NEPS
National Educational Panel Study

Research Data

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Samples, Weights and Nonresponse

NEPS Starting Cohort 1 — Newborns

Education From the Very Beginning

Wave 12

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Bamberg; January 14, 2025

Samples, Weights, and Nonresponse: the Early Childhood Cohort of the National Educational Panel Study (Wave 12)

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Technical Report referring to DOI:10.5157/NEPS:SC1:12.0.0

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1 Prequel

The National Educational Panel Study (NEPS) surveys an Early Childhood cohort sample (Starting Cohort 1, SC1) and follows them over their transition to Kindergarten and beyond. The data are released via corresponding Scientific Use Files (SUF). The current SUF version is available under DOI:10.5157/NEPS:SC1:12.0.0 (NEPS Network, 2022).[1]

This report documents the weighting of Wave 12 and supplements the previous NEPS Technical Reports on Weighting Wave 4 up to Wave 12 Würbach, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024 as well as the NEPS Survey Paper by Würbach et al., 2016, which gives detailed information on the applied sampling procedure, the derivation of design weights, their successive adjustments, and the derivation of panel weights for the previous Waves 1 to 3.

Table 1 summarizes the study numbers, the survey modes, the periods of the studies as well as the numbers of participants in each panel wave available in the current SUF.[2] In all waves, all parents of the panel cohort were asked to be interviewed (by CATI or CAPI[3]).

Table 1: Survey overview for Starting Cohort 1.

Wave	Study number	Survey mode	Time	Number of Participants
1	B04	CAPI	2012/13	3,481
2	B05	CATI/CAPI	2013	2,862
3	B91	CAPI	2014	2,609
4	B100	CAPI	2015	2,478
5	B101	CAPI	2016	2,381
6	B102	CAPI	2017	2,209
7	B126	CAPI	2018	2,116
8	B127	CAPI	2019	2,070
9	B128	CAPI/CAPI-by-Phone	2020	1,848
10	B154	CAPI/CAPI-by-Phone/CAWI	2021	1,898
11	B155	CAPI/CATI-Remote/CASI	2022	1,796
12	B156	CATI-Remote/CAWI	2023	1,794

CATI: Computer-assisted telephone interview, CAPI: Computer-assisted personal interview, CASI: Computer-assisted self-interviewing, CAWI: Computer-assisted web-based interviewing.

All panel participants were invited for direct measurements in Wave 1 and Wave 3 and for competence measurements as of Wave 4. In Wave 2, only a subsample of children was asked

[1] For general information on the NEPS, see Blossfeld et al., 2011. More detailed information is available in the documentation section on the homepage.

[2] More details on the studies are given in the reports of the survey institute 'infas' *Institut für angewandte Sozialwissenschaft GmbH* which conducted the corresponding interviews and tests; see Bauer et al. (2013), Aust and Bauer (2014b, 2014a), and Bauer et al. (2015).

[3] CATI: Computer-assisted telephone interview, CAPI: Computer-assisted personal interview.

participating in the direct measurements (Würbach et al., 2016, Section 2.2). The accordant numbers are given in Table 2. This table details the used gross sample size, the number of participants in the interviews and in the direct and competence measurements as well as the number of those who were actually weighted and available for analyses. The percentages given refer to the number of participants among the used gross sample.

Table 2: Participation in direct measurements and competence measurements, respectively.

Wave	Study number	Used gross sample	Participants	Analyzable and weighted cases	%
1	B04	3,481	3,481	3,111	89.4
2	B05	1,893	1,510	1,407	93.2
3	B91	3,281	2,609	1,921	73.6
4	B100	3,143	2,478	2,324	93.8
5	B101	2,872	2,381	2,049	86.1
6	B102	2,665	2,209	2,087	94.5
7	B126	2,504	2,116	1,989	94.0
8	B127	2,380	2,070	1,931	93.3
9	B128	2,257	1,848	1,652	89.4
10	B154	2,183	1,898	1,555	81.9
11	B155	2,147	1,796	1,510	84.1

Across the distinct panel waves, for all participating units cross-sectional as well as longitudinal weights are provided. Furthermore, weights are given for individuals with additional information from direct and competence measurements, respectively.

The remainder of this supplement is structured as follows: Section 3 details the panel progress of the Starting Cohort 1 and the composition of the gross and net samples of the different waves is described. In Section 4 the nonresponse in Wave 12 as well as the response propensity for continued participation in all twelve waves is analyzed. Nonresponse models are estimated using logistic regressions. Finally, Section 5 concludes with a summary of the provided sampling weights and design information given in the corresponding weighting data set.

2 Changes compared to the previous version

Weights for Wave 12 (Study B156) have been appended.

3 Panel progress

The following Table 3 completes the study summary of Starting Cohort 1 (Table 1) by detailing the composition of the distinct samples together with the numbers of nonrespondents and final dropouts. Final dropouts are separated into final dropouts due to refusal during the survey period and final dropouts between two consecutive waves.

Table 3: Panel progress of Starting Cohort 1 by wave.

		Panel Cohort			Status at the end of the wave			
Wave	Group	Total size	Not used	Used sample	Participants	Temporary dropout	Final dropout (in wave)	Final dropout (after wave)
1	All	–	–	8,483	3,481	0	5,002	50
2	**All**	**3,431**	**0**	**3,431**	**2,862**	**468**	**101**	**49**
	CATI	3,431	0	3,431	2,849	480	101	48
	CAPI	3,431	1,538	1,893	1,510	340	43	21
3	All	3,281	0	3,281	2,609	539	133	5
4	All	3,143	0	3,143	2,478	541	124	[a]147
5	All	2,872	0	2,872	2,381	383	108	[a]99
6	All	2,665	0	2,665	2,209	357	99	[a]62
7	All	2,504	0	2,504	2,116	327	61	[a]63
8	All	2,380	0	2,380	2,070	255	55	[a]68
9	All	2,257	0	2,257	1,848	373	36	[a]38
10	All	2,183	0	2,183	1,898	253	32	4
11	All	2,147	0	2,147	1,796	289	62	7
12	All	2,078	0	2,078	1,794	234	50	3

Note: "-" not applicable; [a] Target persons are final dropouts because contacting was unsuccessful in two successive waves: for 143 after Wave 4, 92 after Wave 5, 60 after Wave 6, 61 after Wave 7, 65 after Wave 8, and 36 after Wave 9.

4 Weighting Adjustments for Wave Participation

Systematic refusals may arise and for this, the (non)response and attrition processes of the sampled individuals, has to be accounted for. Thus, for reasons of usability, commonly design weights are adjusted to account for nonresponse in the survey. For this purpose, the units' probabilities to participate in each survey wave are employed.[4] The processing in the nonresponse analysis with a comparison of the gross sample and the realized sample of Wave 1 is detailed in Würbach et al. (2016, Chapter 4).

Logistic regression models are used to estimate the individual participation propensities. On the basis of the estimated (non)response models participation probabilities are predicted and used as adjustment factors to derive cross-sectional and longitudinal survey weights.

[4] In SC1 the target population are newborns but the respondents are their legal guardians. Hence, in this particular case it would be more appropriate to use the term realization probability instead of participation probability. Nevertheless, realization probability is not commonly used in the context of survey weighting, therefore it is waived.

4.1 Modeling Wave 12 Participation

Directly on the onset of Wave 12, the panel cohort comprised 2,078 parents and children pairs. That is, 1,353 units dropped out from the panel by either withdrawing panel consent or being repeatedly temporary dropout in preceding waves. The Tables 4 and 5 give the corresponding variables and results for panel and wave participation. Please note that only the prediction models used to derive the adjustment factors are given in the participation models. That is, only the models with significant estimates are used.

Regarding panel willingness, year of birth, educational attainment, employment status, migration background, and marital status of the interviewed person as well as the household composition show a stable significant effect, cp. Table 4. Having a migration background decreases panel willingness significantly. In the opposite direction, the older the respondents are and the higher the educational attainment is, the higher is the willingness for further participation, compared to interviewed parents being born in 1986 or later and those having CASMIN 1a, 1b, 2b. Being employed or being married or divorced also increases the probability to stay in the panel. The number of children in the household exhibits a positive trend effect, too. The more children the higher the propensity to remain in the panel, compared to those parents having just one child in the household.

The probability of attending the CAPI is significantly influenced by the year of birth, the educational attainment, the migration background, the marital status as well as the household composition, cp. Table 5. Older respondents are more likely to participate, compared to respondents being born in 1986 or later. And the higher the educational level of the respondents, i.e. the higher the CASMIN, the higher is the participation propensity. Again, being employed or being married or divorced also increases the probability to participate in the CAPI. Respondents with migration background are less likely to participate. Here, the number of children in the household exhibits a negative effect. The more children the lower is the propensity to particpate, compared to those parents having just one child in the household.

Table 4: Model estimating the individual panel entrance propensities for Wave 12.

	Wave 12
Constant	-2.015^{***}
	(0.180)
Year of birth (IP): 1975 and before (ref. = ”1986 and later”)	0.363^{**}
	(0.150)
Year of birth (IP): 1976-80 (ref. = ”1986 and later”)	0.236^{*}
	(0.138)
Year of birth (IP): 1981-85 (ref. = ”1986 and later”)	0.145
	(0.135)
CASMIN (IP): 1c,2a (ref. = ”1a,1b,2b”)	0.274^{*}
	(0.158)
CASMIN (IP): 2c (ref. = ”1a,1b,2b”)	0.614^{***}
	(0.157)
CASMIN (IP): 3a,3b (ref. = ”1a,1b,2b”)	0.973^{***}
	(0.164)
Employment status (IP): employed (ref. = ”not employed”)	1.915^{***}
	(0.090)
Migration background (IP): yes (ref. = ”no”)	-0.586^{***}
	(0.090)
Marital status (IP): married (ref. = ”not married”)	0.542^{***}
	(0.111)
Marital status (IP): divorced,widowed (ref. = ”not married”)	0.857^{***}
	(0.195)
Number of children in household: 2 (ref. = ”1”)	0.129
	(0.094)
Number of children in household: 3 (ref. = ”1”)	0.599^{***}
	(0.134)
Number of children in household: 4+ (ref. = ”1”)	0.934^{***}
	(0.232)
Observations	3,431

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$; standard errors are given in parentheses; IP - interviewed person.

Table 5: Model estimating the individual participation propensities (CAPI of parents) in Wave 12.

	Wave 12
Constant	0.692**
	(0.310)
Year of birth (IP): 1975 and before (ref. = ”1986 and later”)	0.490*
	(0.258)
Year of birth (IP): 1976-80 (ref. = ”1986 and later”)	0.165
	(0.223)
Year of birth (IP): 1981-85 (ref. = ”1986 and later”)	0.170
	(0.221)
CASMIN (IP): 1c,2a (ref. = ”1a,1b,2b”)	0.493*
	(0.258)
CASMIN (IP): 2c (ref. = ”1a,1b,2b”)	0.890***
	(0.261)
CASMIN (IP): 3a,3b (ref. = ”1a,1b,2b”)	1.094***
	(0.264)
Migration background (IP): yes (ref. = ”no”)	−0.465***
	(0.147)
Marital status (IP): married (ref. = ”not married”)	0.747***
	(0.180)
Marital status (IP): divorced,widowed (ref. = ”not married”)	0.162
	(0.262)
Number of children in household: 2 (ref. = ”1”)	−0.407**
	(0.165)
Number of children in household: 3 (ref. = ”1”)	−0.490**
	(0.214)
Number of children in household: 4+ (ref. = ”1”)	−0.843**
	(0.336)
Observations	2,078

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$; standard errors are given in parentheses; IP - interviewed person.

4.2 Modeling Participation in Consecutive Waves

In addition to the cross-sectional weights, also weights for participation in consecutive waves, i.e. longitudinal weights, are provided. These weights comprise the longitudinal weights for participating in the parent interview in all twelve waves on the one hand, and the longitudinal weight for participation in the direct and competence measurements in all waves on the other hand. For this purpose, two logistic regression models have been estimated: one for attending all of the CAPIs (in Wave 1 up to Wave 12) and another one for participating in all direct and competence measurements (in Wave 1 up to Wave 12). Table 6 shows the corresponding variables and results.

The coefficients of the longitudinal model for parent participation in the CAPI confirm the picture that has emerged from previous modeling of cross-sectional participation, cp. Table 6 and Table 5. Age, educational attainment and migration background influence continued participation significantly. The older the respondent and the higher the CASMIN the higher is the propensity for repeated participation. Having migration background also influences repeated participation in the CAPI negatively.

Table 6: Model estimating the longitudinal individual participation propensities (CATI/CAPI of parents) for Wave 3 up to 12.

	Wave 12
Constant	-1.141^{***}
	(0.269)
Year of birth (IP): 1975 and before (ref. = ”1986 and later”)	0.621^{***}
	(0.187)
Year of birth (IP): 1976-80 (ref. = ”1986 and later”)	0.301^{*}
	(0.175)
Year of birth (IP): 1981-85 (ref. = ”1986 and later”)	0.161
	(0.176)
CASMIN (IP): 1c,2a (ref. = ”1a,1b,2b”)	1.019^{***}
	(0.257)
CASMIN (IP): 2c (ref. = ”1a,1b,2b”)	1.366^{***}
	(0.254)
CASMIN (IP): 3a,3b (ref. = ”1a,1b,2b”)	1.525^{***}
	(0.253)
Migration background (IP): yes (ref. = ”no”)	-0.433^{***}
	(0.108)
Observations	2,078

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$; standard errors are given in parentheses; IP - interviewed person.

5 Summary and Use of Weights

The NEPS provides various kinds of weights for the Early Childhood cohort together with design information. Table 7 lists the design information and summarizes all types of weights and their accordant label provided by SUF release version DOI:10.5157/NEPS:SC1:12.0.0. To ease statistical analysis, all weights apart from the pure design weight (Wave 1) are provided in a trimmed and standardized form (Würbach et al., 2016, Chapter 6). Standardized weights have mean one and sum up to the number of participants in the corresponding wave. Summary statistics for all kind of weights provided are given in Table 8.

Please refer to Würbach et al. (2016, Chapter 6) for advices regarding the usage of weights.

Table 7: Variables included in the weighting data set for SC1 SUF version 12.0.0.

Variable	Applies to	Content
Identifier		
ID_t	all targets	Identifier for target person
Design information		
psu	all targets	Primary Sampling Unit (Point number)
stratum	all targets	Stratification variable according to sampling frame
px80101_R	all targets	Federal State according to sampling frame
Design and survey weights adjusted for nonresponse		
w_t1ext	3481	Nonresponse adjusted design weight for parents participating in wave 1 (unstandardized)
w_t1	3481	Cross-sectional weight for parents participating in wave 1
w_t1comp	3111	Cross-sectional weight for children participating in wave 1 (direct measures)
w_t2	2862	Cross-sectional weight for parents participating in wave 2
w_t2comp	1407	Cross-sectional weight for children participating in wave 2 (direct measures)
w_t1to2comp	1353	Longitudinal weight for children participating in wave 1 to 2 (direct measures)
w_t3	2609	Cross-sectional weight for parents participating in wave 3
w_t3comp	1921	Cross-sectional weight for children participating in wave 3 (direct measures)
w_t1to3	2427	Longitudinal weight for parents participating in wave 1 to 3
w_t1to3comp	970	Longitudinal weight for children participating in wave 1 to 3 (direct measures)
w_t4	2478	Cross-sectional weight for parents participating in wave 4
w_t4comp	2324	Cross-sectional weight for children participating in wave 4 (competences)
w_t1to4	2171	Longitudinal weight for parents participating in wave 1 to 4
w_t1to4comp	861	Longitudinal weight for children participating in wave 1 to 4 (direct measures, competences)
w_t5	2381	Cross-sectional weight for parents participating in wave 5
w_t5comp	2049	Cross-sectional weight for children participating in wave 5 (competences)
w_t1to5	2001	Longitudinal weight for parents participating in wave 1 to 5

Table 7: Variables included in the weighting data set for SC1 SUF version 12.0.0. (continued)

Variable	Applies to	Content
w_t1to5comp	735	Longitudinal weight for children participating in wave 1 to 5 (direct measures, competences)
w_t6	2209	Cross-sectional weight for parents participating in wave 6
w_t6comp	2087	Cross-sectional weight for children participating in wave 6 (competences)
w_t1to6	1817	Longitudinal weight for parents participating in wave 1 to 6
w_t1to6comp	661	Longitudinal weight for children participating in wave 1 to 6 (direct measures, competences)
w_t7	2116	Cross-sectional weight for parents participating in wave 7
w_t7comp	1989	Cross-sectional weight for children participating in wave 7 (competences)
w_t1to7	1702	Longitudinal weight for parents participating in wave 1 to 7
w_t1to7comp	613	Longitudinal weight for children participating in wave 1 to 7 (direct measures, competences)
w_t8	2070	Cross-sectional weight for parents participating in wave 8
w_t8comp	1931	Cross-sectional weight for children participating in wave 8 (competences)
w_t1to8	1605	Longitudinal weight for parents participating in wave 1 to 8
w_t1to8comp	561	Longitudinal weight for children participating in wave 1 to 8 (direct measures, competences)
w_t9	1848	Cross-sectional weight for parents participating in wave 9
w_t9comp	1652	Cross-sectional weight for children participating in wave 9 (competences)
w_t1to9	1431	Longitudinal weight for parents participating in wave 1 to 9
w_t1to9comp	490	Longitudinal weight for children participating in wave 1 to 9 (direct measures, competences)
w_t10	1898	Cross-sectional weight for parents participating in wave 10
w_t10comp	1555	Cross-sectional weight for children participating in wave 10 (competences)
w_t1to10	1361	Longitudinal weight for parents participating in wave 1 to 10
w_t1to10comp	423	Longitudinal weight for children participating in wave 1 to 10 (direct measures, competences)
w_t11	1796	Cross-sectional weight for parents participating in wave 11
w_t1to11	1267	Cross-sectional weight for children participating in wave 11 (competences)
w_t1to11comp	363	Longitudinal weight for parents participating in wave 1 to 11
w_t11comp	1510	Longitudinal weight for children participating in wave 1 to 11 (direct measures, competences)
w_t12	1794	Cross-sectional weight for parents participating in wave 12
w_t1to12	1215	Longitudinal weight for parents participating in wave 1 to 12

Table 8: Summary statistics for all weights provided.

Label of weight	Min.	Lower Quart.	Median	Mean	Upper Quart.	Max.
w_t1ext	26.346	40.683	49.752	93.062	67.924	656.658
w_t1	0.182	0.389	0.568	1.000	0.925	4.749
w_t1comp	0.271	0.437	0.549	1.000	0.766	4.798
w_t2	0.161	0.379	0.551	1.000	0.955	4.804
w_t2comp	0.256	0.404	0.523	1.000	0.761	4.937
w_t1to2comp	0.296	0.462	0.595	1.000	0.823	4.784
w_t3	0.111	0.296	0.476	1.000	1.136	5.024
w_t3comp	0.149	0.305	0.441	1.000	1.263	5.004
w_t1to3	0.136	0.347	0.542	1.000	1.040	4.852
w_t1to3comp	0.227	0.377	0.516	1.000	0.895	4.847
w_t4	0.083	0.246	0.420	1.000	1.181	5.186
w_t4comp	0.094	0.238	0.415	1.000	1.156	5.253
w_t1to4	0.115	0.320	0.505	1.000	1.098	4.976
w_t1to4comp	0.195	0.354	0.497	1.000	0.927	5.108
w_t5	0.062	0.204	0.360	1.000	1.194	5.358
w_t5comp	0.070	0.192	0.379	1.000	1.088	5.384
w_t1to5	0.101	0.303	0.482	1.000	1.100	5.035
w_t1to5comp	0.175	0.345	0.482	1.000	0.989	4.987
w_t6	0.049	0.173	0.331	1.000	1.116	5.455
w_t6comp	0.047	0.153	0.359	1.000	0.981	5.500
w_t1to6	0.091	0.291	0.472	1.000	1.100	5.079
w_t1to6comp	0.162	0.329	0.468	1.000	0.997	5.016
w_t7	0.040	0.154	0.316	1.000	1.071	5.538
w_t7comp	0.037	0.133	0.348	1.000	0.984	5.537
w_t1to7	0.082	0.285	0.460	1.000	1.097	5.107
w_t1to7comp	0.149	0.306	0.450	1.000	1.029	5.101
w_t8	0.031	0.130	0.279	1.000	1.000	5.624
w_t8comp	0.026	0.108	0.305	1.000	0.976	5.592
w_t1to8	0.076	0.279	0.458	1.000	1.088	5.117
w_t1to8comp	0.134	0.286	0.432	1.000	1.053	5.148
w_t9	0.028	0.120	0.264	1.000	0.980	5.659
w_t9comp	0.022	0.095	0.277	1.000	0.940	5.642
w_t1to9	0.074	0.273	0.457	1.000	1.066	5.244
w_t1to9comp	0.119	0.257	0.412	1.000	1.043	5.254
w_t10	0.020	0.091	0.229	1.000	0.905	5.725
w_t10comp	0.015	0.079	0.244	1.000	0.985	5.693
w_t1to10	0.070	0.260	0.446	1.000	1.059	5.221
w_t1to10comp	0.115	0.247	0.431	1.000	1.015	5.329
w_t11	0.017	0.078	0.209	1.000	0.858	5.758
w_t1to11	0.067	0.252	0.432	1.000	1.072	5.251
w_t1to11comp	0.110	0.244	0.453	1.000	1.090	5.287
w_t11comp	0.010	0.067	0.198	1.000	1.011	5.726
w_t12	0.011	0.058	0.172	1.000	0.785	5.803
w_t1to12	0.061	0.245	0.428	1.000	1.063	5.280

For further information on weighting please contact `statistik@lifbi.de`.

Acknowledgements

This paper uses data from the National Educational Panel Study (NEPS; see Blossfeld and Roßbach, 2019). The NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi, Germany) in cooperation with a nationwide network.

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