

1 **Do adolescents with impaired vision have different intentions and**
2 **ambitions for their education, career and social outcomes**
3 **compared to their peers? Findings from the Millennium Cohort**
4 **Study.**

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17

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19 **SYNOPSIS**

20 In this contemporary national birth cohort, adolescents with impaired vision had similar intentions and
21 ambitions regarding their future education, careers and social outcomes as their normally sighted
22 peers.

23

24 **ABSTRACT**

25 **Background/aims** To investigate if impaired vision adversely impacts the intentions/ambitions of
26 adolescents concerning their future education, careers and social outcomes.

27 **Methods** Population-based birth cohort study in the United Kingdom comprising 9273 participants
28 from the Millennium Cohort Study who were followed-up to age 17 years. Children were classified as
29 having normal vision or unilateral or bilateral impaired vision caused by significant eye conditions
30 based on detailed parental-structured questionnaire data on sight problems and treatment coded by
31 clinicians. Ten domains covering education, career, and social outcomes by age 30 were
32 investigated.

33 **Results** Adjusted regression models showed few differences by vision status. Bilateral impaired
34 vision was associated with increased odds of intending to remain in full-time education after statutory
35 school age (adjusted OR, 2.00; 95%CI: 1.08, 3.68) and of home ownership at age 30 (1.83; 1.01,
36 3.32). Impaired vision was not associated with intending to attend university. A significantly higher
37 proportion of parents of children with bilateral or unilateral impaired vision thought that their child
38 would not get the exam grades required to go to university than parents of those with normal vision
39 (29 or 26% versus 16%; $p=0.026$).

40 **Conclusion** Adolescents with impaired vision have broadly the same intentions/ambitions regarding
41 future education, careers and social outcomes as their peers with normal vision. The known
42 significant gaps in attainment in these domains amongst young adults with vision impairment is
43 therefore likely to be due to barriers that they face in achieving their ambitions. Improved
44 implementation of existing interventions is necessary to ensure equality of opportunities.

45

46 **KEY MESSAGES**

47 **What is already known on this topic**

48 Despite a legislative framework to protect and support those living with disabilities, there remain
49 reduced opportunities for adults with impaired vision manifest in their lower educational and
50 employment attainments.

51 **What this study adds**

52 Using a national population-based study in the UK we found that adolescents with impaired vision did
53 not differ from this with normal vision in their intentions for future education, careers and social
54 outcomes, and there were no differences in the reasons for intending or not intending to go to
55 university.

56 **How this study might affect research, practice or policy**

57 Our findings demonstrate that significant gaps in attainment in key domains by comparison with
58 normally sighted peers do not originate in differences in aspirations of adolescents, and suggest that
59 instead the barrier is lack of specific support and provision required to help them realise their
60 potential.

61 **Introduction**

62 In the UK, the rights of individuals living with disabilities to promote equal opportunities are
63 enshrined in legislation.^{1,2} Educational provision and rehabilitation services exist to ensure
64 everyone can achieve their ambitions.³ Nevertheless, adults with disabilities today are more
65 likely to have lower educational attainment, be in lower-skilled jobs, not own a house, live in
66 social housing, have poorer well-being, and feel lonely.⁴

67

68 Prior research has shown that whilst future educational and occupational
69 intentions/ambitions are similar among adolescents with and without disability, there is an
70 attainment gap in these domains as those living with disability have worse outcomes.⁵

71 Qualitative research with adolescents living with visual impairment (VI) has shown that most
72 have well-defined professional and personal ambitions for their lives as adults but also that
73 they fear discrimination in the workplace and have concerns about independent living and
74 family life.⁶ There has been no systematic investigation to quantify any associations between
75 their impaired vision and their plans/ambitions for future education, careers and social
76 outcomes.

77

78 We hypothesised that, despite having concerns about barriers they might face, adolescents
79 living with VI would have the same intentions/ambitions as their peers with normal vision. We
80 report here our quantitative investigation of this question analysing data from the Millennium
81 Cohort Study (MCS), which has collected data longitudinal on health, well-being, education
82 and social outcomes of children as they transition to adulthood.

83

84 **Methods**

85 **Study design**

86 The MCS is a birth cohort study of 18,827 children born in the United Kingdom (UK) in 2000-
87 01.⁷ Households from socioeconomically disadvantaged and ethnic minority backgrounds

88 were intentionally oversampled to ensure sufficient numbers for analysis of these typically
89 hard-to-reach groups.⁷ This makes the cohort particularly suited for research on VI as the
90 risk of childhood VI is considerably higher among lower socioeconomic and ethnic minority
91 households.⁸ Data on development and family socioeconomic circumstances were collected
92 every 2-3 years.

93 Our previous work^{9,10} identified MCS's members with vision problems at ages 3-7 years, the
94 age at which VI would have manifested in most children.⁸ This was used to dichotomise
95 individuals as having impaired vision or not, and future intentions were assessed up to the
96 age of 17 years. Adolescents with neurological or neurodevelopmental conditions (such as
97 Down syndrome) were excluded as these conditions could themselves impact both vision
98 and intentions.^{9,11}

99 The MCS received overarching ethics approval from the Multi-Centre Research Ethics
100 Committee (MREC/03/2/022).¹² This study drew on existing anonymised data, therefore
101 additional ethics approval was not needed for our analysis.

102

103 **Vision data**

104 In the absence of a formal biomedical assessment of MCS, our ophthalmic team developed
105 and piloted a structured questionnaire that was administered by trained expert interviewers
106 to elicit any vision and eye conditions, which eye(s) affected, age when first suspected, any
107 treatment undertaken and formal certification for sight impairment at ages 3, 5, and 7 years.

108 The questionnaire comprised both open-ended answers where the expert interview recorded
109 parents' response verbatim, including taking information from medical correspondence
110 provided by the parents, as well pre-defined/precoded lists of the most common eye
111 conditions for the age group. At ages 5 and 7 years, previously recorded data were also
112 rechecked. Three clinical members of our team classified responses independently using a
113 conservative and hierarchical strategy that required diagnosis, forms of therapy, and age at
114 treatment to match consistently. Coding was based on the International Classifications of

115 Diseases (ICD) and the extended taxonomy used in our previous national epidemiological
116 study of blindness in children,⁸ which has been successfully validated.^{9,10} We dichotomised
117 participants at age 7 years into either a) those with significant eye conditions causing any
118 level of impaired vision and/or those certified as sight impaired (full list in eTable 1) or b)
119 those without any eye condition causing impaired vision. We also distinguished between
120 unilateral and bilateral impaired vision (using the coded data on laterality and treatment) as
121 an indicator of severity based on knowledge of a 'gradient' of functional impact on
122 socioeconomic outcomes.¹³⁻¹⁵

123

124 **Intentions regarding education, career and social outcomes**

125 These outcomes comprised self-report at ages 14 to 17 years on various dimensions of
126 education, career, and social outcomes (see eTable 2 for questions and coding used in our
127 study; entire surveys are available at [https://cls.ucl.ac.uk/cls-studies/millennium-cohort-](https://cls.ucl.ac.uk/cls-studies/millennium-cohort-study/)
128 [study/](https://cls.ucl.ac.uk/cls-studies/millennium-cohort-study/)).

129 *Education* – Members reported as 14-years-olds how likely they were to remain in full-time
130 education beyond statutory schooling age (16 years) and the main reason they might *not*
131 stay in full-time education. As 17-year-olds, they reported how likely they were to go to
132 university and the main reason for their view. Parents also reported on their view of the
133 likelihood that their child would go to university and from this, the agreement between child-
134 parent pairs was derived.

135 *Career* – At age 17 years, participants reported what job they expected to be doing when
136 aged 30 years which were categorised using the Social Occupation Grouping SOC2000
137 Major Groups by the MCS team¹⁶ and then grouped into three groups by us (ordinal
138 categories 1: managers, senior officials, professional occupations; 2: associate professional
139 and technical; and 3: administrative, secretarial and skilled trades occupations, personal

140 service, sales, customer service, process plant and machine operatives, and elementary
141 occupations).

142 *Social outcomes* – At age 17 years, members reported on what they expected to have
143 achieved by age 30 including home ownership, having a good car, earning money, having a
144 worthwhile job, having children, being married, being famous, or other personal
145 achievements.

146

147 **Confounders/covariates**

148 Due to the sociodemographic patterning in impaired vision and intentions,^{8,11,17,18} important
149 confounders were ethnicity, maternal education, and household income along with the
150 cohort member's sex, any special education needs (SEN i.e. not specific to vision as primary
151 and secondary reasons for SEN were not available nor information on contact with a
152 Qualified Teacher of Children and Young People with Vision Impairment (QTVI) but should
153 be inclusive of SEN), and parent's university expectations for their child,^{11,18,19} measured at
154 ages 7, 11, 14 and/or 17 years. See eTable 1 for detailed coding of covariates.

155

156 **Statistical analyses**

157 Analyses were performed in R version 4.1.0.²⁰ With most outcomes measured at age 17
158 years, the final study sample included all who participated at that age. To account for the
159 MCS survey design and attrition over time, sample weights were applied.²¹ There was
160 between 2 and 65% missing data, with the largest number of missing observations in
161 outcomes reported at age 17 (eTable 3). Logistic regression models adjusted by
162 confounders showed that missingness was positively associated with impaired vision, lower
163 socio-demographic characteristics as with 'lower' intentions/ambitions (eTable 4), therefore,
164 imputation would not be appropriate.²² Missing values were grouped as 'not present' for

165 binary outcomes and classified as 'do not know' for ordinal outcomes (turning them into
166 nominal).

167

168 Chi-squared tests assessed differences by impaired vision in sociodemographic
169 characteristics, intentions, and the reasons for educational intentions. Regression models of
170 intentions were fitted to assess associations with impaired vision adjusted for confounders;
171 logistic models for *remaining in full-time education, going to university, and social outcomes,*
172 and multinomial models for *university agreement by child-parent and occupation.* Next,
173 interactions between impaired vision and sociodemographic characteristics (i.e. sex,
174 maternal education, and household income) were added to test for synergistic effects
175 associated with intentions and kept in the models if significant at $\alpha=0.05$. Interactions
176 between impaired vision and ethnicity could not be estimated due to the low frequency of
177 some combinations. All models' assumptions were satisfied.

178

179 **Results**

180 **Study population**

181 The study sample comprised 9273 singletons who participated at least at age 17 years and
182 had no neurological or neurodevelopmental conditions (82 excluded) (Figure S1). The
183 overall proportion of adolescents with eye conditions that caused unilateral impaired vision
184 was 47 per 1000 (95% CI, 44-50), and mostly due to amblyopia and/or strabismus, whilst the
185 frequency of bilateral impaired vision was 5 per 1000 (4-6) and mainly accounted for by
186 children certified as sight impaired severely sight impaired and/or with conditions affecting
187 retina, optic nerve of visual pathways. The impaired vision groups had a higher proportion of
188 adolescents with lower maternal educational attainment, and general SEN history (Table 1).

189

190 Table 1. Sociodemographic characteristics of the study population by vision status.

Characteristic	Category	Normal vision (weighted* %)	Unilateral impaired vision (weighted* %)	Bilateral Impaired vision (weighted* %)	χ^2 (weighted*) p-value†
Sex	Boys	4367 (50)	222 (51)	20 (41)	0.360
	Girls	4425 (50)	210 (49)	29 (59)	
Ethnicity	Black/ African/ Caribbean	276 (3)	10 (2)	‡	NA
	South Asian	958 (11)	32 (7)	‡	
	White	7281 (83)	378 (88)	‡	
	Other	277 (3)	12 (3)	‡	
Maternal education	A-levels or higher	3622 (41)	154 (36)	16 (33)	0.032
	O-levels	2864 (33)	138 (32)	20 (41)	
	None	2306 (26)	140 (32)	13 (27)	
Household income quintile	1 Richest	1952 (22)	82 (19)	6 (12)	0.601
	2	1884 (21)	95 (22)	12 (24)	
	3	1731 (20)	83 (19)	10 (20)	
	4	1654 (19)	84 (19)	11 (22)	
	5 Poorest	1571 (18)	88 (20)	10 (20)	
History of special education needs	No	7761 (88)	355 (82)	37 (76)	<0.001
	Yes	1031 (12)	77 (18)	12 (24)	

191 *Weighted for survey design; †Associations with $p < 0.05$ in **bold**; ‡Not provided to avoid potential
192 statistical disclosure at $n < 5$.

193

194 **Future intentions**

195 The distribution of the future education, career, and social outcomes intentions of
196 adolescents by level of vision can be seen in eTable 5. The adjusted regression models are
197 reported in Table 2. There were no significant interactions between vision status and sex,
198 maternal education, and household income, therefore only the main effects are reported.

199

200 Table 2: Adjusted associations between vision status and future intentions

Intention*	Category	Unilateral impaired aOR (95%CI)†	Bilateral impaired aOR (95%CI)†
Education			
Remain in education beyond 16 years		1.21 (0.97-1.51)	2.00 (1.08-3.68)
Likely to go to university		0.85 (0.65-1.09)	1.67 (0.96-2.91)

University likelihood agreement by participant-parent pair	Participant and parent agree – unlikely to attend	1.00	1.00
	Participant and parent agree – likely to attend	0.72 (0.54-0.95)	1.61 (0.85-3.08)
	Participant and parent disagree	0.87 (0.68-1.11)	0.72 (0.33-1.58)
Career at age 30			
Career	High skilled occupation	1.00	1.00
	Medium skilled occupation	1.26 (0.84-1.89)	1.79 (0.65-4.92)
	Low skilled occupation	1.48 (0.96-2.30)	0.90 (0.22-3.61)
	Do not know	1.26 (0.95-1.66)	1.03 (0.47-2.28)
Social outcome at age 30			
Home ownership		0.87 (0.71-1.06)	1.83 (1.01-3.32)
Having a good car		1.05 (0.86-1.29)	1.05 (0.59-1.86)
Earning a lot of money		1.01 (0.81-1.26)	1.48 (0.83-2.66)
Having a worthwhile job		0.92 (0.75-1.13)	1.25 (0.69-2.24)
Having children		0.90 (0.72-1.12)	1.06 (0.56-1.98)
Being married		0.85 (0.69-1.04)	1.04 (0.56-1.92)
Being famous or other personal achievement		1.25 (0.97-1.60)	0.97 (0.46-2.05)

201 *Independent outcomes with their own regression model.

202 †Odds ratio (aOR) weighted for survey design and adjusted for sex, ethnicity, maternal education,
 203 household income, special education needs, and parents university expectation; associations with
 204 $p < 0.05$ in **bold**.

205

206 *Education* – Compared to adolescents with normal vision, those with bilateral impaired vision
 207 had twice the odds of intending to remain in full-time education from the age of 16 years
 208 (aOR, 2.00; 95%CI, 1.08-3.68). There were no differences by vision status in intention to go
 209 to university.

210 It was relatively rare for participants to intend to go to university whilst their parents
 211 disagreed, therefore the discordant pairs were combined to express both directions.

212 Unilateral impaired vision was associated with reduced odds of participants and parents
 213 agreeing on it being likely that the participant would go to university (0.72, 0.54-0.95).

214 Participants' reasons for intending or not intending to remain in full-time schooling or going to
 215 university did not vary by vision status (Table 3). The majority (73%) reported they were
 216 likely to go to university to improve their job prospects or pursue their career of interest.
 217 However, significantly more parents of 17-year-olds with bilateral or unilateral impaired
 218 vision thought that their child would not get the educational qualifications required to go to

219 university compared to parents of those with normal vision (29 or 26% versus 16%;
 220 $p=0.026$).

221 Career at age 30 – There were no differences in terms of intended occupation (grouped in
 222 three groups) by vision status.

223 Social outcomes at age 30 – Compared to adolescents with normal vision, those with
 224 bilateral impaired vision had higher odds of thinking they would achieve home ownership
 225 (1.83; 1.01-3.32). No other differences in intended social outcomes by vision status were
 226 observed.

227

228 Table 3: Child- and parent-reported reasons for full-time education and university intentions
 229 by vision status.

Reasons	Normal vision (weighted* %)	Unilateral impaired vision (weighted* %)	Bilateral impaired vision (weighted* %)	χ^2 (weighted*) p -value†
Child-report unlikely to remain in full-time education at age 16‡				
Too early to decide	36%	33%	39%	0.114
Prefer to work	36%	34%	29%	
Not helpful for career	6%	6%	7%	
Child-report unlikely to go to university‡				
Not the grades	33%	35%	34%	0.926
Prefer to work	23%	25%	25%	
Too early to decide	13%	13%	12%	
Child-report likely to go to university‡				
Better job prospect	73%	75%	77%	0.938
Learn more	9%	8%	6%	
Experience new things	5%	7%	3%	
Parent-report unlikely to go to university‡				
Child prefers to work	61%	56%	43%	0.394
Child does not want to go	35%	37%	14%	0.488
Child will not get the grades	16%	26%	29%	0.026

230 *Weighted for survey design; †Associations with $p<0.05$ in **bold**; ‡Child reported one reason whilst
 231 parents reported multiple reasons, top three shown.

232

233 Discussion

234 Using a population-based birth cohort study, we found no meaningful adverse association
235 between impaired vision and the intentions and ambitions of affected adolescents in terms of
236 their future education, careers and key social outcomes when compared with their normally
237 sighted peers. Interestingly, those with bilateral impaired vision were more likely to intend to
238 remain in full-time education beyond 16 years and to expect to own a home by the age of 30
239 years. Reasons for being likely or unlikely to remain in full-time education or going to
240 university did not differ by vision status. Adolescents with unilateral impaired vision and their
241 parents were less likely to agree that they were going to university and these parents more
242 often reported they thought their child would not get the qualifications required to get into
243 university compared to child-parent pairs of those with normal vision.

244

245 Strengths of this study include the sample size of adolescents with unilateral or bilateral
246 impaired vision embedded in a representative birth cohort and thus provides an appropriate
247 comparison group with normal vision. A wealth of data has been collected longitudinally
248 which allowed an investigation of intentions/ambitions in both professional and personal
249 domains as well as some insights into the perspectives of both adolescents and their
250 parents. Data were collected at ages during the transition from statutory to further and higher
251 education and about outcomes into early adult life. As all outcomes were not rare (>10%),
252 the study had enough power to detect significant differences if present between the normal
253 vision group and impaired vision groups, including the much smaller bilateral impaired vision
254 group with the exception of the intention for occupation. The reason for not combining the
255 unilateral and bilateral impaired vision groups to increase statistical power is because they
256 are distinct clinical groups with different functional impacts on socioeconomic outcomes¹³⁻¹⁵
257 and combining them would dilute any differences present in the more severe bilateral
258 impaired vision group. A potential limitation includes the possibility for misclassification of
259 vision status through the use of parental reports of eye conditions and thereby may result in
260 biased associations. This approach has been verified previously^{9,10} and indirect validation is

261 provided by similarity in frequency of childhood impaired vision and causative conditions
262 observed in this study and those reported in similar UK population studies that involved
263 biomedical assessment.¹⁷ Attrition and missing data are common problems in cohort studies.
264 Here, attrition was addressed by using sampling weights²¹ and missing observations of
265 intentions were extensively examined and appropriately dealt with, limiting the potential bias
266 of the results.²² Although regression models were adjusted for the major confounders
267 identified in previous research,^{11,17-19} residual confounding cannot be ruled out, as in any
268 observational study. The MCS did not collect data on teachers' expectations for their
269 students to go to university, whether adolescents received support other than at school, and
270 whether adolescents and their parents were satisfied with support services received. These
271 factors would be important to investigate in future research. Finally, as in all observational
272 research, associations do not imply causality, however reverse causality is not the case as
273 childhood vision status precedes the later outcomes.

274
275 There has been no similar research, to our knowledge, with which we can directly compare
276 our findings. However previous qualitative research has shown that most adolescents living
277 with impaired vision have well-considered education and career ambitions⁶ but also have
278 concerns about discrimination at work, independent living, driving in particular for boys,
279 intimate relationships and the implications of hereditary eye conditions.⁶ Our study now
280 quantified that the ambitions of adolescents living with impaired vision correspond closely to
281 those of their peers with normal vision. The fact that impaired vision was not associated with
282 lower ambitions or expectations in several domains - having a worthwhile job, earning a lot
283 of money, having a good car, being married, or having children - is striking, given the present
284 realities of adults living with VI in the UK. For example, 15% have a university degree
285 compared with 38% of adults without a disability,²³ furthermore a higher proportion have no
286 educational qualifications (11% vs 6%, respectively)²³ and much lower proportion are in paid
287 employment (57% vs 81%, respectively).⁴ Our findings suggest that the 'attainment gap' in

288 adult life is at least partly attributable to the ambitions and intentions of adolescents living
289 with impaired vision not being fully realised. A combination of factors is likely to account for
290 this, including a lack of adequate and appropriate support in the transition from compulsory
291 schooling into further and higher education, and opportunities to enter into and remain in
292 employment.

293

294 There is now extensive literature identifying the specific needs of children and young people
295 (CYP) with VI in terms of support for development and in educational settings^{24,25}
296 recognising that most childhood VI in the UK and other industrialised countries is present at
297 birth or from early infancy.²⁶ A formal assessment of educational needs, to develop and
298 agree the child's education and health care plan (EHCP)^{25,27} is the key catalyst for ensuring
299 adequate provision in the UK and is likely to be a key factor in educational attainment in
300 adult life³, yet around 80% of CYP with VI do not have such a plan²⁸ as was in our study.

301 There are also significant variations in habitation support in the UK, which for CYP living with
302 VI is aimed at maximising independence at different developmental stages all the way to
303 adult life; worryingly given the findings of our study, adolescents aged 16 years and older are
304 the age group the least likely to receive this support.²⁷ This is in turn also likely to be a key
305 factor in obtaining and retaining employment.²⁷ The 2014 legal reforms related to special
306 educational needs provision in the UK have not been effective due to implementation
307 problems with considerable gaps in support provision, with suggested improvements not yet
308 widely implemented.²⁹ Without accessible high-quality support services to help CYP with VI
309 through schooling and further and higher education, many will not achieve their potential.
310 Importantly, educational attainment is a stronger predictor of employment in adults with
311 impaired vision than it is for those without disabilities.³⁰ Thus, educational provision is the
312 foundation for much that follows in adult life for CYP with VI.

313

314 Given the striking associations between disadvantage and risk of VI in childhood^{8,9,17,26} and
315 the influence of socioeconomic status on educational aspirations,^{11,18} it is notable that we

316 found no synergistic interactions between impaired vision and the sociodemographic factors
317 associated with adolescents' intentions.

318

319 Our findings that there is little to distinguish between the intentions/ambitions of adolescents
320 with unilateral impaired vision (the majority of whom had amblyopia) and those with normal
321 vision is consistent with our prior research by us^{10,21} and others³¹ that has shown that
322 amblyopia is not associated with adverse educational, occupational, or social outcomes into
323 adult life. Furthermore, children with amblyopia perform similarly well to their peers in early
324 cognition tasks and school tests.^{10,31} Together these findings should reassure families,
325 teachers and clinicians that amblyopia need not be considered a barrier to professional or
326 personal ambitions.

327

328 We examined concordance between adolescents and their parents about the intention or
329 expectation of going to university. Interestingly we found that unilateral –but not bilateral—
330 impaired vision was associated with reduced odds of adolescents and their parents agreeing
331 that they were likely to go to university. Since unilateral impaired vision was not similarly
332 associated with adolescents reporting directly that were likely to university, it seems that
333 parental concerns about their child's likelihood of obtaining the necessary school
334 qualifications to go to university explain the discordance. These concerns may reflect both a
335 lack of awareness (due to suboptimal communication between families and professionals)²⁹
336 or a lack of availability of support^{32,33} to ensure children with impaired vision achieve their full
337 educational potential. This is important to address as parents' support is a strong predictor of
338 employment in young adults with VI.³⁴

339

340 **Conclusion**

341 Adolescence is a key development stage and those living with VI face additional challenges.

342 In the general population, career aspirations in adolescence predict career attainment in

343 early adult life, even after controlling for family social background and general cognitive
344 ability.¹¹ Despite a legislative framework to protect and support those living with disabilities,
345 there remain reduced opportunities for adults with impaired vision manifest in their lower
346 educational and employment attainments. Our study demonstrates the origin of these
347 disparities is not in the aspirations of affected individuals in their childhood or adolescence
348 but rather suggests is in the specific support and provision they receive to nurture their
349 abilities so that they can achieve full potential.

350
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352

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374
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376
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378 <https://beta.ukdataservice.ac.uk/datacatalogue/series/series?id=2000031#!/access-data>. For this
379 study, we utilised surveys at ages 3, 5, 7, 11, 14 and 17 years (MCS2-7 SN:5350, 5795, 6411, 7464,
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381 original parental report on eye conditions (variable EYEX in MCS2-4). Access is otherwise obtained
382 via <https://www.closer.ac.uk/study/millennium-cohort-study/>. Information on eye conditions was
383 included in the coding of longstanding illness (variable CLSI in MCS2-4) that is present in the freely
384 available survey data from the UK Data Archive. The longstanding illness is based on the
385 International Statistical Classification of Diseases and Related Health Problems 10th version (ICD-10).

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390

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