

Cost effectiveness of mental health promotion in schools – focussed interventions supplementary analysis

Background

The literature on the cost effectiveness of mental health promotion in schools, whilst small, consistently indicates broader benefits to society in terms of reduced use of health and social care, specialist education facilities and interactions with the legal system.

The primary cost effectiveness analyses suggested that focussed mental health promotion interventions in school are unlikely to be cost effective, in terms of health gain, when only the direct costs to the education service are considered. Given the evidence for a broader range of benefits, this chapter reports a supplementary analysis which incorporates estimates of the costs avoided by other services.

Methods

This analysis draws upon evidence from the appraisal of parent-training programmes for conduct disorder. (1) This report found that the average cost to the public purse of children with conduct problems was £497 per year; increasing to £1435 for children with conduct disorder. A child's status with regard to conduct problems and conduct disorder was specified using the CBCL (Child Behaviour Check List). (2) The CBCL scale has a well defined distribution (mean=50; s.d = 10). A score between 60 and 65 indicates the presence of conduct problems and a score above 65 indicates the presence of conduct disorder.

For the purposes of our analysis, we assumed that the mean CBCL score for children to whom the focussed intervention was provided, would be above 50. CBCL Secondly, we assumed that the effectiveness of the interventions on the CBCL would be consistent with that identified by the Parent Training Appraisal. (3)

On the basis of these assumptions we amended the original cost effectiveness model to take account of the expected cost savings in health, social, voluntary and legal sectors from improved mental health and associated behaviour.

The control cohort are predicted to incur the excess costs from education, health, social, voluntary and legal sectors reported based upon the expected incidence of conduct disorder and conduct problems, based upon the CBCL instrument.

The CBCL for the intervention cohort is assumed to be reduced in line with the effectiveness evidence for parent training on the CBCL scale, reported in the parent training appraisal report. As with the previous analyses, we have estimated the cost effectiveness of the intervention in a steady state – i.e. the within year costs and outcomes for a school operating the programme across all year groups. The excess costs are only the within year excess costs.

Sensitivity analysis.

To obtain parameter distributions on the CBCL for the probabilistic sensitivity analysis simulated a sample of children using the CBCL score distribution. We then eliminated the lower 50% of simulated observations to create a sample of children assumed to be representative of those receiving focussed mental health promotion interventions. We then bootstrapped this sample to

generate a mean and standard deviation to describe the uncertainty around the mean value of the CBCL in this sub-group of children.(4)

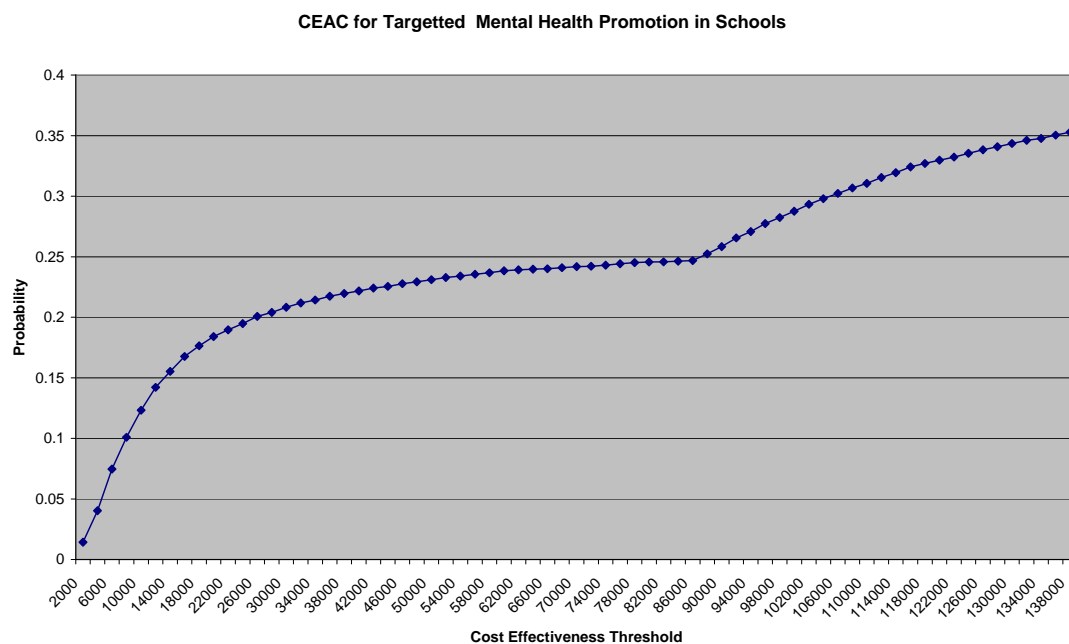
The distributions for all other parameters are described in the appendix to this chapter.

The results are presented as the expected ICER and as a Cost Effectiveness Acceptability Curve.(5)

Results

The expected incremental cost effectiveness of the focussed mental health promotion intervention taking account of resource use avoided in other sectors is £94, 727 per QALY.

The Cost Effectiveness Acceptability Curve is presented in Figure 1; below.



Discussion

The analysis presented above indicates that operating a targeted mental health promotion intervention in primary schools is highly unlikely to be cost effective in year.

This contrasts with the results of the analysis of parent training for conduct disorder, in which interventions of this type were found to be cost saving. One of the reasons for this is that the expected cost of providing the service is somewhat higher in schools than in the community. The second reason is that the distribution of children over the behavioural problems spectrum; as measured by the CBCL, is much milder in the primary school setting, than for children with conduct problems or disorder. The majority of the children in the simulated cohort had neither conduct problems nor conduct disorder and therefore were unlikely to be incurring additional costs in other parts of the public and voluntary services.

If the children targeted for mental health promotion in schools were more likely to have conduct problems and disorders than our analysis has assumed, this would increase the likelihood that targeted interventions were cost effective at conventional levels. Equally, if the behavioural benefits were sustained overtime, then the intervention would be likely to become cost effective in due course. It would take approximately a approximately 7 years of sustained benefit for the intervention to be cost saving, and by interpolation, around 4 years of sustained benefit for it to reach conventional levels of cost effectiveness.

It is important to emphasise the assumptions that have been necessary to construct the cost effectiveness analysis. We have had to assume that a moderate effect size on mental health outcome translates into a 2 level improvement in emotional and cognitive functioning in the children, as

measured in the Health Utilities Index 2 framework. Secondly, we have had to assume that the children who are targeted for mental health promotion intervention are well described by the upper half of the CBCL distribution. Finally, we have had to assume that the targeted mental health promotion interventions have a similar impact upon behavioural problems as the parent training programmes.

Perhaps the key finding of our evaluation is that whilst it is highly plausible that effective mental health promotion is beneficial to the children and society, the evidence to establish its actual value is simply not available. Well designed research including both trials and observational studies, considering a broad spectrum of casemix and outcomes are needed.

References:

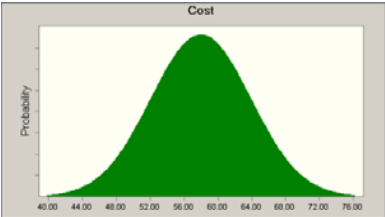
- (1) Sutcliffe P., McCabe C. Kaltenthaler, E. Effectiveness and cost effectiveness of parent training programmes in conduct disorder. A report from the NICE Decision Support Unit. University of Sheffield 2005.
- (2) Achenbach TM Manual for the child behaviour checklist 4-18; Burlington VT, University Associated in Psychiatry 1991
- (3) Dretzke J., Frew, E., Davenport, C., et al The effectiveness and cost-effectiveness of parent training/education programmes for the treatment of conduct disorder, including oppositional defiant disorder, in children. Birmingham, West Midlands Health Technology Assessment Collaboration, University of Birmingham April 2004
- (4) Chrystal Ball 7.2. Decisioneering Denver Colorado USA 2006
- (5) Van Hout BA, Al MJ, Gordon GS, Rutten FFH. Costs, effects and c/e-ratios alongside a clinical trial. Health Econ 1994; 3: 309–319.

Appendix 1: Parameter distributions for Cost effectiveness analysis of focussed interventions incorporating cost savings

Assumption: Cost

Normal distribution with parameters:

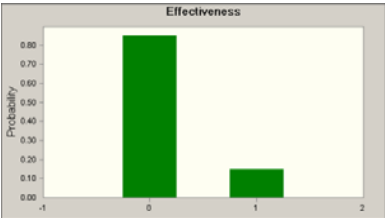
Mean 57.98
Std. Dev. 5.90



Assumption: Effectiveness

Yes-No distribution with parameters:

Probability of Yes(1) 0.15

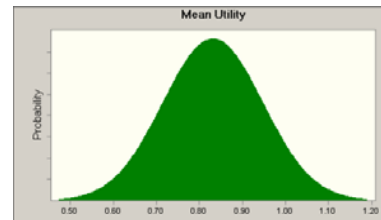


Assumption: Mean Utility

Normal distribution with parameters:

Mean 0.83

Std. Dev. 0.12

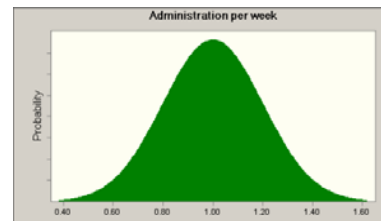


Assumption: Administration per week

Normal distribution with parameters:

Mean 1.00

Std. Dev. 0.20



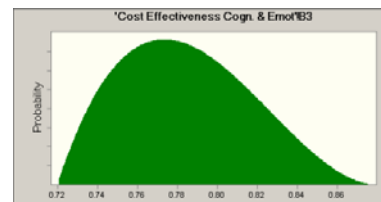
Assumption: B3

Beta distribution with parameters:

Minimum 0.72

Maximum 0.88

Alpha 2



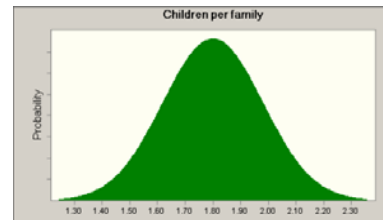
Beta

3

Assumption: Children per family

Normal distribution with parameters:

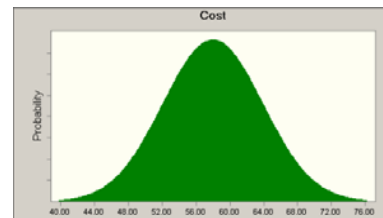
Mean 1.80
Std. Dev. 0.18



Assumption: Cost

Normal distribution with parameters:

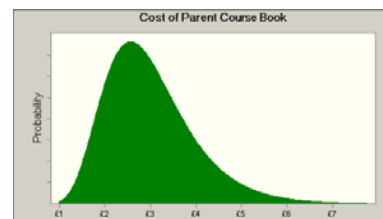
Mean 57.98
Std. Dev. 5.90



Assumption: Cost of Parent Course Book

Lognormal distribution with parameters:

Mean £3

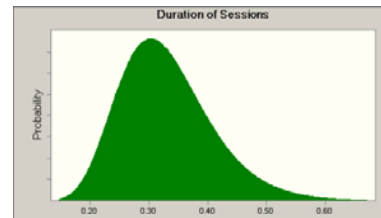


Std. Dev. £1

Assumption: Duration of Sessions

Lognormal distribution with parameters:

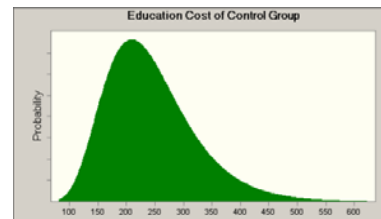
Mean 0.33
Std. Dev. 0.08



Assumption: Education Cost of Control Group

Lognormal distribution with parameters:

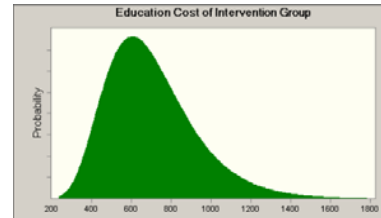
Mean 244
Std. Dev. 80



Assumption: Education Cost of Intervention Group

Lognormal distribution with parameters:

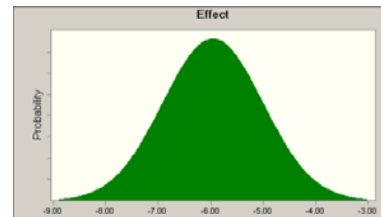
| | |
|-----------|-----|
| Mean | 704 |
| Std. Dev. | 229 |



Assumption: Effect

Normal distribution with parameters:

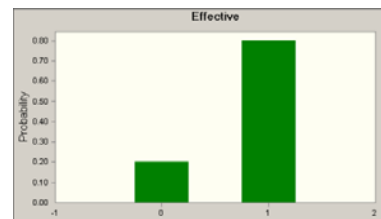
| | |
|-----------|-------|
| Mean | -5.96 |
| Std. Dev. | 0.95 |



Assumption: Effective

Yes-No distribution with parameters:

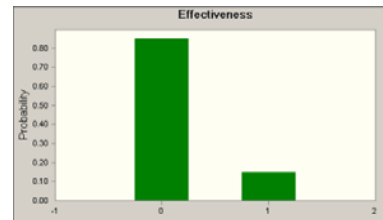
| | |
|-----------------------|-----|
| Probability of Yes(1) | 0.8 |
|-----------------------|-----|



Assumption: Effectiveness

Yes-No distribution with parameters:
Probability of Yes(1)

0.15



Assumption: Mean Utility

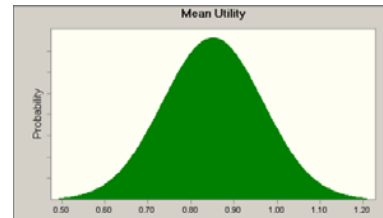
Normal distribution with parameters:

Mean

0.85

Std. Dev.

0.12

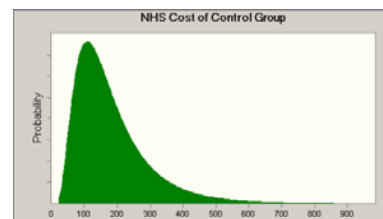


Assumption: NHS Cost of Control Group

Lognormal distribution with parameters:

Mean

184

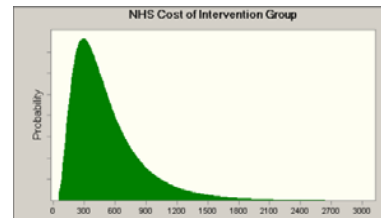


Std. Dev. 119

Assumption: NHS Cost of Intervention Group

Lognormal distribution with parameters:

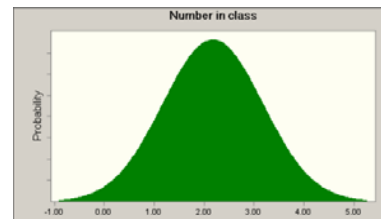
Mean 531
Std. Dev. 370



Assumption: Number in class

Normal distribution with parameters:

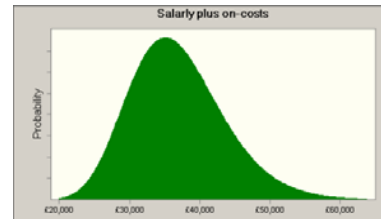
Mean 2.18
Std. Dev. 1.00



Assumption: Salary plus on-costs

Lognormal distribution with parameters:

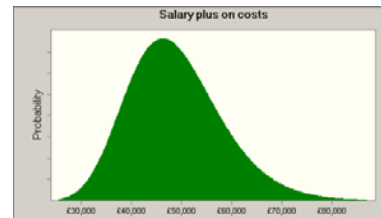
| | |
|-----------|---------|
| Mean | £36,906 |
| Std. Dev. | £6,800 |



Assumption: Salary plus on costs

Lognormal distribution with parameters:

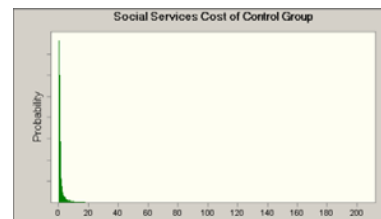
| | |
|-----------|---------|
| Mean | £48,933 |
| Std. Dev. | £9,500 |



Assumption: Social Services Cost of Control Group

Lognormal distribution with parameters:

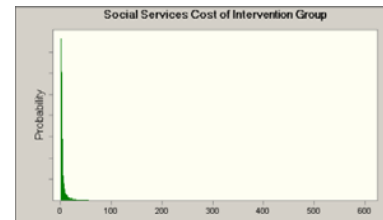
| | |
|-----------|----|
| Mean | 3 |
| Std. Dev. | 24 |



Assumption: Social Services Cost of Intervention Group

Lognormal distribution with parameters:

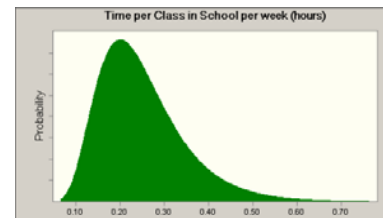
| | |
|-----------|----|
| Mean | 9 |
| Std. Dev. | 70 |



Assumption: Time per Class in School per week (hours)

Lognormal distribution with parameters:

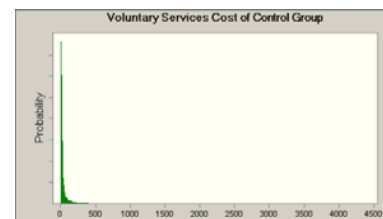
| | |
|-----------|------|
| Mean | 0.25 |
| Std. Dev. | 0.10 |



Assumption: Voluntary Services Cost of Control Group

Lognormal distribution with parameters:

| | |
|------|----|
| Mean | 66 |
|------|----|



| | |
|-----------|-----|
| Std. Dev. | 508 |
|-----------|-----|

Assumption: Voluntary Services Cost of Intervention Group

Lognormal distribution with parameters:

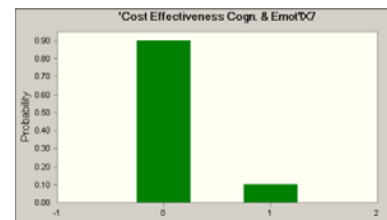
| | |
|-----------|------|
| Mean | 191 |
| Std. Dev. | 1461 |



Assumption: X7

Yes-No distribution with parameters:

| | |
|-----------------------|-----|
| Probability of Yes(1) | 0.1 |
|-----------------------|-----|



End of Assumptions