Birth cohort and fieldwork phase	
		Subsample a (twins of the first birth sub-cohorts) (C1: 2009, C2: 2003, C3: 1997, C4:1990-1991)	Subsample b (twins of the second birth sub-cohorts) (C1: 2010, C2: 2004, C3: 1998, C4: 1992-1993)
First wave	CATI	CATI 1a <i>not part of the second funding period</i>	CATI 1b 11/2016 – 04/2017
Second wave	F2F	F2F 2a 11/2016 – 05/2017	F2F 2b 09/2017 – 04/2018
Second wave	CATI	CATI 2a 09/2017 – 04/2018	CATI 2b <i>not part of the second funding period</i>

¹ If there were several siblings in the family, the sibling relevant for the survey was selected in the first interview. This sibling will also be interviewed in the subsequent survey waves.

The subject of this technical report is the telephone interviews of subsample b conducted in wave 1 of the TwinLife study (CATI 1b).

About one year after the first F2F interviews, all families who had participated in the F2F survey of wave 1 and who had declared their willingness to be part of the TwinLife panel study were contacted for the telephone interviews of wave 1. Whereas family members 5 years and older were interviewed in the F2F survey, only those 10 years and older were to be interviewed by phone. Beforehand, the families received a letter announcing the telephone survey. In the letter, a hot-line free of charge was named as well as a study-specific email-address. For more information on the TwinLife project, the families were also referred to the TwinLife study website. A newsletter containing results from the first interviews was also enclosed with the letter.

The CATI 1b survey was conducted between 12/05/2016 and 04/30/2017.

Table 2 provides an overview of the design of the telephone interview conducted in wave 1.

Tabelle 2 CATI 1b study synopsis

Fieldwork phase	12/05/2016 to 04/30/2017
Selected population	German-speaking families with a pair of same-sex twins in four age cohorts (K1: 2010, K2: 2004, K3: 1998, K4: 1992-1993)
Gross sample	n=2,029 families with 4,046 twins
Communication strategy	– Letter, data protection notice and newsletter in advance of the telephone survey – Easter card as part of panel tracking
Data collection mode	Telephone interview (CATI)
Target persons	All family members of subsample b who were interviewed in the F2F survey (including those who had moved in the meantime): – Both twins (at least 10 years old, otherwise questions were answered by the other people in the HH), – Their parents and step-parents, – A sibling (at least 10 years of age, otherwise questions were answered by the other people in the HH), – Partner of the twins, provided the twins are at least 18 years old and they live together with their partner.
Survey instruments	Interview language: German Computer-assisted questionnaire with the following modules: – Family questionnaire – Household questionnaire – Individual questionnaire
Mean interview duration ²	– Family questionnaire: Ø 8.3 minutes – Household questionnaire: Ø 1.9 minutes – Individual questionnaire: Ø 25.3 minutes
Interviewer deployment	n=91 interviewers
Interviewer training	Personal training by infas project management and the TwinLife team, two half-day sessions
Valid net interviews	– n=1,412 families with at least one family member interviewed – n=4,143 individual interviews conducted
Data processing	– Preparing data records: Preparing the raw data according to the CATI 1a data record and in coordination with the TwinLife team – Coding open answers (ISCO 08)
Data delivery	– Monthly fieldwork reports – Interim delivery of the survey data in March 2017 – Delivery of final data in June 2017 (family data set, household data set, individual data set, methodological data, contact data)
Documentation	Technical report in German and English

² Cases were excluded from the analysis if the interviews were implausibly long or short. This was caused by, e.g., the interviews being interrupted or the interviewer going back within the survey instrument. One percent of cases in the upper and lower distribution margin were excluded from the calculations.

2 Sample

2.1 Description of the gross sample

The respondents from the first interview form the starting point for the sample in a panel study. The gross panel sample therefore includes the twins who were interviewed in the initial F2F survey (F2F 1b).³ However, only those pairs of twins who consented to be interviewed again were available for the following survey waves.

The F2F interviews of wave 1 were conducted by TNS Infratest in Munich. In order to pass on the addresses to infas, the permission of the respondents was required. All respondents were therefore informed in writing about the change of the survey institute and the associated disclosure of the addresses and had the opportunity to object to this.

The gross sample of the CATI 1b telephone survey therefore consisted only of twins and their families who expressed their willingness to participate in the panel study and did not object to the transfer of their addresses to infas.

The final sample of the CATI 1b survey was comprised of 2,029 families with 4,046 twins. There were 12 pairs of adult twins in age cohort 4 where only one of the twins objected to their address being passed on or withdrew their willingness to participate in the panel. In consultation with the TwinLife team, the families of these twins were not excluded from the panel study. The twin who was still willing to be interviewed as well as the rest of the family members thus remained in the panel. The twins who objected to the transfer of their addresses were not contacted.

Tabelle 3 Gross sample CATI 1b

	Total	Age cohorts			
		Cohort 1	Cohort 2	Cohort 3	Cohort 4
Families	2,029	494	514	522	499
Of which:					
– Both twins in the sample	2,017	494	514	522	487
– Only one twin in the sample	12	-	-	-	12

Source: Methodological data

³ In the first F2F survey (F2F 1b), interviews with families were only considered valid if at least both twins and one biological parent were interviewed successfully.

2.2 Target persons

The design of the TwinLife study intends for the following family members to be interviewed:

- Both twins
- Both biological parents
- Step-parents/partners of the biological parents, provided they live in the same household as the biological parent
- One sibling for each pair of twins (regardless of whether this is a full, half, adoptive or step-sibling),⁴
- Current partner of a twin (only for twins over 18 years of age)

During the first interview, all relevant family members were documented and contacted. However, not in all families it was possible to interview all of them.⁵

During the telephone survey of wave 1, only people who had taken part in the first F2F interview were interviewed. Therefore, family members who were not interviewed during the first F2F survey were not contacted for the telephone survey.⁶ Family members of the twins were interviewed even if the twins themselves did not participate.

Partners of the twins were only interviewed in the CATI 1b survey if they shared a household with the twin and had already taken part in the first F2F survey.

In the first F2F interview, twins and siblings aged 5 years and older were interviewed personally, whereas during the telephone survey it was only twins and siblings aged 10 years and older. Therefore, no telephone interviews were conducted with the twins in the youngest age cohort (cohort 1) nor with any siblings under the age of 10 years. Instead, the parents were asked additional questions about the children.

⁴ If there were several siblings in the family, the sibling relevant for the survey was selected in the first interview. This sibling will also be interviewed in the subsequent survey waves.

⁵ A minimum requirement for a valid family in the F2F surveys of wave 1 was that at least the two twins and one biological parent were interviewed.

⁶ First-time respondents in the TwinLife study are only interviewed in the F2F surveys.

Therefore, the following family members were interviewed in the CATI 1b survey provided they had taken part in the F2F 1b survey and had not withdrawn their consent to participate in the panel:

- Both twins of cohorts 2 (12-year-olds), 3 (18-year-olds) and 4 (24-year-olds),
- Both biological parents
- Step-parents/partners of the biological parents, provided they live in the same household as the biological parent
- One sibling over 10 years of age (regardless of whether this is a full, half, adoptive or step-sibling),
- Current partner of a twin (only for twins over 18 years of age) if they live in the same household as the twin.

3 Survey instruments

The survey instrument of the TwinLife study consists of three components: (a) the family questionnaire, (b) the household questionnaire, and (c) the individual questionnaire. The transitions from one interview component to the next are controlled automatically by the survey program.

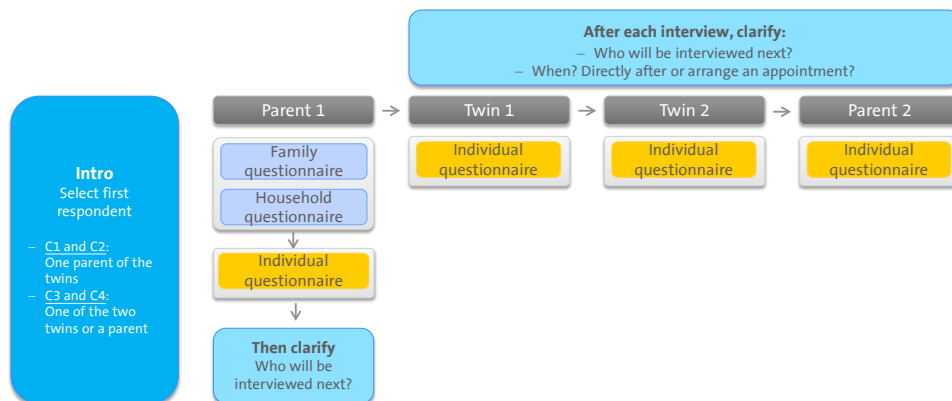
The survey instruments for the telephone survey of the second subsample (CATI 1b) corresponded to those of the first subsample (CATI 1a). A pre-test was conducted on all survey instruments before the main CATI 1 survey.

3.1 Overview of the interview process

The family and household questionnaires had to be answered before any individual interview could be conducted. The family questionnaire was used to identify the target persons in the families (see section 2.2) as well as the household constellations of the family.

Once the family questionnaire was answered by one family member, all households of the family with at least one target person were activated for telephone contact. Therefore, different households of one family were able to be contacted at once.

Abbildung 1 Interview process: Example

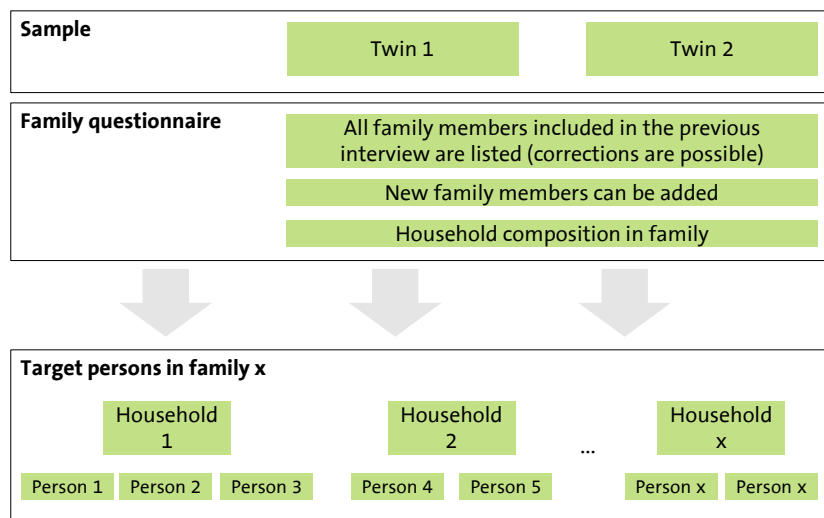


In each household, the interview started with the household questionnaire. Afterwards, the individual interviews were conducted with all respondents of the household aged 10 years and older. Usually, the first individual interview was conducted with the person who answered the household questionnaire. If this was not possible, another respondent could be selected for the first individual interview. There was no specific order for conducting the individual interviews within a household. This allowed for flexibility concerning the respondents' appointment requests. The individual interviews did not have to be conducted in succession. If no other respondent in the household was available for an interview, an appointment at a later time was arranged. The information with whom the appointment was arranged was accessible for the interviewer via a note field. If this person was not available at the scheduled appointment, interviews could still be conducted with other respondents in the household.

3.2 Family questionnaire

In each family, the interview started with the family questionnaire, which only needed to be answered once. This family questionnaire was used to identify the target persons in the families (see section 2.2) and to document the household constellations of the family.

Abbildung 2 Family questionnaire: Identifying target persons and households



Source: infas, own visuals



In cohorts 1 and 2 (twins were about 6 and 12 years old), the family questionnaire was answered by the mother or father of the twins. In cohorts 3 and 4, the family questionnaire was answered either by a twin or a parent.

Since all the families had already been interviewed about one year earlier, pre-load information such as name, date of birth, gender and the relationship to the twins were displayed for all family members already known from the previous interview. This information was corrected or supplemented by the interviewers when necessary. The family questionnaire also recorded family members who had not yet been recorded, such as a new partner of a biological parent.

The following persons were supposed to be included in the family questionnaire:

- Both twins
- All siblings of the twins (biological, adoptive, half or step-siblings)
- Mother (biological, adoptive or foster mother)
- Father (biological, adoptive or foster father)
- Stepfather or partner of the mother
- Stepmother or partner of the father
- Partner of the twins (only in cohort 3 and 4)
- Children of the twins

The family members relevant for the survey could either live together in one household or live in various households. The family's household constellations were also recorded in the family questionnaire. For all households with at least one target person, the current address and telephone number was recorded.

3.3 Household questionnaire

The household questionnaire had to be answered for each household with at least one target person. It contained questions on the current living situation and the relationship between the individual family members. Other people (e.g., grandparents) who were living in the household but had not yet been registered in the family questionnaire were also recorded.

The household questionnaire had to be answered by a household member over 16 years of age.

If twins or siblings aged 10 to 13 lived in the household, the consent of the parent to interview the children was obtained at the end of the household questionnaire. The children were only interviewed if the consent had been given.

3.4 Individual questionnaire

After the household questionnaire was completed, individual interviews were conducted with every target person in the family.

The individual interview contained questions about school, occupation, happiness and health. Additionally, questions about the twins' grandparents and the occurrence of certain life events were included.

If the twins or the siblings were 10 years old or younger, a parent on children questionnaire was completed by one parent living in the same household as the child. This questionnaire included questions on religion, education, health and deviant behavior. If more than one parent was living with the child, the parent who completed the household questionnaire was chosen to answer the questions. The parent on children questionnaire followed immediately after the individual questionnaire.

3.5 Interview duration

The interview durations for the different questionnaires and types of respondents are listed in tables 4, 5 and 6.⁷

The family questionnaire was completed only once in the twins' households and took approximately eight minutes. The household questionnaire was completed in each household of the family and took around two minutes.

Tabelle 4 Interview duration by questionnaire

	Number of cases	Min.	Max.	Median	Mean (M)	Standard deviation (SD)
Family questionnaire	1,394	3.0	19.9	7.3	8.3	3.6
Household questionnaire	1,561	1.0	19.3	1.6	1.9	1.4
Individual interview	4,101	10.0	66.4	24.6	25.3	8.1

Basis: Valid interviews with valid time measure /source: Survey data

⁷ Cases were excluded from the analysis if the interviews were implausibly long or short. This was caused by, e.g., the interviews being interrupted or the interviewer going back within the survey instrument. One percent of cases in the upper and lower distribution margin were excluded from the calculations.

On average, the individual interviews took approximately 25 minutes, but the length varied across different types of respondents and their age (see table 5 and table 6). In cohort 1, the individual interviews had the longest average duration with approximately 30 minutes. Since the twins in cohort 1 were not interviewed, their parents gave information about the children, thus prolonging their interviews.

Tabelle 5 Interview duration of individual interviews by age cohort

	Number of cases	Min.	Max.	Median	Mean (M)	Standard deviation (SD)
Total	4,101	10.0	66.4	24.6	25.3	8.1
Cohort 1	616	10.2	66.4	29.0	29.8	9.0
Cohort 2	1,263	10.0	63.1	19.5	21.6	8.9
Cohort 3	1,305	10.4	63.2	24.4	25.5	6.4
Cohort 4	917	12.2	61.4	26.3	26.9	6.2

Basis: Valid interviews with valid time measure /source: Survey data

Tabelle 6 Interview duration of individual interviews by type of respondent

	Number of cases	Min.	Max.	Median	Mean (M)	Standard deviation (SD)
Total	4,101	10.0	66.4	24.6	25.3	8.1
Twins	1,745	10.0	58.2	21.2	21.5	6.6
Siblings	275	10.1	32.6	17.6	17.9	4.9
Mother	1,206	15.7	66.4	29.7	30.8	7.4
Father	819	14.0	62.2	26.8	27.7	6.9
Step-parents	44	19.0	55.3	25.6	26.7	6.4
Partner of the twins	12	14.3	22.2	17.9	18.0	2.7

Basis: Valid interviews with valid time measure /source: Survey data

4 Conducting the survey

4.1 Interviewer training

All interviewers deployed in the CATI 1b survey were given an intensive training designed specifically for the study by the infas project management. Each interviewer participated in one half-day training session. Two half-day training sessions were held in total, one on 11/25/2016 and one on 11/28/2016 in Bonn.

These sessions introduced the content of the questionnaires as well as the technical instructions on the specifics of the study. A main focus was laid on the succession of the different interview components. The interviewers were also made aware of the importance of the family questionnaire for all of the subsequent interview components in the family. In practical parts of the sessions, the interviewers trained to conduct interviews in order to further develop their understanding of the specifics of each questionnaire component. The details of the training sessions are presented in figure 3.

Abbildung 3 TwinLife CATI 1b training session

Start	End	Contents	Duration
10:00	10:20	Section I: Welcome, basic information about the study	0:20
		> Welcome, presentation of the structure of the training session > Aim of the study > Brief information about the first wave	
10:20	11:25	Section II: Sampling and contacting the families	1:05
		> Sampling > Who will be interviewed? > Contacting the families > Information on arranging appointments > CATI-Intro > Motivating respondents	
11:25	11:55	Section III: Basic information on the interview process	0:30
		> Overview of the structure of an interview > Family and household questionnaire > Individual questionnaire	
11:55	12:15	Break	0:20
12:15	14:00	Section IV: Starting the interview and Individual questionnaire	1:45
		> Start of the interview, family questionnaire and household questionnaire > Transition between individual interviews > Practice: Start of the interview, family questionnaire and household questionnaire > Practice: Individual interviews and transition between interviews	
		> Particular features of the questionnaire > Final questions and feedback round	

Furthermore, all interviewers received a study-specific interviewer handbook as well as a handout of the training presentation. The interview handbook contained all important information and explanations in writing and could thereby serve as a reference during the fieldwork phase.

4.2 Interviewer deployment

Only interviewers who had extensive experience in conducting interviews with longitudinal designs were selected for the TwinLife telephone survey (CATI 1b). A total of 91 interviewers conducted at least one interview each. The percentages of male and female interviewers were almost equal (men: 46.2 percent; women: 53.8 percent). Interviewers between 21 and 75 years old were deployed (see table 7). More than half of the interviewers had been working for infas for at least six years when the survey started.

Tabelle 7 Characteristics of the deployed interviewers

Column %	Abs.	%
Total	91	100.0
Gender		
Male	42	46.2
Female	49	53.8
Age groups		
Up to 29 years	19	20.9
30-49 years	32	35.2
50-65 years	30	33.0
Over 65 years	10	11.0
Experience as an interviewer		
Up to 1 year	5	5.5
2-3 years	15	16.5
4-5 years	17	18.7
6 years or more	54	59.3
Highest school qualification		
Basic secondary school/polytechnic secondary school qualification	6	6.6
Intermediate secondary school qualification/vocational extension certificate	22	24.2
Advanced technical secondary school qualification	11	12.1
Final school graduation/entry qualification for higher education	52	57.1

Basis: Interviewers deployed who conducted at least one interview / Source: infas interviewer master file

The 91 interviewers conducted a total of 4,143 individual interviews (see table 8). On average, the interviewers conducted 45.5 interviews, with a maximum of 159 interviews being conducted by one interviewer (see table 9).⁸

⁸ The standard deviation is 34.4, i.e. there is a large variance among the interviewers.

Tabelle 8 Individual interviews per interviewer

Number of inter- viewers	Number of cases	Min.	Max.	Mean (M)	Standard deviation (SD)
91	4,143	3	159	45.5	34.4

Source: Methodological data

About 63 percent of the interviewers conducted a maximum of 50 interviews.

Tabelle 9 Number of interviews conducted per interviewer (grouped)

Number of interviews per interviewer	Total	
Column %	Abs.	%
Total	91	100.0
1 to 10	14	15.4
11 to 20	12	13.2
21 to 50	31	34.1
51 to 100	30	33.0
101 to 150	2	2.2
More than 150	2	2.2

Source: Methodological data

4.3 Quality assurance and interviewer monitoring

Throughout the entire fieldwork phase, quality monitoring of the interviewers was carried out. The quality of the interviews was monitored by trained supervisors who were very familiar with the specific methodical requirements of the survey as well as the CATI interviewing techniques. These supervisors were trained specifically for the TwinLife study by the project managers. Thus, they could answer any study-specific questions of the interviewers in close collaboration with the project management. The aim of the supervision was to maintain a high quality of the interview data and maximize the response rate of the participants by providing ongoing support. The supervision tasks included the following:

- Monitoring the interviewers by listening to interviews in the telephone studio and reviewing the entries by observation on the supervision mask (viewing the interviewer's screen at the supervisor's workstation).
- Holding individual meetings or retraining sessions with the interviewers in case of any problems with the study.
- Holding individual and group meetings or retraining sessions directly after the interview if any problems were reported. Written feedback was also issued to the interviewers.
- Intervening directly in the interview in case of any errors or allocation difficulties that could lead to extensive errors in the data. This occurred either by providing short verbal or written information during the interview or direct

intervention of the supervision if there were bigger problems and the interviewer became overwhelmed.

The supervision was performed during the whole fieldwork phase. A tight flow of information to the project management was maintained so that problems concerning the survey instruments could be solved as quickly as possible. Solutions were immediately distributed to the telephone studio.

4.4 Announcement letter

All families received a personal letter before they were contacted by phone. The letter included information about the interview itself, the adherence of all relevant data protection laws and the voluntariness of the study participation.

In cohorts 1 and 2 (6-year-old and 12-year-old twins), the letters were addressed to the parents or guardians of the twins, since they were the ones being contacted for the telephone interview. In cohorts 3 and 4 (18-year-old and 24-year-old twins), both twins received separate letters, regardless of whether they were living in the same household or not. In these families, the twins were therefore contacted directly.

The announcement letter stated that the family would be contacted by infas interviewers. Furthermore, a hotline free of charge and a study-specific email address were provided. The families were also referred to the study's website. The letter was sent promptly before the start of the fieldwork.

In addition to announcing the interview and preparing the contact by the interviewers, the letter was also used for tracking the target person. By sending the letters in an envelope printed "If undeliverable, please return! If undeliverable, address correction card!" they were used to check addresses.

Additionally, any responses to the letter received via the study-specific e-mail address, the free hotline or via the online address portal were also recorded and processed.

The TwinLife team also provided a newsletter containing results from the first wave. This newsletter was sent to the families together with the announcement letter and the data protection notice. The newsletter is also available on the study website.

To provide telephone numbers or new address information, families were referred to the study's online address portal, the study e-mail address as well as the free hotline.

In line with the survey design of the CATI 1a survey, the respondents of the CATI 1b survey received no incentive or thank you letter.

4.5 Tracking during the fieldwork phase

In order to avoid mobility-related nonresponse and to achieve a maximum response rate from the panel sample, various tracking techniques were undertaken during the fieldwork phase. The respondents were able to update their address using the study's hotline, e-mail address or the online address portal. The new information was then entered in the address database and used in the telephone studio.

Furthermore, various tracking techniques were implemented throughout the fieldwork phase for the target persons whose telephone numbers were no longer correct. Initially, research was conducted using the address factory database of Deutsche Post AG. Subsequently, individual inquiries about changed addresses were submitted to the citizens' registration office. These measures were conducted each month throughout the entire fieldwork phase and after.

The central tracking techniques, such as research using the address factory database, were performed at the household level for all respondents in the household. Responses from the respondents via the hotline or the online address portal could either refer to a complete household or to a single person in the household.

During the fieldwork phase, tracking techniques were implemented for n=328 addresses (see table 10).

Tabelle 10 Tracking techniques during the fieldwork phase

Column %	Total	
	Abs.	%
Total number of addresses	328	100.0
Deceased	1	0.3
Moved abroad	2	0.6
Old address data confirmed	167	50.9
New address data back	158	48.2
Result for cases with new address data (multiple answers may apply)		
New address data back	158	100.0
New telephone number	100	63.3
New address	116	73.4
New e-mail address	6	3.8

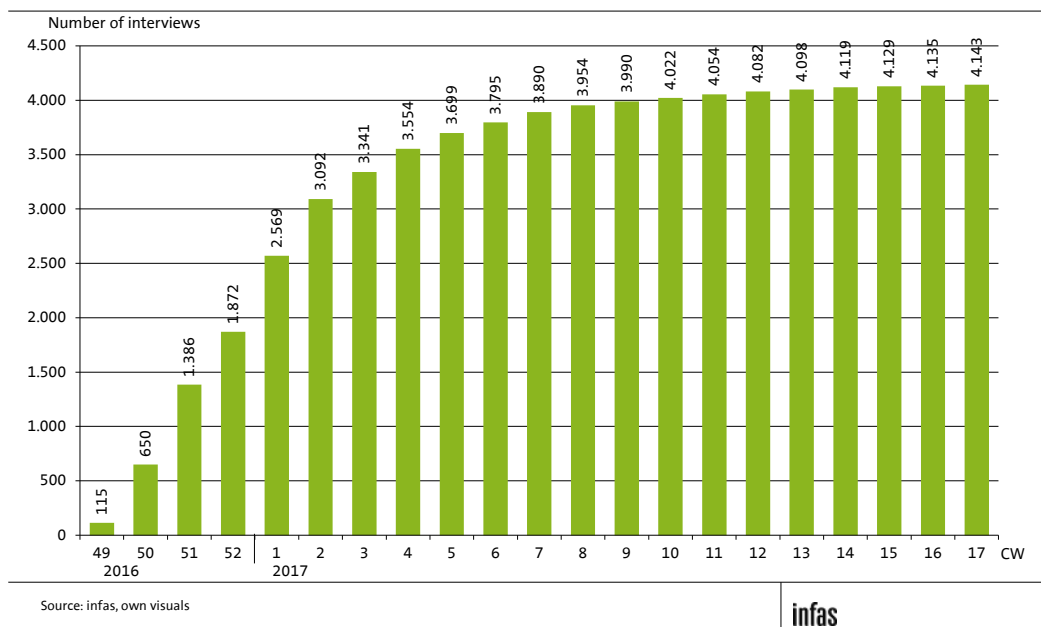
Source: infas sample management system (iSMS)

4.6 Fieldwork process

The fieldwork phase of the CATI 1b survey began on 12/05/2016 (CW 49) and ended on 04/30/2017 (CW 17). During the CATI 1b survey, a total of 4,143 individual interviews in 1,412 families were conducted. The total fieldwork phase was 21 calendar weeks long.

Figure 4 documents the individual interviews conducted during fieldwork. It shows the development of the total number of interviews throughout the fieldwork phase: the steeper the increase, the larger the increase of completed interviews.

Abbildung 4 Development of interviews conducted during the fieldwork phase



5 Fieldwork results

For each contact or contact attempt, the interviewers recorded the processing outcome according to a detailed return code specification.⁹ However, depending on the contact history, the processing outcome from the last contact was not necessarily the final one. Therefore, the so-called final outcome was calculated and used in the following overviews.

5.1 Final processing outcomes and response rates: families

The sample of the CATI 1b survey consisted of 2,029 families with 4,046 twins.¹⁰ In 1,412 of these families, an interview was conducted with at least one respondent (69.6 percent). The response rate was highest in cohort 1 with 70.2 percent, while it was lowest in cohort 4 (66.3 percent).

In total, 179 families (8.8 percent) refused to participate. The reasons for this being the following:

- In 42 cases, the families hung up immediately. In terms of those who refused to participate, this corresponds to 23.5 percent.
- 35 families refused to participate in the survey as a matter of principle, thereby revoking their willingness to participate in the panel survey. In terms of those who refused to participate, this corresponds to 19.6 percent. This percentage is particularly high in cohort 3, where the twins had come of age since the first interview.
- Another 22 families (12.3 percent of those who refused) decided to skip the current wave but were open to continue participating in the survey in the future.
- As another reason of refusal a lack of interest in the topic of the study was stated (8.9 percent).

191 families could not be reached at all during the fieldwork phase. This corresponds to 9.4 percent of the sample. Another 9.6 percent of the families were reached but no appointment was successfully arranged within the fieldwork phase.

⁹ Contact files with the entire contact history were handed over to the TwinLife team.

¹⁰ In 12 families, one twin refused to continue participating in the survey.

Tabelle 11 Final outcome: families

	Total		Cohort 1		Cohort 2		Cohort 3		Cohort 4	
Column %	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%
Gross sample	2,029	100.0	494	100.00	514	100.0	522	100.0	499	100.0
Not in target group	1	0.1	-	-	-	-	1	0.2	-	-
Moved abroad	1	0.1	-	-	-	-	1	0.2	-	-
Nonresponse – non-contact	191	9.4	70	14.2	45	8.8	38	7.3	38	7.6
Did not answer/not reachable	34	1.7	11	2.2	10	1.9	2	0.4	11	2.2
Answering machine	34	1.7	8	1.6	5	1.0	10	1.9	11	2.2
No connection	102	5.0	41	8.3	23	4.5	25	4.8	13	2.6
Wrong number/TP not known at the number	12	0.6	3	0.6	5	1.0	1	0.2	3	0.6
TP/HH no longer lives there/new address/telephone number unknown	9	0.4	7	1.4	2	0.4	-	-	-	-
Nonresponse – refusal	179	8.8	25	5.1	55	10.7	45	8.6	54	10.8
Refusal: matter of principle	35	1.7	5	1.0	9	1.8	14	2.7	7	1.4
Refusal: no time, interview too long, too much	10	0.5	1	0.2	6	1.2	1	0.2	2	0.4
TP refuses: only wishes to be interviewed F2F	2	0.1	-	-	2	0.4	-	-	-	-
TP refuses: too ill	2	0.1	-	-	1	0.2	-	-	1	0.2
TP refuses to start the interview	2	0.1	-	-	-	-	1	0.2	1	0.2
Interview broken off	7	0.3	1	0.2	2	0.4	1	0.2	3	0.6
Hangs up immediately	42	2.1	8	1.6	14	2.7	8	1.5	12	2.4
Contact person refuses to provide any information	9	0.4	2	0.4	1	0.2	4	0.8	2	0.4
Refusal: not interested in topic	16	0.8	1	0.2	6	1.2	3	0.6	6	1.2
Refusal: Data protection reason	1	0.1	-	-	-	-	1	0.2	-	-
Refusal: other reasons	31	1.5	5	1.0	7	1.4	6	1.1	13	2.6
Refusal: not in this wave (temporary drop-out)	22	1.1	2	0.4	7	1.4	6	1.1	7	1.4
Nonresponse – other	195	9.6	43	8.7	51	9.9	38	7.3	63	12.6
Appointment not possible within fieldwork phase	182	9.0	37	7.5	48	9.3	36	6.9	61	12.2
No communication possible in the target language	13	0.6	6	1.2	3	0.6	2	0.4	2	0.4
Interview (family questionnaire)	1,463	72.1	356	72.1	363	70.6	400	76.6	344	68.9
Invalid	8	0.4	1	0.2	4	0.8	2	0.4	1	0.2
Valid and at least one individual interview conducted	1,412	69.6	347	70.2	347	67.5	387	74.1	331	66.3
Valid but no individual interview conducted	43	2.1	8	1.6	12	2.3	11	2.1	12	2.4

Source: Methodological data

During the fieldwork phase, a total of 52,840 contacts or contact attempts were made in the 2,029 families. The families were contacted an average of 26 times.

Three families were not contacted by telephone as they had refused to participate via the hotline before the start of the fieldwork.

Tabelle 12 Average number of contacts at the family level

	Number of families	Min.	Max.	Mean (M)	Standard deviation (SD)	Total number of contacts
Total	2,029	0	149	26.0	22.9	52,840
Cohort 1	494	1	99	17.5	15.9	8,618
Cohort 2	514	0	103	19.8	16.0	10,188
Cohort 3	522	0	130	27.0	21.6	14,104
Cohort 4	499	0	149	39.9	28.7	19,930

Source: Methodological data, contact data

Tabelle 13 Contact attempts grouped at the family level

	Total		Cohort 1		Cohort 2		Cohort 3		Cohort 4	
Column %	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%
Total	2,029	100.0	494	100.0	514	100.0	522	100.0	499	100.0
0	3	0.1	-	-	1	0.2	1	0.2	1	0.2
1-2	117	5.8	33	6.7	34	6.6	25	4.8	25	5.0
3-5	117	5.8	55	11.1	27	5.3	21	4.0	14	2.8
6-10	348	17.2	135	27.3	113	22.0	68	13.0	32	6.4
11-20	531	26.2	130	26.3	159	30.9	159	30.5	83	16.6
21-50	652	32.1	125	25.3	149	29.0	186	35.6	192	38.5
51-100	235	11.6	16	3.2	30	5.8	59	11.3	130	26.1
101 and more	26	1.3	-	-	1	0.2	3	0.6	22	4.4

Source: Methodological data, contact data

Families in which all target respondents were interviewed (n=963), were contacted an average of 18.7 times. On average, more contacts were necessary in cohorts 3 and 4 than in cohorts 1 and 2.

Tabelle 14 Average number of contacts for completed families

	Number of families	Min.	Max.	Mean (M)	Standard deviation (SD)	Total number of contacts
Total	963	3	107	18.7	13.7	18,003
Cohort 1	303	3	56	13.4	9.6	4,062
Cohort 2	276	5	71	17.0	11.6	4,685
Cohort 3	244	6	107	22.5	15.4	5,496
Cohort 4	140	6	87	26.9	15.9	3,760

Source: Methodological data, contact data

In addition to the unadjusted gross sample response rate, other measures also give important information about the field outcomes (see table 15). The response rate describes the rate of families with at least one valid individual interview (n=1,412) from the gross sample minus those addresses outside of the target group. The cooperation rate displays the number of successfully contacted families who decided to take part in the CATI 1b survey. The contact rate measures the number of families with whom verbal contact could be established during the fieldwork phase.

Tabelle 15 Outcome rates according to the AAPOR definition

	Total	Cohort 1	Cohort 2	Cohort 3	Cohort 4
Response rate $= I / [(I + IP) + (NR-NC + NR-R + NR-O/U) + UE]$	69.6	70.2	67.5	74.3	66.3
Cooperation rate $= I / [(I + P) + NR-R + NR-O/U]$	76.9	81.8	74.0	80.2	71.8
Refusal rate $= R / [(I + P) + (NR-R + NR-NC + NR-O/U) + UE]$	8.8	5.1	10.7	8.6	10.8
Contact rate $= [(I + P) + NR-R + NR-O/U] / [(I + P) + NR-R + NR-O + NR-NC + NR-UE]$	90.6	85.8	91.2	92.7	92.4

Source: AAPOR, own calculations

5.1.1 Number of target persons

During the CATI 1b survey, only those family members who had taken part in the F2F 1b survey and had not withdrawn their consent to be in the panel were interviewed again. Target persons for the CATI 1b survey were:

- Both twins of cohorts 2 (12-year-olds), 3 (18-year-olds) and 4 (24-year-olds),
- Both biological parents,
- Step-parents/partners of the biological parents provided they live in the same household as a biological parent,
- One sibling over 10 years of age (regardless of whether this is a full, half, adoptive or step-sibling),
- Current partners of the twins (only for twins over 18 years of age) if they live in the same household as the twins.

Twins of age cohort 1, siblings less than 10 years of age as well as partners of twins who did not live together with the twins were not included in the CATI 1b survey.

In the 1,455 families that took part in the survey¹¹, 5,075 target persons were identified. Thus, an average of 3.5 family members per family was to be interviewed in the CATI 1b survey, with a minimum of one and a maximum of six.

Tabelle 16 Number of target persons per family

	Number of families	Number of persons	Min.	Max.	Mean (M)	Standard deviation (SD)
Total	1,455	5,075	1	6	3.5	1.1
Cohort 1	355	689	1	3	1.9	0.6
Cohort 2	359	1,467	3	6	4.1	0.7
Cohort 3	398	1,610	3	6	4.1	0.7
Cohort 4	343	1,309	2	6	3.8	0.8

Source: Methodological data

The number of target persons varies between the age cohorts. For example, in cohort 1, there were n=306 families with two or less family members to be interviewed, as the twins themselves were not interviewed in this age cohort. In cohorts 2, 3 and 4, both twins were relevant to the survey so that at least two target persons were identified in the families.

Tabelle 17 Distribution of target persons per family

Column %	Total (families)		Cohort 1		Cohort 2		Cohort 3		Cohort 4	
	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%
Total	1,455	100.0	355	100.0	359	100.0	398	100.0	343	100.0
1 target person	76	5.2	76	21.4	-	-	-	-	-	-
2 target persons	230	15.8	224	63.1	-	-	-	-	6	1.7
3 target persons	326	22.4	55	15.5	69	19.2	91	22.9	111	32.4
4 target persons	564	38.8	-	-	191	53.2	199	50.0	174	50.7
5 target persons	249	17.1	-	-	98	27.3	107	26.9	44	12.8
6 target persons	10	0.7	-	-	1	0.3	1	0.3	8	2.3

Source: Methodological data

¹¹In 1,412 of these families, at least one valid individual interview was conducted. In 43 families, no valid individual interview could be conducted (see table 11).

5.1.2 Number of households

In the 1,455 families, the target persons were distributed over an average of 1.4 households per family. At least one and up to four households with target persons were named in the families interviewed.

Tabelle 18 Number of households with target persons per family

	Number of families	Number of households	Min.	Max.	Mean (M)	Standard deviation (SD)
Total	1,455	1,965	1	4	1.4	0.7
Cohort 1	355	367	1	2	1.0	0.2
Cohort 2	359	381	1	3	1.1	0.3
Cohort 3	398	526	1	4	1.3	0.6
Cohort 4	343	691	1	4	2.0	0.9

Source: Methodological data

As expected, the target persons of age cohorts 3 and 4 were distributed over more households than the target persons in families of underaged twins (cohort 1 und 2). While in more than 95 percent of the families in cohort 1 and 2 all target persons lived in one household, this rate was around 74 percent in cohort 3 and just more than 33 percent in cohort 4.

Tabelle 19 Distribution of households per family

	Total		Cohort 1		Cohort 2		Cohort 3		Cohort 4	
Column %	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%
Total	1,455	100.0	355	100.0	359	100.0	398	100.0	343	100.0
1 household	1,093	75.1	343	96.6	340	94.7	296	74.4	114	33.2
2 households	230	15.8	12	3.4	16	4.5	81	20.4	121	35.3
3 households	116	8.0	-	-	3	0.8	16	4.0	97	28.3
4 households	16	1.1	-	-	-	-	5	1.3	11	3.2

Source: Methodological data

5.1.3 Completeness of families

In 66.2 percent of the 1,455 families interviewed, all target persons in the families were successfully interviewed. The percentage of complete families was particularly high in cohorts 1 and 2. As expected, it was more difficult to conduct interviews with all family members of the adult twins (cohorts 3 and 4).

Tabelle 20 Completeness of the interviewed families

	Total		Cohort 1		Cohort 2		Cohort 3		Cohort 4	
<i>Column %</i>	<i>Abs.</i>	<i>%</i>	<i>Abs.</i>	<i>%</i>	<i>Abs.</i>	<i>%</i>	<i>Abs.</i>	<i>%</i>	<i>Abs.</i>	<i>%</i>
Total: Families interviewed	1,455	100.0	355	100.0	359	100.0	398	100.0	343	100.0
Family complete	963	66.2	303	85.4	276	76.9	244	61.3	140	40.8
Family not complete but at least one valid individual interview	449	30.9	44	12.4	71	19.8	143	35.9	191	55.7
Family with no valid individual interview	43	3.0	8	2.3	12	3.3	11	2.8	12	3.5

Source: Methodological data

5.2 Final processing outcomes and response rates: twins

The gross sample of the CATI 1b survey consisted of 2,029 families with 4,046 twins. In 12 families, one of the two twins withdrew their willingness to participate in the panel before the start of the CATI 1b survey. In consultation with the TwinLife team, the other family members of these twins were still contacted and interviewed.

In the telephone interview, only respondents aged 10 years and older were interviewed. Thus, the twins of age cohort 1 were not interviewed. Instead, the parents gave information about the twins. The following tables consequently refer to the twins in cohorts 2, 3 and 4 who were personally contacted and interviewed, and to the parents of cohort 1 who gave information about their twins.

Overall, an interview was conducted for or with 2,450 twins (60.6 percent).

In cohort 1, parent interviews were conducted for 694 twins, this corresponds to a response rate of 70.2 percent.

In cohort 2, 61.6 percent of the 1,028 twins were interviewed. Since the twins were underaged, the initial contact in this cohort was always with a parent. Only twins for whom a parent had already completed the family and household questionnaire were interviewed. With regard to these n=718 twins, the response rate was at 88.2 percent.

In cohort 3 (18-year-old twins), the response rate for the twins was 63.4 percent.

In cohort 4 (24-year-old twins), 47 percent of the twins could be interviewed.

Tabelle 21 Final outcome: twins

	Total		Cohort 1		Cohort 2		Cohort 3		Cohort 4	
<i>Column %</i>	<i>Abs.</i>	<i>%</i>	<i>Abs.</i>	<i>%</i>	<i>Abs.</i>	<i>%</i>	<i>Abs.</i>	<i>%</i>	<i>Abs.</i>	<i>%</i>
Gross sample	4,046	100.0	988	100.0	1,028	100.0	1,044	100.0	986	100.0
Unavailable as parents did not take part	310	7.7	-	-	310	30.2	-	-	-	-
Not in target group	2	0.0	-	-	-	-	2	0.2	-	-
Moved abroad	2	0.0	-	-	-	-	2	0.2	-	-
Nonresponse – no interview possible	2	0.0	-	-	-	-	-	-	2	0.2
TP could not be interviewed/long-term sick/disabled	2	0.0	-	-	-	-	-	-	2	0.2
Nonresponse – non-contact	393	9.7	142	14.4	1	0.1	90	8.6	160	16.2
Did not answer/not reachable	77	1.9	24	2.4	-	-	6	0.6	47	4.8
Answering machine	80	2.0	16	1.6	-	-	25	2.4	39	4.0
No connection	176	4.3	82	8.3	1	0.1	52	5.0	41	4.2
Wrong number/TP not known at the number	13	0.3	6	0.6	-	-	3	0.3	4	0.4
TP/HH no longer lives there/new address/telephone number unknown	47	1.2	14	1.4	-	-	4	0.4	29	2.9
Nonresponse – refusal	390	9.6	58	5.9	58	5.6	126	12.1	148	15.0
Refusal: matter of principle	60	1.5	10	1.0	-	-	30	2.9	20	2.0
Refusal: no time, interview too long, too much	12	0.3	2	0.2	-	-	5	0.5	5	0.5
TP refused to answer: too ill	2	0.0	-	-	-	-	-	-	2	0.2
TP refuses to start the interview	4	0.1	-	-	-	-	2	0.2	2	0.2
Interview broken off	23	0.6	6	0.6	1	0.1	4	0.4	12	1.2
Hangs up immediately	72	1.8	16	1.6	6	0.6	21	2.0	29	2.9
Contact person refuses to provide any information	34	0.8	4	0.4	12	1.2	12	1.1	6	0.6
No access to TP/participation not allowed/not willing according to info	36	0.9	-	-	34	3.3	2	0.2	-	-
Refusal: not interested in topic	30	0.7	2	0.2	1	0.1	10	1.0	17	1.7
Refusal: Data protection reasons	3	0.1	-	-	-	-	2	0.2	1	0.1
Refusal: other reasons	67	1.7	14	1.4	3	0.3	17	1.6	33	3.3
Refusal: not in this wave (temporary drop-out)	47	1.2	4	0.4	1	0.1	21	2.0	21	2.1
Nonresponse – other	497	12.3	94	9.5	26	2.5	164	15.7	213	21.6
Appointment not possible within fieldwork phase	477	11.8	82	8.3	26	2.5	160	15.3	209	21.2
No communication possible in the target language	20	0.5	12	1.2	-	-	4	0.4	4	0.4
Interview	2,452	60.6	694	70.2	633	61.6	662	63.4	463	47.0
Valid interview	2,450	60.6	694	70.2	633	61.6	662	63.4	461	46.8
Invalid interview	2	0.0	-	-	-	-	-	-	2	0.2

Source: Methodological data, contact data

5.2.1 Completeness of twin pairs

1,535 twin pairs were to be interviewed in cohorts 2, 3 and 4. 12 of these twin pairs were already incomplete in the gross sample, as one of the twins withdrew their willingness to participate in the panel. Of the remaining 1,523 twin pairs, both twins were interviewed in 791 twin pairs (51.9 percent). The completeness of twin pairs is considerably higher in cohorts 2 and 3 at around 60 percent than with the twins in cohort 4 (34.9 percent).

Tabelle 22 Completeness of twin pairs

	Total		Cohort 2		Cohort 3		Cohort 4	
Column %	Abs.	%	Abs.	%	Abs.	%	Abs.	%
Sample: Complete twin pairs	1,523	100.0	514	100.0	522	100.0	487	100.0
Both twins interviewed	791	51.9	313	60.9	308	59.0	170	34.9
Only one twin interviewed	174	11.4	7	1.4	46	8.8	121	24.8
No twin interviewed	558	36.6	194	37.7	168	32.2	196	40.2

Source: Methodological data

5.2.2 Regional characteristics

Since no information about the distribution of twins according to regional characteristics is available from official statistics, statements about the distribution of twins according to federal state, BIK municipality type and political municipality size are only possible in comparison to the gross sample of the CATI 1b survey. The regional characteristics always refer to the twins' current place of residence and not to the place of residence at the time of sampling.

It must also be noted that the sampling in wave 1 was carried out with a disproportional design.¹²

The distribution of the interviewed twins according to federal state, BIK municipality types and political municipality size very closely resembles the distribution of the gross sample.

¹² Brix et al. (2017): A longitudinal twin family study of the life course and individual development (TWINLIFE). TwinLife Technical Report Series No. 05, October 2017.

Tabelle 23 Gross-net comparison of twins: Regional characteristics I¹³

	Gross sample		Net sample		Difference in % points
<i>Column %</i>	<i>Abs.</i>	<i>%</i>	<i>Abs.</i>	<i>%</i>	<i>Percentage points</i>
Total	4,046	100.0	2,450	100.0	
Federal State					
Schleswig-Holstein	66	1.6	41	1.7	0.1
Hamburg	238	5.9	158	6.5	0.6
Lower Saxony	453	11.2	254	10.4	-0.8
Bremen	118	2.9	62	2.5	-0.4
North-Rhine Westphalia	1,182	29.2	724	29.6	0.4
Hesse	195	4.8	124	5.1	0.3
Rhineland-Palatinate	165	4.1	105	4.3	0.2
Baden-Württemberg	490	12.1	313	12.8	0.7
Bavaria	382	9.4	236	9.6	0.2
Saarland	30	0.7	17	0.7	-
Berlin	341	8.4	212	8.7	0.3
Brandenburg	65	1.6	45	1.8	0.2
Mecklenburg-Vorpommern	21	0.5	13	0.5	-
Saxony	149	3.7	81	3.3	-0.4
Saxony-Anhalt	73	1.8	31	1.4	-0.4
Thuringia	63	1.6	33	1.4	-0.2
No valid address	15	0.4	1	0.0	-0.4

Source: Methodological data

¹³ The regional characteristics refer to the twins' current place of residence.

Tabelle 24 Gross-net comparison of twins: Regional characteristics II¹⁴

	Gross sample		Net sample		Difference in % points
Column %	Abs.	%	Abs.	%	Percentage points
Total	4,046	100.0	2,450	100.0	
BIK regional size class					
Less than 2,000 residents	7	0.2	5	0.2	-
2,000 to 4,999 residents	6	0.1	6	0.2	0.1
5,000 to 19,999 residents	174	4.3	112	4.6	0.3
20,000 to 49,999 residents	238	5.9	157	6.4	0.5
50,000 to 99,999 residents STyp 2/3/4	243	6.0	146	6.0	-
50,000 to 99,999 STyp1	125	3.1	73	3.0	-0.1
100,000 to 499,999 residents STyp 2/3/4	386	9.5	233	9.5	-
100,000 to 499,999 residents STyp 1	847	20.9	484	19.8	-1.1
500,000 and more residents STyp 2/3/4	232	5.7	149	6.1	0.4
500,000 and more residents STyp 1	1,773	43.8	1,084	44.2	0.4
No valid address	15	0.4	1	0.0	-0.4
Political municipality size					
Less than 2000 residents	40	1.0	19	0.8	-0.2
2,000 to 4,999 residents	37	0.9	20	0.8	-0.1
5,000 to 19,999 residents	611	15.1	388	15.8	0.7
20,000 to 49,999 residents	514	12.7	357	14.6	1.9
50,000 to 99,999 residents	642	15.9	367	15.0	-0.9
100,000 to 499,999 residents	858	21.2	500	20.4	-0.8
500,000 and more residents	1,329	32.9	798	32.6	-0.3
No valid address	15	0.4	1	0.0	-0.4

Source: Methodological data

¹⁴ The regional characteristics refer to the twins' current place of residence.

5.3 Final processing outcomes and response rates: other family members

In addition to the twins, also parents, step-parents, partners of the twins and a sibling over 10 years of age were interviewed in the CATI 1b survey, provided they had already taken part in the F2F 1b survey and had not withdrawn their consent to be in the panel.

In the 1,455 families with a completed family questionnaire 2,881 target persons (not counting the twins) were identified. Among those were 2,371 parents, 48 step-parents, 431 siblings and 31 partners of twins.

Tabelle 25 Other family members relevant for the survey generated from the family questionnaire

	Total		Cohort 1		Cohort 2		Cohort 3		Cohort 4	
Column %	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%
Total	2,881	100.0	689	100.0	749	100.0	814	100.0	629	100.0
Mother	1,381	47.9	341	49.5	348	46.5	373	45.8	319	50.7
Father	990	34.4	270	39.2	267	35.6	265	32.6	188	29.9
Step-father	46	1.6	8	1.2	10	1.3	18	2.2	10	1.6
Step-mother	2	0.1	-	-	-	-	2	0.2	-	-
Sibling	431	15.0	70	10.2	124	16.6	156	19.2	81	12.9
Partner of twin 1	14	0.5	-	-	-	-	-	-	14	2.2
Partner of twin 2	17	0.6	-	-	-	-	-	-	17	2.7

Source: Methodological data

Not counting the twins, 2,387 family members were interviewed in the 1,455 families. This included 1,209 mothers (50.6 percent), 821 fathers (34.4 percent) and 300 siblings (12.6 percent).

Tabelle 26 Successfully interviewed family members

	Total		Cohort 1		Cohort 2		Cohort 3		Cohort 4	
Column %	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%
Total	2,387	100.0	621	100.0	653	100.0	653	100.0	460	100.0
Mother	1,209	50.6	327	52.7	317	48.5	318	48.7	247	53.7
Father	821	34.4	237	38.2	228	34.9	213	32.6	143	31.1
Step-father	42	1.8	7	1.1	10	1.5	18	2.8	7	1.5
Step-mother	2	0.1	-	-	-	-	2	0.3	-	-
Sibling	300	12.6	50	8.1	98	15.0	102	15.6	50	10.9
Partner of twin 1	7	0.3	-	-	-	-	-	-	7	1.5
Partner of twin 2	6	0.3	-	-	-	-	-	-	6	1.3

Source: Methodological data

Therefore, 2,387 of the 2,881 target persons identified by the family questionnaire were successfully interviewed. This corresponds to a response rate of 82.9 percent. In cohort 1, around 90 percent of the target persons were interviewed. As expected, the response rate was lower in cohort 4 at 73.1 percent.

Tabelle 27 Response rates (%) of other family members relevant for the survey

	Total	Cohort 1	Cohort 2	Cohort 3	Cohort 4
Total	82.9	90.1	87.2	80.2	73.1
Mother	87.5	95.9	91.1	85.3	77.4
Father	82.9	87.8	85.4	80.4	76.1
Step-father	91.3	87.5	100.0	100.0	70.0
Step-mother	100.0	-	-	100.0	-
Sibling	69.6	71.4	65.4	65.4	61.7
Partner of twin 1	50.0	-	-	-	50.0
Partner of twin 2	35.3	-	-	-	35.3

Source: Methodological data

6 Data processing and data delivery

The preload data for conducting the panel interviews was created by the TwinLife team and some variables were added by infas. The preload was then implemented in the survey instrument by infas.

The survey data was prepared as cross-sectional data sets, checked and delivered to the TwinLife team in a Stata and SPSS data format. The variable names and variable labels as well as the value labels were based on the data sets of the CATI 1a survey.

The open plain-text information on the occupation of the respondents and the grandparents of the twins was coded according to the International Standard Classification of Occupations from 2008 (ISCO 08). Open plain-text information that could not be clearly assigned was documented in a separate variable. The open plain-text information was also delivered to the TwinLife team, separately from the survey data.

The data was delivered to the TwinLife team in two batches. An intermediate data set with n=3,006 individual interviews was delivered half-way during the fieldwork phase. The final data set containing all 4,143 individual interviews was delivered on 06/12/2017. The data was transferred via a secure exchange server.

The final data was delivered in six data sets, each in Stata and SPSS data format (see table 28).

In addition to the survey data, the contact data was delivered. It contains the entire contact history (with details such as contact date, type and person) at the family, household and individual level.

Additionally, a methodological data set was prepared in close consultation with the TwinLife team.

Tabelle 28 Overview of the data sets of the final data delivery

Brief description of the content	File name
Family questionnaire	infas_CATI1b_Familienbogen_Enddatenlieferung-HE_TwinLife_5604_20170612.dta
	infas_CATI1b_Familienbogen_Enddatenlieferung-HE_TwinLife_5604_20170612.sav
Family questionnaire: opens	infas_CATI1b_Familienbogen_Opens_Enddatenlieferung-HE_TwinLife_5604_20170612.dta
	infas_CATI1b_Familienbogen_Opens_Enddatenlieferung-HE_TwinLife_5604_20170612.sav
Household questionnaire	infas_CATI1b_Haushaltsbogen_Enddatenlieferung-HE_TwinLife_5604_20170612.dta
	infas_CATI1b_Haushaltsbogen_Enddatenlieferung-HE_TwinLife_5604_20170612.sav
Household questionnaire: opens	infas_CATI1b_Haushaltsbogen_Opens_Enddatenlieferung-HE_TwinLife_5604_20170612.dta
	infas_CATI1b_Haushaltsbogen_Opens_Enddatenlieferung-HE_TwinLife_5604_20170612.sav
Individual questionnaire	infas_CATI1b_Personendaten_Enddatenlieferung-HE_TwinLife_5604_20170612.dta
	infas_CATI1b_Personendaten_Enddatenlieferung-HE_TwinLife_5604_20170612.sav
Individual questionnaire: opens	infas_CATI1b_Personendaten_Opens_Enddatenlieferung-HE_TwinLife_5604_20170612.dta
	infas_CATI1b_Personendaten_Opens_Enddatenlieferung-HE_TwinLife_5604_20170612.sav
Contact data	infas_CATI1b_Kontaktverlauf_5604_20170807.dta
	infas_CATI1b_Kontaktverlauf_5604_20170807.sav
Methodological data: family level	infas_Cati1b_Methodendatensatz_Familienebene_5604_20180314.dta
	infas_Cati1b_Methodendatensatz_Familienebene_5604_20180314.sav
Methodological data: individual level	infas_Cati1b_Methodendatensatz_Personenebene_5604_20180314.dta
	infas_Cati1b_Methodendatensatz_Personenebene_5604_20180314.sav

Annex

– Letter for cohort 1



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An die Erziehungsberechtigten von
<Vorname Twin 1> und <Vorname Twin 2> <Nachname>
Anschrift
PLZ Ort

Bonn, Monat 2016

TwinLife – Deutschlandweite Zwillingenfamilien-Studie zur Entwicklung unterschiedlicher Lebenschancen

Sehr geehrte Eltern,

Sie und Ihre Familie haben ja bereits schon einmal an der deutschlandweiten Zwillingenfamilien-Studie „TwinLife“ teilgenommen, die im Auftrag der Universitäten Bielefeld und Saarbrücken jetzt vom infas Institut für angewandte Sozialwissenschaft GmbH in Bonn durchgeführt wird. Sie haben freundlicherweise zugestimmt, dass wir uns bei Ihnen melden dürfen. Dafür nochmals herzlichen Dank.

Jetzt geht es wieder weiter – diesmal mit einer telefonischen Befragung.

Dieses Mal interessieren wir uns vor allem für Ihre Erfahrungen als Eltern von <Vorname Twin 1> und <Vorname Twin 2> und möchten Sie dazu telefonisch befragen. In den nächsten Wochen wird sich dazu eine Mitarbeiterin oder ein Mitarbeiter von infas bei Ihnen melden, um einen Termin für das telefonische Interview zu vereinbaren.

Warum ist Ihre erneute Teilnahme so wichtig?

Die erneute Teilnahme Ihrer Familie ist für die Qualität und Verlässlichkeit der Studie unersetzlich. Nur so können wir die Fragestellungen der Untersuchung umfassend beantworten und es kann ein vollständiges Bild über die Lebenssituation von Zwillingen entstehen. Die Teilnahme an der Befragung ist selbstverständlich freiwillig und alle Regeln des Datenschutzes werden eingehalten. Weitere Ausführungen können Sie dem beiliegenden Datenschutzblatt entnehmen. Zusätzlich haben wir Ihnen auch den aktuellen TwinLife-Newsletter (10/2016) beigelegt mit vielen interessanten Ergebnissen zum bisherigen Studienverlauf. Wir wünschen Ihnen viel Spaß beim Lesen!

Haben Sie noch Fragen?

Für Rückfragen steht Ihnen bei infas Ihre persönliche Ansprechpartnerin Frau Sabrina Torregroza unter der **kostenfreien Telefonnummer 0800/73 84 500** zu den üblichen Bürozeiten gerne zur Verfügung. Nutzen Sie bei Fragen auch unsere E-Mail-Adresse **twinlife@infas.de**. Wir werden Ihnen kurzfristig unsere Antwort senden.

im Auftrag von



Universität Bielefeld



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Eine Bitte haben wir noch:

Falls sich Ihre Telefonnummer in der Zwischenzeit geändert haben sollte, bitten wir Sie, uns dies mitzuteilen. Schnell und unkompliziert können Sie uns Ihre neue Telefonnummer oder Adresse über unser TwinLife-Online-Adress-Portal unter www.twinlife.infas.de mitteilen. Selbstverständlich können Sie uns dazu auch über die oben genannte Telefonnummer oder E-Mail-Adresse kontaktieren.

Weitere Informationen zum Thema Zwillinge und dem Hintergrund der Studie sowie eine Vielzahl von interessanten Medienbeiträgen finden Sie unter www.twin-life.de.

Wir möchten uns bereits an dieser Stelle sehr herzlich für Ihre Mitwirkung an dieser wichtigen Studie bedanken und verbleiben mit freundlichen Grüßen

Prof. Dr. M. Diewald
Universität Bielefeld
Fakultät für Soziologie

Prof. Dr. Rainer Riemann
Universität Bielefeld
Fakultät für Psychologie
und Sportwissenschaft

Prof. Dr. Frank M. Spinath
Universität des Saarlandes
Philosophische Fakultät

Doris Hess
inf

Anlage:
Datenschutzblatt
TwinLife-Newsletter (Ausgabe 10/2016)

Seite 2

– Letter for cohort 2



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An die Erziehungsberechtigten von
<Vorname Twin 1> und <Vorname Twin 2> <Nach-
name>
Anschrift
PLZ Ort

Bonn, Monat 2016

**TwinLife – Deutschlandweite Zwillingfamilien-Studie zur Entwicklung
unterschiedlicher Lebenschancen**

Sehr geehrte Eltern,

Sie und Ihre Familie haben ja bereits schon einmal an der deutschlandweiten
Zwillingfamilien-Studie „TwinLife“ teilgenommen, die im Auftrag der Universi-
täten Bielefeld und Saarbrücken jetzt vom infas Institut für angewandte Sozial-
wissenschaft GmbH in Bonn durchgeführt wird. Sie haben freundlicherweise
zugestimmt, dass wir uns bei Ihnen melden dürfen. Dafür nochmals herzlichen
Dank.

Jetzt geht es wieder weiter – diesmal mit einer telefonischen Befragung.
Dazu wird sich eine Mitarbeiterin oder ein Mitarbeiter von infas in den nächsten
Wochen bei Ihnen melden, um einen Termin für ein telefonisches Interview zu
vereinbaren. Wir möchten gerne wieder mit Ihnen als Eltern, mit den Zwillingen
sowie weiteren Personen aus Ihrer Familie, die im letzten Jahr bereits persönlich
befragt wurden, ein Interview führen – diesmal jedoch telefonisch!

Zusammen mit unserer Mitarbeiterin bzw. unserem Mitarbeiter stimmen Sie die
Termine so ab, wie es für Sie und Ihre Familie am besten passt.

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umfassend beantworten und es kann ein vollständiges Bild über die Lebens-
situation von Zwillingen entstehen. Die Teilnahme an der Befragung ist selbst-
verständlich freiwillig und alle Regeln des Datenschutzes werden eingehalten.
Weitere Ausführungen können Sie dem beiliegenden Datenschutzblatt entneh-
men. Zusätzlich haben wir Ihnen auch den aktuellen TwinLife-Newsletter
(10/2016) beigelegt mit vielen interessanten Ergebnissen zum bisherigen Stu-
dienverlauf. Wir wünschen Ihnen viel Spaß beim Lesen!

Haben Sie noch Fragen?
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Sabrina Torregroza unter der **kostenfreien Telefonnummer 0800/73 84 500** zu
den üblichen Bürozeiten gerne zur Verfügung. Nutzen Sie bei Fragen auch unse-

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re E-Mail-Adresse **twinlife@inf**. Wir werden Ihnen kurzfristig unsere Antwort senden.

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Doris Hess
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Anlage:
Datenschutzblatt
TwinLife-Newsletter (Ausgabe 10/2016)

– Letter for cohorts 3 and 4



infas, Postfach 240101, 53154 Bonn
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An
 <Vorname Twin> <Nachname Twin>
 Anschrift
 PLZ Ort

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Bonn, Monat 2016

TwinLife – Deutschlandweite Zwillingenfamilien-Studie zur Entwicklung unterschiedlicher Lebenschancen

Liebe/r <Vorname Twin> <Nachname Twin>,

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Doris Hess
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Anlage:
Datenschutzblatt
TwinLife-Newsletter (Ausgabe 10/2016)

– Data protection notice



Erklärung zum Datenschutz und zur absoluten Vertraulichkeit Ihrer Angaben

Das infas Institut für angewandte Sozialwissenschaft in Bonn und das Forscherteam des Projekts TwinLife, angesiedelt an der Universität Bielefeld und der Universität des Saarlandes, führen zusammen die wissenschaftliche Studie „TwinLife – Deutschlandweite Zwillingsfamilien-Studie zur Entwicklung unterschiedlicher Lebenschancen“ durch. Alle beteiligten Institutionen arbeiten streng nach den gesetzlichen Bestimmungen des Datenschutzes.

Ihre Teilnahme an der Studie ist freiwillig. Die Ergebnisse der Befragung werden ausschließlich in anonymisierter Form, d.h. ohne Namen und Kontaktdaten dargestellt.

Das bedeutet: Niemand kann aus den Ergebnissen erkennen, von welcher Person diese Angaben gemacht worden sind.

Dies gilt auch bei den Wiederholungsbefragungen, bei denen es wichtig ist, nach einer bestimmten Zeit noch einmal ein Interview mit derselben Person durchzuführen. Die statistischen Auswertungen werden so vorgenommen, dass die Angaben aus mehreren Befragungen nur durch eine Codenummer, also ohne Namen und Adresse, miteinander verknüpft werden.

Es gibt keine Weitergabe von Daten an Dritte, die Ihre Person erkennen lassen.

Für die Einhaltung der Datenschutzbestimmungen sind verantwortlich:

Dipl.-Soz. Menno Smid

Geschäftsführer
infas Institut für angewandte
Sozialwissenschaft GmbH

Christian Dickmann

Datenschutzbeauftragter
infas Institut für angewandte
Sozialwissenschaft GmbH

Prof. Dr. Martin Diewald

Ansprechpartner für Datenschutz
Universität Bielefeld

Prof. Dr. Frank M. Spinath

Ansprechpartner für Datenschutz
Universität des Saarlandes

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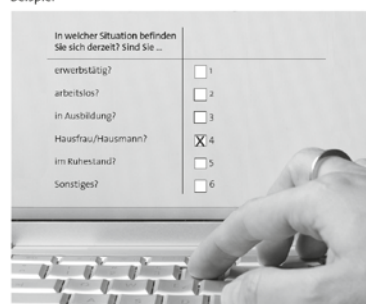
Auf der Rückseite dieser Erklärung zeigen wir Ihnen den Weg Ihrer Daten vom Interview bis zur völlig anonymen Ergebnistabelle.

5604/2016/DS

Was geschieht mit Ihren Angaben?

- 1 Ihre Antworten werden im Computer durch Eingabe der zutreffenden Angabe in Form von Ziffern erfasst. Bei Interviews mit einem Papierfragebogen werden Ihre Angaben ebenfalls in Zahlen umgesetzt und durch infas elektronisch erfasst.
- 2 Ihre Angaben werden ausnahmslos ohne Ihren Namen oder Ihre Kontaktdaten (also in anonymisierter Form) gespeichert.
- 3 Die Namen und Kontaktdaten werden ausschließlich bei infas gespeichert, eine Speicherung bei den beteiligten Universitäten findet nicht statt. Bei infas werden Namen und Kontaktdaten strikt von den Interviews getrennt und nach Abschluss der Untersuchung gelöscht.
- 4 Anschließend werden alle Fragebögen (ohne Namen und Kontaktdaten) ausgewertet. Der Computer zählt z.B. alle Antworten zur Frage zur Erwerbssituation und errechnet daraus die Prozentergebnisse.
- 5 Das Gesamtergebnis und die Ergebnisse für Teilgruppen (z.B. Männer, Frauen) werden in Tabellenform ausgedruckt. Angaben einzelner Personen sind nicht erkennbar.
- 6 Auch bei der Wiederholungsbefragung werden Ihr Name und Ihre Kontaktdaten stets von den Daten des Interviews getrennt.

Beispiel



	Männer	Frauen	Gesamt
Erwerbstätig	60,9%	50,8%	55,5%
Arbeitslos	3,4%	2,8%	3,1%
Ausbildung	3,5%	2,5%	3,0%
Hausfrau/Hausmann	0,4%	11,2%	6,2%
Ruhestand	29,1%	30,0%	29,5%
Sonstiges	2,7%	2,7%	2,7%
Gesamt	100%	100%	100%

In jedem Fall gilt:

Ihre Teilnahme am Interview ist freiwillig.

Bei Nichtteilnahme entstehen Ihnen keine Nachteile. Es ist selbstverständlich, dass alle gesetzlichen Bestimmungen des Datenschutzes eingehalten werden.

Sie können absolut sicher sein, dass wir...

- Ihren Namen und Ihre Kontaktdaten nicht mit Ihren Interviewdaten zusammenführen, so dass niemand erfährt, welche Antworten Sie persönlich gegeben haben;
- Ihren Namen und Ihre Kontaktdaten nicht an Dritte weitergeben;
- keine Einzeldaten, die einen Rückschluss auf Ihre Person zulassen, an Dritte weitergeben;
- die Daten ausschließlich zu Forschungszwecken nutzen werden.

Wir danken für Ihre Mitwirkung und für Ihr Vertrauen in unsere Arbeit!

– Study newsletter



Der Studienverlauf im Überblick

Die Erhebung über mehrere Jahre hinweg erlaubt das Erforschen von Entwicklungsverläufen ab der frühen Kindheit bis ins Erwachsenenalter. Daher ist für uns von zentraler Bedeutung, die Familien über einen mehrjährigen Zeitraum begleiten zu dürfen.



Erste Ergebnisse

Einige Informationen über die teilnehmenden Familien haben wir im Folgenden für Sie zusammengestellt.

Über die teilnehmenden Familien

Ein zentrales Anliegen der TwinLife Studie ist es, anhand der teilnehmenden Familien möglichst aussagekräftige Rückschlüsse auf die Gesamtbevölkerung ziehen zu können. Daher ist es wichtig, dass Familien unterschiedlicher sozialer und ethnischer Herkunft, mit verschiedenen Lebensstilen, Werten und Überzeugungen teilnehmen.

Bisher beteiligen sich bundesweit 4.093 Familien an TwinLife, das sind insgesamt 18.832 Personen: Zwillinge, Eltern und Stiefeltern, Geschwister und Partner der Zwillinge.

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Verteilung der Zwillinge über Deutschland

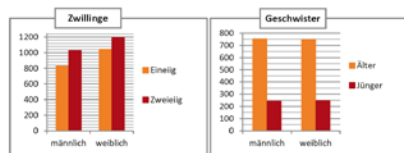


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Über die Zwillinge und Geschwister

Um den Einfluss und das Zusammenspiel von Genen und Umwelt untersuchen zu können, sind die Zwillinge und ihre Geschwister von zentraler Bedeutung.

Für diese Untersuchungen brauchen wir gleich viele eineiige und zweieiige sowie gleich viele männliche und weibliche Zwillingspaare. Die nachfolgende Graphik mit dem Titel „Zwillinge“ verdeutlicht, dass dieses angestrebte Gleichgewicht ausreichend gegeben ist.



Der Vergleich ein- und zweieiiger Zwillinge ermöglicht es, genetische und umweltbedingte Einflüsse getrennt voneinander zu betrachten. Die Hinzunahme von Geschwistern, die – ebenso wie zweieiige Zwillinge – etwa die Hälfte ihrer Gene mit den Zwillingen teilen, ermöglicht es, den Einfluss unterschiedlicher Umwelten zu untersuchen, da die Geschwister zu einem anderen Zeitpunkt in der Familie aufwachsen als die Zwillinge. So kann der Beitrag von Genen und Umwelt, aber auch deren Zusammenwirken bei der Entstehung sozialer Unterschiede erforscht werden.

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Das Leben der Zwillinge

Auf unsere Frage „Versuch(t)en Sie (als Eltern) die Zwillinge so gleich wie möglich zu kleiden?“ gaben 49% aller Eltern an, dies zu tun oder getan zu haben. Weitere 9% erklärten, die Kleidung der Zwillinge aufeinander abzustimmen bzw. abgestimmt zu haben, während 42% angaben, die Zwillinge niemals gleich zu kleiden oder dies je getan zu haben.

Etwa 64% der Zwillingspaare besuch(t)en die gleiche Grundschulklasse. Dieser Anteil lag in der 5. bis 10. Klasse nur noch bei 54%, wobei die meisten Zwillinge (80%) zumindest die gleiche Schule besuch(t)en. In der Oberstufe besuch(t)en fast gleich viele Zwillinge die gleiche Klasse, unterschiedliche Klassen auf der gleichen oder verschiedenen Schulen.

	Gleiche Klasse	Verschiedene Klassen, gleiche Schule	Verschiedene Schulen
Grundschule	64 %	33 %	3 %
5. bis 10. Klasse	54 %	26 %	20 %
Oberstufe	37 %	31 %	32 %

Viele Eltern stellen sich die Frage, ob sich der Besuch der gleichen oder getrennter Klassen negativ auf die Schulleistung der Zwillinge auswirken könnte. Die bisherige Forschung zeigt, dass Unterschiede in der Leistung von Zwillingen nicht darauf zurückzuführen sind, ob diese in die gleiche oder verschiedene Klassen gehen.

Die Frage „Teilen die Zwillinge (aktuell) in etwa die gleichen Hobbies und Interessen?“ wurde von 6503 (Stief-)Elternteilen beantwortet. Die Mehrheit (66%) bejahte diese Frage, 34% antworteten mit „Nein“ oder gaben an, dass dies früher so gewesen sei, heute aber nicht mehr. In 2426 Fällen beantworteten zwei (Stief-)Elternteile diese Frage. Davon waren sich 82% einig, während in 18% die Antworten verschieden ausfielen.

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Infobox – Wussten Sie schon...?

Bei Zwillingsgeburten unterscheidet man zwischen **Zygotie** (Eiigkeit der Zwillinge) und **Chorionizität** (Anzahl der vorliegenden Plazenten).

Das Vorliegen nur einer Plazenta bei Schwangerschaft und Geburt belegt eindeutig die Eineiigkeit der Zwillinge.

Beim Vorhandensein von zwei Plazenten hingegen, können die Zwillinge sowohl ein- als auch zweieiig sein!

Viele weitere wissenswerte Informationen zum Thema „Zwillinge“ finden Sie auf unserer Webseite.

Die Eiigkeit der Zwillinge

Bei insgesamt 2224 Zwillingspaaren wurde die Zygotie bereits durch medizinisches Personal eingeschätzt. Für 115 dieser Paare lag zusätzlich eine genetische Eiigkeitsbestimmung vor.

Der Vergleich der Eiigkeitsbestimmung mittels Fragebogen mit der genetischen Analyse fiel zufriedenstellend aus: Etwas mehr als 90% der Zwillinge wurden richtig klassifiziert. Auch stellten wir die DNA-Ergebnisse der Aussagen des medizinischen Personals gegenüber: In 24% waren diese nicht deckungsgleich. Bei genauerer Betrachtung zeigte sich, dass alle zweieiigen Zwillinge durch medizinisches Personal richtig als solche erkannt, eineiige aber in 39% fälschlich als zweieiig eingestuft wurden. Dieses Ergebnis ist verständlich, da medizinisches Personal häufig die Anzahl der vorliegenden Plazenten zur Zygotie-Bestimmung heranzieht. Zudem verglichen wir die Fragebogenergebnisse mit den medizinischen Aussagen: Diese stimmten in 14% nicht überein, wobei wieder vor allem bei eineiigen Zwillingen die Übereinstimmung fehlte.

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Beste Grüße vom TwinLife Team, aus...

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Wir hoffen, dass wir auch in Zukunft auf Sie zählen können und freuen uns auf die weitere Zusammenarbeit!

www.twin-life.de

Auf unserer Webseite finden Sie weitere Informationen über die Inhalte und den Verlauf der Studie, am Projekt beteiligte Personen und Organisationen, interessante Medienbeiträge und vieles mehr!

So erreichen Sie uns

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