For archived data we thank the Centre for Longitudinal Studies (Institute of Education), National Birthday Trust Fund, National Children's Bureau, City University Social Statistics Research Unit, and the Data Archive distributor, SN:3138, Colchester. Research at the Institute of Child Health and Great Ormond Street Hospital for Children NHS Trust benefits from R&D funding received from the NHS Executive. We thank David Taylor for commenting on an earlier version of this manuscript. JSR holds a joint appointment with the Institute of Ophthalmology, London.

Contributors: See bmj.com.

Funding: The work reported here was supported by a project grant from the BUPA Foundation, which had no role in the design or conduct of the study or in the decision to publish.

Competing interests: None declared.

Ethical approval: This study is part of a broader programme of work approved by the Institute of Child Health's Research Ethics Committee.

1 Hall DM, Elliman D, eds. *Health for all children*. 4th ed. Oxford: Oxford University Press, 2003.
2 Snowdon S, Stewart-Brown S. *Preschool vision screening: results of a systematic review*. University of York, NHS Centre for Reviews and Dissemination, 1997. (CRD Report 9.)
3 Rahi JS, Dezateux C. The future of preschool vision screening services in Britain. *BMJ* 1997;315:1247-8.
4 National Child Development Study, 2004. www.cls.ioe.ac.uk/studies.asp?section=000100020003 (accessed 14 Feb 2006).
5 Stott DH. *The social adjustment of children: manual to the Bristol social adjustment guides*. London: Hodder and Stoughton, 1987.
6 Rutter M, Tizard J, Whitmore K. *Education, health and behaviour*. London: Longman, 1970.
7 Department of Employment. *Classification of occupations and directory of occupational titles (CODOT)*. London: HMSO, 1972.
8 Adams GGW, Karas MP. Effect of amblyopia on employment prospects. *Br J Ophthalmol* 1999;83:380.
9 Attebo K, Mitchell P, Cumming R, Smith W, Jolly N, Sparkes R. Prevalence and causes of amblyopia in an adult population. *Ophthalmology* 1998;105:154-9.
10 Williams C, Northstone K, Harrad R, Sparrow JM, Harvey I, ALSPAC Study Team. Amblyopia treatment outcomes after screening before or at age 3 years: follow up from randomised trial. *BMJ* 2002;324:1549-51.
11 Rahi JS, Logan S, Timms C, Russell-Eggitt I, Taylor DSI. Risk, causes, and outcomes of visual impairment after loss of vision in the non-amblyopic eye: a population-based study. *Lancet* 2002;360:597-602.
12 Clarke MP, Wright CM, Hrisos S, Anderson JD, Henderson J, Richardson SR. Randomised controlled trial of unilateral visual impairment detected at preschool vision screening. *BMJ* 2003;327:1251-4.
13 Chua B, Mitchell P. Consequences of amblyopia on education, occupation, and long-term vision loss. *Br J Ophthalmol* 2004;88:1119-21.
14 Levi DM, Carkeet A. Amblyopia: a consequence of abnormal visual development. In: Simons K, ed. *Early visual development—normal and abnormal*. New York: Oxford University Press, 1993:391-408.

(Accepted 30 January 2006)

doi 10.1136/bmj.38751.597963.AE

Commentary: Does amblyopia matter?

Michael Clarke

Claremont Wing Eye Department, Royal Victoria Infirmary, Newcastle upon Tyne NE1 4LP

Michael Clarke
reader in ophthalmology

m.p.clarke@ncl.ac.uk

Rahi and colleagues report that, "distinguishing, at a population level, between the lives of people with amblyopia and those without in terms of important educational, health, and social outcomes may be difficult."[1] Understanding of amblyopia has moved beyond the traditional concept of a "lazy eye" to the knowledge that it is a form of cerebral visual impairment, caused by a disturbance of vision during a sensitive period of development. Amblyopia is the effect on the developing visual system of another pathology—often refractive error or strabismus (squint)—and is the most common cause of reduced visual acuity (in one eye) in children and young adults, with a generally accepted prevalence of 2-3%.[2]

Clinical and experimental data, indicating better results from early treatment of amblyopia, have led to the development of childhood visual screening programmes, which detect around 7% of children as abnormal, usually because of reduced visual acuity or strabismus. Reduced visual acuity detected at screening may be due to refractive error only, in which vision immediately corrects to normal with glasses, or to amblyopia, in which a residual visual deficit exists even with refractive correction. Rarely, other pathology such as congenital cataract or retinoblastoma may be discovered.

Associations between performance at school and amblyopia are complicated by the independent associations of strabismus and refractive error with a variety of neurodevelopmental disorders, including those caused by premature birth. Nevertheless, bilateral visual deficits (which were excluded from Rahi and colleagues' study) that cannot be corrected with glasses are clearly associated with educational difficulty and reduced life chances.[3]

Although bilateral refractive errors are relatively common in children, bilateral amblyopia is rare and a person with one amblyopic eye generally has good vision in the other. Although it is intuitively desirable that all children should develop good vision in both eyes, the extent of disability attributable to having amblyopia in one eye, when the other sees well, is less clear but is, according to this study, minimal.

Chua and Mitchell found that unilateral amblyopia in people aged 49 or over did not affect lifetime occupational class, but that a lower proportion of such people had completed university degrees[4] (this was not confirmed by Rahi and colleagues). Membreno et al calculated utility values for unilateral amblyopia, but these were based on adult perceptions of acquired visual loss.[5]

Childhood visual screening continues to be a controversial subject, but two main justifications have emerged for trying to ensure that all children leave the critical period with good vision in both eyes: reduced occupational opportunity and the risk of visual impairment if the eye with better vision is affected by trauma or pathology. In the light of this study, the somewhat random occupational visual requirements could be regarded as unjustifiably discriminatory and should be reviewed.

Competing interests: None declared.

1 Rahi JS, Cumberland PM, Peckham CS. Does amblyopia affect educational, health, and social outcomes? Findings from 1958 British birth cohort. *BMJ* 2006;332:820-4.
2 Attebo K, Mitchell P, Cumming R, Smith W, Jolly N, Sparkes R. Prevalence and causes of amblyopia in an adult population. *Ophthalmology* 1998;105:154-9.
3 Rahi J, Cable N. Severe visual impairment and blindness in children in the UK. *Lancet* 2003;362:1359-65.
4 Chua B, Mitchell P. Consequences of amblyopia on education, occupation and long term vision loss. *Br J Ophthalmol* 2004;88:1119-21.
5 Membreno J, Brown M, Brown G, Sharma S, Beauchamp G. A cost-utility analysis of therapy for amblyopia. *Ophthalmology* 2002;109:2265-71.

doi 10.1136/bmj.38772.411146.AE

This article was posted on bmj.com on 6 March 2006: http://bmj.com/cgi/doi/10.1136/bmj.38772.411146.AE