Socioeconomic inequalities in parent-reported and teacher-reported psychological well-being

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ABSTRACT

Objective To determine whether there are differences in the social gradient of parent-reported and teacher-reported child psychological well-being.

Design Secondary data analysis comparing ratings of child psychological well-being (Strengths and Difficulties Questionnaire, SDQ) in the UK Millennium Cohort Study at 7 years by socioeconomic circumstances (SEC). A number of measures of SEC were tested; results are reported for maternal education. From a sample of 13 168 singletons who participated at the age of 7 years, complete data were available for 8207 children.

Results There was a social gradient in SDQ scores reported by parents and teachers, with ‘borderline/abnormal’ scores more prevalent in children with lower-educated mothers. However, the gradient was more marked in parent report compared with teacher report, and discrepancies between parent and teacher reports were greatest for children from higher SECs.

Conclusions The social gradient in child psychological well-being, although present, was weaker in teacher report compared with parent report. This may be because children behave differently in school and home settings, or parents and teachers demonstrate reporting bias.

INTRODUCTION

The association between socioeconomic disadvantage and poor psychological well-being in young children is well established, but is largely based on parental report. Assessments from informants who see children in other settings may provide further insights. Primary school teachers, who spend long periods with pupils, watching them interact with peers and other adults, are the most frequently used additional informants in research. However, inequalities in psychological well-being, as rated by parents and teachers, have rarely been compared in the same child. Child psychological well-being was assessed using the Strengths and Difficulties Questionnaire (SDQ) which was completed by the main respondent (by computer) and the child’s teacher (by mail). We used the total difficulties score, which is the sum of four difficulties components (peer problems, conduct disorders, hyperactivity and emotional problems) and ranges from 0 to 40 (a higher score indicates more difficulties). Children were classified using recommended cut-offs as having ‘borderline/abnormal’ scores (>13 parent; >11 teacher). We ran sensitivity analyses with the continuous score.

METHOD

Subjects and design

We examined data from the Millennium Cohort Study (MCS), a longitudinal study of children born in the UK between 2000 and 2002 (http://www.cls.ioe.ac.uk/mcs). Surveys were carried out with the main respondent (97% were natural mothers). Thirteen thousand one hundred and sixty-eight singleton children at the age of 7 years took part in the survey in which the child’s primary school teacher was also invited to complete a survey. Data were obtained from the UK Data Archive, University of Essex in May 2012.
the survey design and child non-response, the teacher data are close to being missing at random. Nevertheless, we multiply imputed data as a sensitivity analysis. As expected, findings were very similar; therefore, complete case findings are presented.

We examined the mother’s highest educational qualification achieved by the time the child was 7 years of age, classified as: ‘degree’, ‘diploma’, ‘A levels’, ‘GCSE A*-C’, ‘GCSE D-G’ or ‘none’. Two hundred and thirty-six children were missing education data, either because the mother had not reported it or because she reported ‘other qualifications’ (excluded because it was not possible to determine the level of qualification). Additional measures of socioeconomic circumstances (SEC) were explored, representing different aspects of disadvantage: income poverty, lone parenthood, employment-based social class and housing tenure. Since a similar pattern of results was found across SECs, only those by maternal education are reported.

**Statistical analysis**

The working sample comprised 8207 children with SDQ reports and maternal education data. All analyses were conducted in Stata/SE 12 (Stata Corporation, Texas, USA) using ‘svy’ commands to allow for clustered sampling design and attrition up to the age of 7 years. Five thousand and forty-four teachers took part in the survey, providing SDQ scores for a mean 1.6 MCS children (modal value: 1). The clustering of children within teachers arose due to the sample design, and is therefore accounted for by the survey weights.

We estimated prevalence of ‘borderline/abnormal’ SDQ by maternal education. Risk ratios (RR) and 95% CI for ‘borderline/abnormal’ scores were estimated using Poisson regression for parent and teacher reports separately, according to maternal education. Next, we examined whether the social gradient in SDQ scores varied by informant, through testing for an informant-education interaction. As a sensitivity analysis, we repeated analyses with continuous total difficulties and borderline/abnormal cut-offs or mean scores (p>0.1).

RESULTS

In general, the prevalence of ‘borderline/abnormal’ total difficulty scores for both informants increased incrementally as maternal education decreased, with the exception of the diploma category, with highest risks of ‘borderline/abnormal’ scores among children whose mothers had no qualifications and lowest risks for those with degrees (table 1). A significant interaction between informant and education indicated that inequalities in ‘borderline/abnormal’ scores were greater when reported by a parent than a teacher. For example, compared with children whose mothers had no qualifications, those whose mothers had a degree were four times less likely to display ‘borderline/abnormal’ behaviour when rated by a parent (RR 0.3 (CI 0.2 to 0.3)), but only half as likely to have a ‘borderline/abnormal’ score when rated by a teacher (RR=0.4 (CI 0.4 to 0.5)). The pattern was similar for mean scores (data not shown). Informant differences were more apparent among children of more educated mothers: the prevalence of ‘borderline/abnormal’ behaviour in children whose mothers had no qualifications were similar for parent and teacher reports (24.2% and 25.5%, respectively); by contrast, prevalence differed in children whose mothers had a degree (6.0% and 11.1%).

Combinations of parent and teacher reports were then examined in a multinomial model, with children rated as ‘normal’ by parent and teacher as the baseline group. Children with more qualified mothers were less likely to be rated ‘borderline/abnormal’ by one or both informants than those whose mothers had no qualifications (table 2). The social gradient was strongest when a child was rated ‘borderline/abnormal’ by both informants or rated ‘normal’ by a teacher and ‘borderline/abnormal’ by a parent (figure 1); this latter finding might be expected given the stronger social gradient in parent-reported SDQ (table 1).

DISCUSSION

Previous research has identified a social gradient in young children’s psychological well-being when reported by parents. However, there has been scant research comparing socioeconomic inequality between informants. An analysis of the 1999 and 2004 British Child and Adolescent Mental Health Surveys indicated that parent-reported and teacher-reported SDQ scores (in 11-year-olds to 15-year-olds) were similarly related to socioeconomic characteristics, and more strongly than for reports by young people themselves. Our findings indicate that teachers’ assessment of young children’s psychological well-being has a weaker, but still significant, relationship with children’s SECs. These differences may be attributable to a number.

### Table 1

Weighted percentages (N) and risk ratios (CIs) for parent-reported and teacher-reported ‘borderline/abnormal’ Strengths and Difficulties Questionnaire (SDQ) scores, according to maternal education

<table>
<thead>
<tr>
<th></th>
<th>% (N) All</th>
<th>% (N) ‘borderline/abnormal’ score</th>
<th>RRs (CIs) ‘borderline/abnormal’ score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Parent rated</td>
<td>Teacher rated</td>
</tr>
<tr>
<td>None</td>
<td>16.6 (1687)</td>
<td>24.2 (260)</td>
<td>25.5 (295)</td>
</tr>
<tr>
<td>GCSE D-G</td>
<td>10.1 (856)</td>
<td>20.7 (160)</td>
<td>24.3 (193)</td>
</tr>
<tr>
<td>GCSE A*-C</td>
<td>9.9 (882)</td>
<td>12.9 (346)</td>
<td>16.2 (453)</td>
</tr>
<tr>
<td>A Levels</td>
<td>36.0 (2833)</td>
<td>9.1 (79)</td>
<td>12.9 (107)</td>
</tr>
<tr>
<td>Diploma</td>
<td>11.0 (828)</td>
<td>10.1 (80)</td>
<td>14.7 (128)</td>
</tr>
<tr>
<td>Degree</td>
<td>14.3 (1121)</td>
<td>6.0 (91)</td>
<td>11.1 (117)</td>
</tr>
<tr>
<td>Total</td>
<td>100 (8207)</td>
<td>13.8 (1073)</td>
<td>17.2 (1410)</td>
</tr>
</tbody>
</table>

RR, risk ratio.
of factors related to SECs. Reporting bias could account for the lower prevalence of ‘borderline/abnormal’ behaviour in parent reports compared with teacher reports in children from more advantaged backgrounds. For example, better educated mothers may be more inclined to report their child’s behaviour optimistically; or teachers may adjust their expectations for, or assessment of, behaviour according to their knowledge of the child’s background. On the other hand, advantaged children may be more likely to alter their behaviour according to setting, with for example, less stringent boundaries and rules at home than at school. However, we were not able to examine these hypotheses in this dataset.

To our knowledge, this is the first study to compare the social gradient in parent and teacher reports of young children's SDQ scores in the UK, and we do this in a large, representative cohort. Similar associations were also observed for alternative measures of SECs, and when analyses were repeated using a continuous score. SDQ is a validated and reliable measure when reported by parents and teachers. The correlation between parent and teacher SDQ scores was $r=0.5$ ($p<0.001$), which is similar or greater to that reported in other studies. We used response weights to account for attrition, however, this cannot account for item non-response. A large proportion of children did not have teacher-reported SDQ. However, analyses from published technical data and our sensitivity analysis using multiple imputation both indicate that bias resulting from missing data is negligible.

A social gradient in SDQ scores was observed for both informants, but was stronger when reported by a parent; future studies should consider this when examining and interpreting inequalities in child psychological well-being using a single category of informant. The aim of this short report was to describe, for the first time, differences in the socioeconomic gradient in parent-reported and teacher-reported SDQ scores in a nationally representative sample. Future research might examine the mechanisms behind these differences, which could include

<table>
<thead>
<tr>
<th>Parent SDQ Score</th>
<th>Teacher SDQ Score</th>
<th>'Normal'</th>
<th>'Borderline/abnormal'</th>
</tr>
</thead>
<tbody>
<tr>
<td>'Normal'</td>
<td>'Normal'</td>
<td>76.4 (6448)</td>
<td>5.8 (488)</td>
</tr>
<tr>
<td>'Borderline/abnormal'</td>
<td>'Normal'</td>
<td>10.9 (922)</td>
<td>10.7 (119)</td>
</tr>
<tr>
<td>'Borderline/abnormal'</td>
<td>'Borderline/abnormal'</td>
<td>6.9 (585)</td>
<td>5.9 (156)</td>
</tr>
</tbody>
</table>

Weighted % (N) by maternal education

- None: 61.0 (685) 14.8 (176) 13.6 (141) 10.7 (119)
- GCSE D-G: 65.2 (556) 14.1 (112) 10.5 (79) 10.2 (81)
- GCSE A*-C: 76.8 (2190) 10.3 (297) 7.0 (190) 10.2 (156)
- A Levels: 82.4 (731) 8.5 (72) 4.8 (44) 4.3 (35)
- Diploma: 79.1 (882) 10.8 (94) 6.2 (46) 3.9 (34)
- Degree: 86.0 (1460) 8.1 (136) 3.0 (50) 3.0 (41)

RRR (95% CI) by maternal education

- None: – – – –
- GCSE D-G: 0.9 (0.7 to 1.2) 0.7 (0.5 to 1.1) 0.9 (0.6 to 1.3)
- GCSE A*-C: 0.6 (0.4 to 0.7) 0.4 (0.3 to 0.6) 0.4 (0.3 to 0.6)
- A Levels: 0.4 (0.3 to 0.6) 0.3 (0.2 to 0.4) 0.3 (0.2 to 0.5)
- Diploma: 0.6 (0.4 to 0.8) 0.4 (0.2 to 0.6) 0.3 (0.2 to 0.4)
- Degree: 0.4 (0.3 to 0.5) 0.2 (0.1 to 0.2) 0.2 (0.1 to 0.3)

**Figure 1** Relative risk ratios (see table 2 for the CIs of relative risk ratios) for combined parent-reported and teacher-reported Strengths and Difficulties Questionnaire scores according to maternal education.

school and teacher characteristics, parental mental health and parenting style. Finally, it will be informative to examine the extent to which parent and teacher scores predict inequalities in child psychological outcomes at later ages.

Acknowledgements
We would like to thank all the Millennium Cohort families for their participation, and the director of the Millennium Cohort Study and colleagues in the management team at the Centre for Longitudinal Studies, Institute of Education, University of London. We would also like to thank the MCS user group at the Institute of Child Health: Catherine Law, Carol Dezateux, Lucy Griffiths, Tim Cole, Philippa Cumberland, Jamie Fagg, Francesco Sera, Nadia Micali, Helen Bedford, Emeline Rougeaux and Marco Geraci.

Contributors
All authors contributed to the study conception, design and analysis. HL drafted the paper. All authors revised the paper. All authors have seen and approved the final version.

Funding
The Population, Policy and Practice Programme was formed in 2014, incorporating the activities of the Centre for Paediatric Epidemiology and Biostatistics (CPEB). The CPEB was supported in part by the Medical Research Council in its capacity as the MRC Centre of Epidemiology for Child Health (award G0400546). Research at the UCL Institute of Child Health and Great Ormond Street Hospital for Children receives a proportion of the funding from the Department of Health’s National Institute for Health Research Biomedical Research Centres funding scheme. AP is funded by a Medical Research Council Population Health Scientist fellowship. All researchers were independent of the funders and the funders played no part in the study design, analysis or interpretation of the data, writing of the report or the decision to submit for publication.

Competing interests
All authors have completed the ICMJE uniform disclosure form at http://www.icmje.org/coi_disclosure.pdf and declare: AP had financial support from the Medical Research Council for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous 3 years; no other relationships or activities that could appear to have influenced the submitted work.

Provenance and peer review
Not commissioned; externally peer reviewed.

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REFERENCES
3 Goodman A, Rowe R, Gan Y. SDQ: information for researchers and professionals about the Strengths and Difficulties questionnaires Youth in Mind, 2010.