

Table 1 Number of children enrolled in the nationwide population-based Longitudinal Survey of Newborns in the 21st Century (2001 cohort)

Survey number	Age of children	No. of questionnaires sent	No. of questionnaires returned	Response rate
1	0.5 years	53,575	47,015	87.8%
2	1.5 years	46,966	43,925	93.5%
3	2.5 years	46,897	42,812	91.3%
4	3.5 years	44,837	41,559	92.7%
5	4.5 years	43,559	39,817	91.4%
6	5.5 years	42,187	38,537	91.3%
7	7 years	40,598	36,785	90.6%
8	8 years	39,261	36,136	92.0%
9	9 years	37,932	35,264	93.0%
10	10 years	36,989	34,124	92.3%
11	11 years	36,059	32,913	91.3%
12	12 years	35,038	32,065	91.5%

Table 2 Data available for television-watching as the main form of play and its daily duration (h) in children at each age in the Longitudinal Survey of Newborns in the 21st Century (2001 cohort).

	Data available n (%)	Data not available n (%)
Television-watching		
At the age of 1.5 years		
As main form of play	43925 (93.4)	3090 (6.6)
At the age of 2.5 years		
As main form of play	42812 (91.1)	4203 (8.9)
Daily duration, h	42541 (90.5)	4474 (9.5)
At the age of 3.5 years		
Daily duration, h	41323 (87.9)	5692 (12.1)
At the age of 4.5 years		
Daily duration, h	39565 (84.2)	7450 (15.9)
At the age of 5.5 years		
Daily duration on weekdays, h	38380 (81.6)	8635 (18.4)
Daily duration on Sunday, h	38205 (81.3)	8810 (18.7)
Parents' concerns for child's decreased visual acuity at the age of 7 - 12 years	30823 (65.6)	16192 (34.4)

Table 3 Demographic characteristics of study participants in total and stratified by television-watching status at the ages of 1.5 and 2.5 years

	Total children (N = 47,015)	At the age of 1.5 years		At the age of 2.5 years	
		Not as main form of play (n = 21,687)	As main form of play (n = 22,238)	Not as main form of play (n = 25,015)	As main form of play (n = 17,797)
Characteristics of children					
Sex, n (%)*					
Boys	24425 (52)	11275 (52)	11550 (51.9)	12807 (51.2)	9409 (52.9)
Girls	22590 (48)	10412 (48)	10688 (48.1)	12208 (48.8)	8388 (47.1)
Term or preterm birth, n (%)*					
Term birth	44633 (94.9)	20612 (95)	21135 (95)	23754 (95)	16944 (95.2)
Preterm birth	2382 (5.1)	1075 (5)	1103 (5)	1261 (5)	853 (4.8)
Parity, n (%)*					
0	22967 (48.9)	10249 (47.3)	11213 (50.4)	11877 (47.5)	9049 (50.8)
≥ 1	24048 (51.1)	11438 (52.7)	11025 (49.6)	13138 (52.5)	8748 (49.2)
Singleton or multiple birth, n (%)*					
Singleton birth	46039 (97.9)	21296 (98.2)	21737 (97.7)	24507 (98)	17448 (98)
Multiple birth	976 (2.1)	391 (1.8)	501 (2.3)	508 (2)	349 (2)
Parental characteristics					
Mean maternal age at delivery, years (SD)*	30 (4.5)	30 (4.5)	30.1 (4.4)	30.1 (4.4)	30.2 (4.5)
Maternal educational attainment, n (%)‡					
University or higher	6031 (13.8)	3308 (15.4)	2723 (12.3)	3581 (14.8)	2268 (13.2)
Junior college or vocational school	18034 (41.3)	8839 (41)	9195 (41.6)	10369 (42.9)	6936 (40.2)
High school	17157 (39.3)	8176 (37.9)	8981 (40.6)	9045 (37.4)	7099 (41.2)
Junior high school and others	2453 (5.6)	1225 (5.7)	1228 (5.5)	1203 (5)	937 (5.4)
Paternal educational attainment, n (%)‡					
University or higher	15625 (36.2)	7687 (36.1)	7938 (36.2)	9010 (37.6)	6124 (35.9)
Junior college or vocational school	6758 (15.6)	3322 (15.6)	3436 (15.7)	3809 (15.9)	2644 (15.5)
High school	17168 (39.8)	8398 (39.5)	8770 (40)	9255 (38.6)	6909 (40.5)
Junior high school and others	3633 (8.4)	1877 (8.8)	1756 (8)	1887 (7.9)	1384 (8.1)
Maternal smoking status, n (%)*					
Non-smoking	38565 (82.5)	18003 (83.5)	18571 (83.9)	21064 (84.6)	14818 (83.7)
Smoking	8172 (17.5)	3565 (16.5)	3553 (16.1)	3823 (15.4)	2888 (16.3)
Residential area, n (%)					
Wards	10297 (21.9)	4761 (22)	4884 (22)	5496 (22)	3892 (21.9)
Cities	27707 (58.9)	12762 (58.8)	13129 (59)	14719 (58.8)	10486 (58.9)
Towns or villages	9011 (19.2)	4164 (19.2)	4225 (19)	4800 (19.2)	3419 (19.2)

SD, standard deviation

^{*} Obtained from the birth record[†] Obtained from the first survey (at the age of 6 months)[‡] Obtained from the second survey (at the age of 18 months)

There were 3340 missing for maternal educational attainment, 3831 missing for paternal educational attainment, and 278 missing for maternal smoking status.

Table 4 Crude and adjusted* odds ratios for associations between television-watching as the main form of play at the ages of 1.5 and 2.5 years and parents' concerns for child's decreased visual acuity at the ages of 7–12 years.

	<i>N</i> _{case} / <i>N</i>	% of cases	Crude ORs (95% CI)	Adjusted* ORs (95% CI)
At the age of 1.5 years				
Not as main form of play	5803 / 14950	38.8	1 (ref.)	1 (ref.)
As main form of play	6399 / 15555	41.1	1.1 (1.05 - 1.15)	1.1 (1.05 - 1.15)
At the age of 2.5 years				
Not as main form of play	6957 / 17782	39.1	1 (ref.)	1 (ref.)
As main form of play	5259 / 12762	41.2	1.09 (1.04 - 1.14)	1.09 (1.04 - 1.15)

* Adjusted for child factors (sex, preterm birth, parity, singleton or not), parental factors (maternal age at delivery, maternal educational attainment, paternal educational attainment), and residential area.

Table 5 Crude and adjusted* odds ratios for associations between daily television-watching duration at the age of 2.5–5.5 years and parents' concerns for child's decreased visual acuity at the ages of 7 – 12 years.

	Ncase /N	% of cases	Crude ORs (95% CI)	Adjusted* ORs (95% CI)
At the age of 2.5 years				
Less than 1 hour	1179 / 3116	37.8	1 (ref.)	1 (ref.)
1 to less than 2 hours	4407 / 11263	39.1	1.06 (0.97 - 1.15)	1.06 (0.97 - 1.15)
2 to less than 3 hours	1775 / 4318	41.1	1.15 (1.04 - 1.26)	1.14 (1.03 - 1.25)
3 hours or more	4603 / 11230	41.0	1.14 (1.05 - 1.24)	1.14 (1.05 - 1.24)
At the age of 3.5 years				
Less than 1 hour	1195 / 3040	39.3	1 (ref.)	1 (ref.)
1 to less than 2 hours	4850 / 12236	39.6	1.01 (0.93 - 1.1)	1.05 (0.97 - 1.14)
2 to less than 3 hours	1842 / 4431	41.6	1.1 (1 - 1.21)	1.15 (1.04 - 1.27)
3 hours or more	4198 / 10557	39.8	1.02 (0.94 - 1.11)	1.07 (0.98 - 1.16)
At the age of 4.5 years				
Less than 1 hour	1520 / 3689	41.2	1 (ref.)	1 (ref.)
1 to less than 2 hours	3653 / 9249	39.5	0.93 (0.86 - 1.01)	0.96 (0.88 - 1.03)
2 to less than 3 hours	4177 / 10507	39.8	0.94 (0.87 - 1.02)	0.99 (0.91 - 1.07)
3 hours or more	2622 / 6563	40.0	0.95 (0.87 - 1.03)	1.01 (0.92 - 1.1)
At the age of 5.5 years (on weekdays)				
Less than 1 hour	2205 / 5325	41.4	1 (ref.)	1 (ref.)
1 to less than 2 hours	4882 / 12294	39.7	0.93 (0.87 - 0.99)	0.96 (0.89 - 1.02)
2 to less than 3 hours	3302 / 8391	39.4	0.92 (0.86 - 0.98)	0.96 (0.89 - 1.03)
3 hours or more	1665 / 4218	39.5	0.92 (0.85 - 1)	0.97 (0.89 - 1.05)
At the age of 5.5 years (on Sundays)				
Less than 1 hour	1193 / 2901	41.1	1 (ref.)	1 (ref.)
1 to less than 2 hours	3642 / 9180	39.7	0.94 (0.86 - 1.03)	0.96 (0.88 - 1.05)
2 to less than 3 hours	3742 / 9569	39.1	0.92 (0.84 - 1)	0.96 (0.88 - 1.04)
3 hours or more	3423 / 8444	40.5	0.98 (0.9 - 1.06)	1.03 (0.95 - 1.13)

*Adjusted for child factors (sex, preterm birth, parity, singleton or not), parental factors (maternal age at delivery, maternal educational attainment, paternal educational attainment), and residential area.

Table 6 Crude and adjusted* odds ratios for associations between television-watching as the main form of play at the ages of 1.5 and 2.5 years and parents' concerns raised twice or more about child's decreased visual acuity at the ages of 7–12 years in sensitivity analysis of 28,820 children who participated in all 6 surveys at the ages of 7–12 years.

	<i>N</i> _{case} / <i>N</i>	% of cases	Crude ORs (95% CI)	Adjusted* ORs (95% CI)
At the age of 1.5 years				
Not as main form of play	3188 / 14046	22.7	1 (ref.)	1 (ref.)
As main form of play	3597 / 14519	24.8	1.12 (1.06 - 1.18)	1.12 (1.06 - 1.19)
At the age of 2.5 years				
Not as main form of play	3849 / 16677	23.1	1 (ref.)	1 (ref.)
As main form of play	2950 / 11929	24.7	1.09 (1.04 - 1.16)	1.1 (1.04 - 1.17)

* Adjusted for child factors (sex, preterm birth, parity, singleton or not), parental factors (maternal age at delivery, maternal educational attainment, paternal educational attainment), and residential area.

Table 7 Crude and adjusted* odds ratios for associations between daily television-watching duration at the ages of 2.5–5.5 years and parents' concerns raised twice or more about child's decreased visual acuity at the ages of 7–12 years in sensitivity analysis of 28,820 children who participated in all 6 surveys at the ages of 7–12 years

	N _{case} / N	% of cases	Crude ORs (95% CI)	Adjusted* ORs (95% CI)
At the age of 2.5 years				
Less than 1 hour	630 / 2947	21.4	1 (ref.)	1 (ref.)
1 to less than 2 hours	2443 / 10587	23.1	1.1 (1 - 1.22)	1.11 (1 - 1.23)
2 to less than 3 hours	1022 / 4048	25.2	1.24 (1.11 - 1.39)	1.23 (1.1 - 1.39)
3 hours or more	2585 / 10466	24.7	1.21 (1.09 - 1.33)	1.22 (1.1 - 1.35)
At the age of 3.5 years				
Less than 1 hour	671 / 2876	23.3	1 (ref.)	1 (ref.)
1 to less than 2 hours	2698 / 11483	23.5	1.01 (0.92 - 1.11)	1.04 (0.94 - 1.15)
2 to less than 3 hours	1062 / 4158	25.5	1.13 (1.01 - 1.26)	1.17 (1.05 - 1.32)
3 hours or more	2282 / 9835	23.2	0.99 (0.9 - 1.1)	1.04 (0.94 - 1.15)
At the age of 4.5 years				
Less than 1 hour	848 / 3469	24.4	1 (ref.)	1 (ref.)
1 to less than 2 hours	2139 / 8754	24.4	1 (0.91 - 1.1)	1.03 (0.93 - 1.13)
2 to less than 3 hours	2323 / 9848	23.6	0.95 (0.87 - 1.04)	1.01 (0.92 - 1.11)
3 hours or more	1392 / 6101	22.8	0.91 (0.83 - 1.01)	0.97 (0.88 - 1.08)
At the age of 5.5 years (on weekdays)				
Less than 1 hour	1257 / 5019	25.0	1 (ref.)	1 (ref.)
1 to less than 2 hours	2756 / 11584	23.8	0.93 (0.87 - 1.01)	0.96 (0.89 - 1.04)
2 to less than 3 hours	1841 / 7836	23.5	0.92 (0.85 - 1)	0.97 (0.89 - 1.06)
3 hours or more	884 / 3934	22.5	0.87 (0.79 - 0.96)	0.92 (0.83 - 1.02)
At the age of 5.5 years (on Sundays)				
Less than 1 hour	686 / 2734	25.1	1 (ref.)	1 (ref.)
1 to less than 2 hours	2090 / 8688	24.1	0.95 (0.86 - 1.04)	0.96 (0.87 - 1.07)
2 to less than 3 hours	2065 / 8982	23.0	0.89 (0.81 - 0.98)	0.93 (0.84 - 1.03)
3 hours or more	1870 / 7849	23.8	0.93 (0.84 - 1.03)	1 (0.9 - 1.11)

*Adjusted for child factors (sex, preterm birth, parity, singleton or not), parental factors (maternal age at delivery, maternal educational attainment, paternal educational attainment), and residential area.