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An investigation of changes in Welsh children's mental health between 2007/2008 and
2012/2013.

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Abstract

Improving children's mental well-being is a recognised public health priority, but evidence on recent trends is lacking. This study updates evidence on differences in child mental health since 2008 by comparing two nationally representative cohorts in Wales, UK. Parents of 4-12 year old children completed the Strength and Difficulties Questionnaire (SDQ). No significant differences were seen for younger girls between 2007/2008 and 2012/2013. There was a decrease in conduct, hyperactivity and total difficulties symptom scores and an increase in prosocial scores for boys' and older girls. These findings suggest that rates of child mental health problems are stable or falling.

Key words: children, mental health, SDQ, survey.

An investigation of recent changes in child mental health

The global burden of disease linked to indices of child psychopathology is starting to be revealed, with 3.4% of the total burden of disability from mental and substance use disorders attributed to childhood behavioural problems such as ADHD and conduct disorder [1]. Coupled with research documenting the psychological and financial implications of childhood psychiatric conditions for individuals, their families and society, this underscores the importance of retaining a focus on trends and change in levels of mental health [2].

There has been concern about a long-term increase in child and adolescent mental health problems over the second half of the 20th Century [2]. Recent evidence suggests that levels of emotional and behavioural problems among children levelled off or reduced up to 2008 [2-7]. Although there is some evidence to suggest limited change in the early adolescent age group, with perhaps the exception of emotional problems in adolescent girls [4], we know less about young children in the period since then, which has included a global financial crisis. Our study provides a profile of potential changes in child mental health problems between two time-points over a five-year period (2007/8 to 2012/3), assessing mean levels of problems and population variance.

Method

This study used data from the Welsh Health Survey, a UK-based nationally representative cross-sectional Welsh sample of private households. Up to two children aged 4-12 years from each household were randomly selected to participate in the survey [8]. Clustered sampling was used to ensure representative sampling across local authorities in Wales and number of children per household. Information about the survey can be found at <http://gov.wales/docs/statistics/2015/150707-welsh-health-survey-quality-report-en.pdf>.

Ethical approval was obtained from the University School of Psychology Research and Ethics Committee.

Parents completed the 25-item Strengths and Difficulties Questionnaire (SDQ) a well-validated screen of their child's mental health symptoms comprising five subscales (Emotional, Conduct, Hyperactivity, Peer and Prosocial behaviour; range 1-5) [9]. Population means for child mental health have been shown to be a valid method for discerning group differences in mental health [10]. The first four subscales are summed to produce a Total Difficulties score (range 4-20). Published norms and standardised cut-offs were used to identify children who scored in the abnormal range for each subscale (see www.sdq.info.com for further details). This classification has been shown to have strong sensitivity for identifying individuals with clinically significant psychiatric disorders [11]. Demographic information on family size, housing tenure and social economic status was also used. To investigate the role of age, participants were stratified into two groups aged 4-7yrs (equivalent to UK infant school/ key stage 1) and 7-12yrs (equivalent to UK junior school/ key stage 2).

To investigate changes in child mental health over time, SDQ scores in the 2007 and 2008 surveys (n=2904, 77% response rate) were compared to SDQ scores for children in the 2012 and 2013 surveys (n=3262, 77% response rate). T-tests compared SDQ scores between the two time points separately for males and females with *F* and Cohen's *d*' effect size calculated [12]. Analyses of co-variance were used to address possible changes in population variance between time points. Sex-by-cohort interactions tested whether or not observed cross-cohort change differed by sex. Multivariate analyses were conducted for total SDQ scores taking into account changes in demographic variables (family size, Social economic status, housing tenure and child age). Separate analyses for each age group were also

conducted. Finally, chi-square analyses compared the proportion of children classified in the abnormal range. Analyses were undertaken in STATA version 13 [13]. The survey command and sample-specific weights accounted for clustered sampling.

Results

Demographic differences between cohorts: The two cohorts did not differ in terms of child gender or family size, but children in 2012/2013 compared to children in 2007/2008 were slightly older (mean=8.14, $sd= 2.56$ vs. mean= 7.94, $sd= 2.58$, $p=0.002$), less likely to live in owner-occupied housing (64.5% vs. 70.2% respectively; $\chi^2(1)=24.36$, $p<0.001$), or to have parents in managerial or professional occupations (35.6% vs. 38.4%, $\chi^2(3) = 10.71$, $p=0.01$).

Cross-cohort comparisons in child mental health symptoms: No significant differences were seen in SDQ scores for girls between 2007/2008 and 2012/2013 (Table 1). For boys, there was a significant decrease in conduct, hyperactivity and total difficulties scores and an increase in prosocial scores (Table 1). Sex-by-cohort comparisons indicated greater decreases across time in emotional, conduct, hyperactivity and total problem scores for boys than girls (all $p<0.05$). For boys, Cohen's d' effect sizes ranged from 0.10-0.15 (Table 1). Multivariate analyses indicated that cohort differences in total SDQ scores for boys remained when controlling for demographic variables (for cohort: $B= -0.94$, 95%CI: -1.47 - 0.42, $p<0.001$; Cohen's $d' = 0.14$). Analyses by age showed the same pattern of results for younger (4-7yrs) and older (8-11yrs) boys. For girls, no significant differences were found between 2007/2008 and 2012/2013 for younger girls. However, for older girls there was a significant decrease in conduct, hyperactivity and total difficulty scores and an increase in prosocial scores similar to that seen in boys.

TABLE 1

Population variance decreased for conduct, hyperactivity, peer and total problems scores for boys (all $p < 0.05$) and for prosocial behaviour for girls ($p = 0.01$).

Significantly fewer boys were in the abnormal range for total difficulties in 2012/2013 than in 2007/2008 (8.3% vs. 11.1%; $\chi^2 = 6.48(1)$, $p = 0.01$), conduct problems (10.8% vs. 12.8%, $\chi^2 = 3.98(1)$, $p = 0.046$) and peer problems (10.6% vs. 12.9%, $\chi^2 = (1)3.92$, $p = 0.048$). No other changes in proportion of individuals in the abnormal range were found.

Discussion

Findings point to a modest improvement in the mental health symptoms of boys' and older girls' since 2008, though the mental health of younger girls showed no change. The findings add to an emerging literature suggesting a small decrease in child mental health symptoms in the last decade, particularly for boys [3-4].

In addition to mean reductions in symptom scores, we also found reduced variance across several subscales and fewer boys scoring above clinical cut-offs at the later survey point. Taken together, it does not appear that the reduction in population mean symptom scores has masked an increase in the subgroup of children with clinical-level symptom scores at the extremes of the distribution. Changes over time were independent of changes in measured demographics.

This study spans the period of the global financial crisis. Our findings that child mental health problems have either not changed or improved since 2007/8, suggests that such global factors have not, yet, influenced child wellbeing. Whilst direct associations between family financial position and child mental health are beyond the scope of this study, it is worth noting that the proportion of families owning their own home did fall over this time, which was not negatively reflected in child mental health.

Although the samples are large, nationally representative and randomly selected, a limitation is the restriction to children living in private households registered in the UK. We were also reliant on parent ratings of symptoms. It is important to recognise that the study provides a broad-brush picture of children's mental health but does not provide data on trends in clinically ascertained psychiatric disorders. It was also not possible to test whether change over this period differed between regions of the UK. Finally, the study assessed symptoms, not associated functional impairment. Prior evidence of trends between 1999 and 2008 demonstrated that though children on average experienced fewer core symptoms, child distress and impairment at home and at school became more pronounced for those who did experience symptoms [3]. A recent report has also highlighted substantial increases in help seeking from children and young people [14].

This study provides an estimate of the difference in child mental health symptom scores during the first and second decades of this century, revealing that at least for boys and older girls, symptoms have decreased slightly. The results extend similar downward trends reported since the turn of the Century in children in the UK [3], but perhaps differ to some extent from recent adolescent studies which have suggested an increase in mental health problems [4]. Testing reasons for changes in child mental health was beyond the scope of this analysis, but previous studies have highlighted the roles of changing family, school and broader social contexts [2]. Whilst we were able to track changes since 2007 to 2013, it is possible that the consequences of financial hardship had not yet filtered through to exert measurable effects on factors proximal to child mental health. Therefore, it will be necessary to repeat these analyses in the years to come. This highlights the importance of repeatedly collecting routine data on child mental health through Government initiatives such as the Welsh Health Survey to obtain insight into the wellbeing of children over time and to plan accordingly.

Whilst rates of mental health problems, including those scoring above the clinical cut-offs have not increased and have, indeed, decreased in boys, this is not necessarily reflected in the demands on clinical services [15]. Future research should investigate the difference between change in mental health over time and clinical demand.

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Table 1: Parent SDQ scores by cohort and gender.

	2007/2008	2012/2013	Cohen's <i>d'</i>	Model 1: Unadjusted		Model 2: Adjusted*	
	Mean (sd)	Mean(sd)		B (95% CI)	<i>p</i>	B (95% CI)	<i>p</i>
Total difficulties score							
Male	8.58 (5.98)	7.74 (6.01)	0.14	-0.84 (-1.34, -0.34)	0.001	-0.94 (-1.47, -0.42)	<0.001
Female	6.90 (5.30)	7.07 (5.67)	0.03	0.17 (-0.33, 0.67)	0.50		
Emotional score							
Male	1.61 (1.89)	1.46 (1.94)	0.08	-0.15 (-0.31, 0.007)	0.061		
Female	1.71 (1.83)	1.85 (2.02)	0.07	0.14 (-0.03, 0.31)	0.11		
Conduct score							
Male	1.71 (1.71)	1.46 (1.66)	0.15	-0.25 (-0.39, -0.11)	0.001	-0.29 (-0.43, -0.14)	<0.001
Female	1.32 (1.48)	1.25 (1.44)	0.05	-0.07 (-0.19, 0.31)	0.28		
Hyperactivity score							
Male	3.87 (2.60)	3.55 (2.64)	0.12	-0.32 (-0.54, -0.11)	0.003	-0.36 (-0.58, -0.15)	0.001
Female	2.78 (2.33)	2.82 (2.40)	0.02	0.05 (-0.16, 0.25)	0.66		
Peer score							
Male	1.46 (1.94)	1.35 (1.79)	0.06	-0.11 (-0.26, 0.037)	0.14		
Female	1.17 (1.53)	1.20 (1.57)	0.02	0.03 (-0.11, 0.16)	0.70		
Prosocial score							
Male	8.09 (1.93)	8.29 (2.00)	0.10	0.20 (0.04, 0.37)	0.016	0.27 (0.11, 0.43)	0.001
Female	8.69 (1.70)	8.80 (1.65)	0.07	0.11 (-0.05, 0.26)	0.18		

Note: * Adjusted for family size, Social economic status, housing tenure and child age. Analyses were undertaken in STATA version 13.¹⁰ Survey command and sample-specific weights accounted for clustered sampling.