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Psychiatric diagnoses and behaviour problems from childhood to early adolescence in young people with severe intellectual disabilities

OLIVER CHADWICK*, YVETTE KUSEL, MARION CUDDY AND ERIC TAYLOR

Institute of Psychiatry, King's College London, UK

ABSTRACT

Background. While general population studies indicate an increase in the rate of psychiatric disorder in adolescence, little is known about the course of mental health and behaviour problems between childhood and adolescence in young people with severe intellectual disabilities.

Method. From a sample of 111 children with severe intellectual disability who had been identified from the registers of six special schools at 4–11 years of age, 82 were traced and reassessed 5 years later at the age of 11–17 years. Behaviour problems were assessed by means of parental interviews conducted in the family home and parent and teacher questionnaires. Parental reports of psychiatric diagnoses were checked against health records.

Results. With most behaviour problems, including aggression, destructive behaviour and self-injury, there was little difference in rates between the two assessment occasions. However, in spite of this overall pattern of stability, the rates of some behaviour problems, including overactivity, showed significant reductions between childhood and early adolescence. Persistence rates for most behaviour problems appeared comparable to those reported for similar behaviours in general population studies of children. There was no significant difference in the proportion of cases with psychiatric diagnoses between the two assessment occasions, although brief psychotic episodes emerged in three cases in adolescence.

Conclusions. The findings suggest that the prevalence of mental health and behavioural problems in young people with severe learning disabilities remains relatively stable between childhood and adolescence, although some specific behaviour problems diminish. However, a small minority of children may develop severe psychiatric disorders in adolescence.

INTRODUCTION

Psychiatric disorders and behaviour problems are relatively common in children with intellectual disabilities (ID) (Dykens, 2000), with most recent prevalence studies indicating rates of psychiatric disorder of around 40% (Einfeld & Tonge, 1996*a*, *b*; Stromme & Diseth, 2000; Emerson, 2003). However, little is known about their course between childhood and adolescence.

* Address for correspondence: Dr Oliver Chadwick, Department of Psychology, Box 77, Institute of Psychiatry, De Crespigny Park, London SE5 8AF, UK.
(Email: o.chadwick@iop.kcl.ac.uk)

Epidemiological studies of children of normal intellectual ability indicate an increase in rates of psychiatric disorder during adolescence (Rutter *et al.* 1976), primarily due to the increased risk of depression, particularly among girls, the substantial increase in delinquency and substance abuse rates and the characteristically adolescent onset of some less common disorders such as anorexia nervosa and schizophrenia (Rutter, 1979, 1990). There is good reason to believe that both biological and environmental risk factors for these disorders apply as much to young people with severe ID as to those without. For example, it may be expected that both the

hormonal changes that take place at puberty and the experience of significant personal loss are risk factors for depression in this group in the same way as in intellectually able young people. However, it is also likely that some of the handicaps associated with severe ID may impede the expression of some disorders or attenuate the impact of these risk factors.

This may happen in several ways. First, the limited communication skills of many children with severe ID may hamper attempts to assess their mental state. This may result in difficulties in identifying emotional disorders such as depression as well as some of the features of schizophrenia such as delusions and hallucinations. As a result, these disorders may go unrecognized. Second, the sensori-motor handicaps sometimes associated with severe ID may impede the expression of some behaviour disorders. Children who cannot walk are unlikely to be diagnosed with hyperactivity. Third, young people with severe ID may lack the personal and social skills needed to carry out such delinquent acts as school truancy, shoplifting or the purchase of illicit drugs. Fourth, because they often lack these and other daily living skills, they tend to be supervised by their carers for a greater proportion of their waking lives than their non-disabled peers. Consequently, they may also have less opportunity to engage in such acts. Finally, the cognitive limitations of young people with severe ID might themselves provide a degree of protection against the likelihood of depression, if not other disorders. It has been suggested that one of the reasons for the rarity of depression in very young children of normal intelligence is because they have not yet developed the mental capacity to experience some its cognitive features, such as hopelessness about the future (Rutter, 1990). Children and adolescents with severe ID often have mental ages in the pre-school range. To the extent that the development of the capacity to form ideations and beliefs of this kind plays a causal role in the increased risk of depression in adolescence, this may militate against the persistence of low mood states and the development of depression in adolescents with severe ID.

The few studies that have examined the issue, both cross-sectional (e.g. Gath & Gumley, 1986; Quine, 1986; Quine & Pahl, 1992; Einfeld & Tonge, 1996*a*, *b*; Cormack *et al.* 2000) and longitudinal (Quine & Pahl, 1989, 1992; Richardson & Koller, 1996; Tonge & Einfeld, 2000, 2003; McCarthy & Boyd, 2001), suggest a slight decrease in the likelihood of mental health and behaviour problems between childhood and adolescence. For example, Richardson & Koller (1996) followed a population-based sample of 192 children with ID who had been identified and studied at 8–10 years of age (Birch *et al.* 1970), and reassessed them at 22 years of age. They found a slight reduction in rates of parent-reported behaviour disturbance between childhood (39%) and early adulthood (33%) among those with an IQ of less than 50, although it should be noted that the presence of behaviour disturbance during childhood was based mainly on retrospective recall at follow-up at least 6 years later. More recently, Tonge & Einfeld (2000, 2003) used the Developmental Behaviour Checklist (DBC) to re-examine a population-based sample of 584 children aged 3–19 years with ID at 4 and then 9 years later. They also found a slight, statistically non-significant, reduction (from 43% to 39% to 37%) in the proportion with DBC scores indicative of psychiatric disorder in their total sample of children which included those with mild, as well as severe, ID.

Even less is known about the persistence of mental health problems in children with severe ID, although the few studies that have been conducted suggest, as with adults (cf. Emerson *et al.* 1996, 2001; Kiernan & Alborz, 1996; Kiernan *et al.* 1997) relatively high levels of persistence. For example, Richardson & Koller (1996) found that 65% of those with behaviour disturbances in childhood continued to show them in early adulthood while Turner & Sloper (1996) found persistence rates in excess of 80% for many behaviour problems in their 5-year follow-up of the Manchester Down Syndrome Cohort. However, there is also some evidence that persistence rates may vary according to the type of psychiatric or behaviour disorder under consideration. Reid (1980) followed a clinical sample of children with ID for nearly 5 years and concluded that the persistence of different types of psychiatric disorder resembled that found in general population samples, with conduct disorders showing much greater persistence than emotional disorders.

These few studies do not provide a sound basis for conclusions about the outcome of mental health and behaviour problems in children with severe ID. The aims of the present study were, therefore, to examine their prevalence, course and persistence.

METHOD

The study is a 5-year follow-up of a community sample of young people with severe ID who were first identified and studied in 1996–1997 when they were 4–11 years old and who were traced and reassessed in 2002–2003 when they were 11–17 years old.

Ethical approval for both the initial and follow-up studies was obtained from the Ethical Committee (Research) of the Institute of Psychiatry.

Initial study

Full details of the initial study are given in Chadwick *et al*. (2000). In brief, parents of children whose names appeared on the registers of four (of the five) schools for children with severe learning difficulties (LD) and two (of the three) schools for children with mild LD in three adjacent inner London boroughs were interviewed using a shortened version of the Vineland Scales to assess the child's severity of ID. Children with an overall standard score of less than 50 were included in the sample ($n = 114$).

Follow-up study

Sample

A total of 111 (97·4%) of the 114 children were of secondary school age at the time of the follow-up study and were targeted for reassessment. Families who had moved since the initial study were traced via the child's previous school and/or local education authority.

Three children had died during the 5-year interval since the initial study. Letters were sent to the parents/carers of the remaining 108 children inviting their participation. Thirteen declined to take part and 13 others failed to respond to at least three letters inviting their participation. In total, the parents/carers of 82 children (75·9% of the survivors) were interviewed at follow-up.

Procedure

In the case of 74 children who were living at home, it was usually the child's mother who was interviewed. The remaining eight children attended residential schools or lived in children's homes most of the time, and for them the teacher or residential care-worker who knew the child best was interviewed wherever possible. The interviewing was roughly equally divided between two PhD-level research psychologists, and was carried out 'blind' to the ratings from the initial study. The interviews usually took place in the family home (or residential school or children's home), usually lasted 3–5 hours and were usually conducted over the course of two visits. Parents were offered £25 as a token of appreciation of their time. Although resources did not allow the child to be systematically examined or observed, the interviewer briefly met 24 (29·3%) of them while visiting the child's home.

Measures

Behaviour problems

(*a*) As at the time of the initial assessment, the Behaviour Problems section of the Disability Assessment Schedule (DAS; Holmes *et al*. 1982; Wing, 1989) interview schedule was used to collect information on the presence and severity of the child's behaviour problems. It includes questions about aggressive and destructive behaviours, overactivity, self-injury, screaming or making other disturbing noises, sleeping difficulties, difficult or objectionable personal habits, sexually inappropriate behaviour and simple stereotypies. Each behaviour problem was rated in terms of the severity of management difficulties it posed (rated on a 0–2 scale). An 'overall behaviour problem score' was obtained by aggregating these ratings across all nine individual behaviours listed above.

(*b*) Parents and teachers were again asked to complete the 58-item Aberrant Behavior Checklist (ABC; Marshburn & Aman, 1992). Parent questionnaires were obtained for 56 (68·3%) of the sample and teacher questionnaires for 59 (71·9%). However, as teacher questionnaires had not been used in one of the boroughs for the initial study, comparisons between initial and follow-up teacher ABC scores were limited to 30 cases.

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Psychiatric diagnosis

Resources did not allow the direct assessment of the child's psychiatric state, but parents were asked whether the child had ever been diagnosed with a psychiatric disorder, and if so, what type of disorder, by whom and where. Where parental reports indicated that a diagnosis had been made, details were checked against family doctor records. Only diagnoses made by appropriately qualified staff (consultant psychiatrists or consultant paediatricians working in the field of neurodevelopmental disability) were accepted as valid.

Severity of ID and handicaps

The Vineland Screener, a shortened version of the Vineland Adaptive Behavior Scales (Sparrow *et al*. 1984) interview assessment, was re-administered at follow-up to provide a quantitative measure of the child's skills and level of development in communication, daily living skills and social behaviour. A mean age equivalent score on these three measures was used to provide an overall measure of severity of ID. Additional information on the child's disabilities and handicaps was obtained from the relevant sections of the DAS (Holmes *et al*. 1982; Wing, 1989).

Puberty status

Parents/carers were shown copies of the drawings representing Tanner stages I–V of breast and genital/pubic hair development from Morris & Udry (1980) and asked to point to the one that best depicted their child's current stage of physical maturation. Children were considered to be pubertal if they were reported to have reached stages IV or V of genital/pubic hair development.

Inter-rater reliability

The section of the DAS interview covering the child's handicaps, skills and behaviour was routinely audio-taped, and 15 of these recordings were rated independently by the second interviewer. Intra-class correlation coefficients were good or very good for DAS handicaps (range 0·87–1·00), Vineland domain sums of scores (range 0·98–0·99) and DAS behaviour problems (range 0·72–1·00).

Statistical analysis of the data

Differences between initial and follow-up ratings of the severity of individual behaviour problems were examined using Wilcoxon signed rank tests, and differences on other ordinal variables using χ^2 tests for linear associations, for both of which exact two-sided significance levels were calculated where possible. Overall behaviour problem scores approximated to normal distributions and differences between initial and follow-up scores were examined using paired *t* tests.

In order to take account of the number of comparisons made, the risk of Type I errors was controlled using false discovery rate methods (Keselman *et al*. 2002) as calculated using the *multproc* package in STATA (Newson *et al*. 2001). Effect sizes for behaviour problem scores were calculated as the difference in mean scores divided by the standard deviation for the whole sample. Effect sizes for dichotomous variables were estimated from the product of the log odds ratio and $\sqrt{3}/\pi$ (Haddock *et al*. 1998).

RESULTS

The follow-up sample

Demographic characteristics

The mean age of the sample at follow-up was 13:06 years (range 11:00–17:04 years) compared with a mean of 8:02 years (range 4:06–11:11 years) at initial assessment: the mean interval between the initial and follow-up assessments was therefore 5:04 years (range 4:05–6:10 years). Forty-six of the 82 cases were boys (56·1%) and 36 were girls (43·9%). Six (7·3%) were twins, including two who were both part of the follow-up sample. All but three (96·3%) of the sample were born in the UK. Forty-one children (50·0%) came from ethnic minority backgrounds.

'*Cause*' *of ID*

A specific condition had been identified for 61·0% of the sample [81·7%, if cases of autistic spectrum disorder (ASD) are included]. The commonest of these were cerebral palsy (20·7%) and various rare syndromes (18·3%; two cases of fragile X, two of Noonan syndrome and one each of Angelman, Jacobsen, Joubert, Lenz–Microphthalmia, Neurofibromatosis, Nori,

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Smith–Lemli–Opitz, Prader–Willi, Smith Magenis, Williams, and 5-p syndromes). Down syndrome comprised 11·0% of the sample and there were three cases for which some other chromosomal anomaly had been detected (affecting chromosomes 1, 6 and 22) although no specific syndrome had been identified. In total, 6·1% of the cases were due to post-natal causes. Finally, one child had Lennox–Gastaut syndrome, although it was unclear whether her ID was attributable to her epilepsy syndrome.

Handicaps and disabilities

Full details of the children's skills and disabilities at initial and follow-up assessments are given elsewhere (Chadwick *et al.*, unpublished observations), but in brief, at the time of follow-up, five children were blind or nearly blind and approximately 21% needed help with walking on flat ground. Eighteen per cent had had an epileptic seizure during the previous month or were taking anticonvulsants at the time of the interview. Although 41% could feed themselves, only 11% could wash themselves, 11% could dress themselves without help and 18% could manage all of their toileting needs without help. Approximately 10% were reported to have no effective means of communication and communication was restricted to the use of a few sounds or concrete gestures in a further 13%.

On the Vineland Screener, 84% of the sample had an age equivalent level of functioning of between 1:00 year and 3:11 years, with the remaining 16% divided approximately equally between those functioning above or below this range.

Domestic circumstances

Whereas at the time of the initial study the entire sample had been living in families, by the time of follow-up 5 years later, six (7·3%) were in full-time institutional care (in local authority children's homes or 52-week-per-year residential schools). Six other children (7·3%) attended residential schools as weekly or term-time boarders.

Of the 76 children who were living in family situations at least part of the time, 53·6% were looked after by two biological parents, 35·5% by single parents, 7·9% by their mother and her partner, 2·6% by foster parents and one (1·3%) by an older sibling. A total of 55·7% lived in households in which the main source of income was earned income and 44·3% in households in which the main source was Department of Social Security benefits and allowances.

Representativeness of the follow-up sample

In order to examine to what extent the sample that participated at follow-up differed from those that did not, the two groups were compared on 12 key child and family measures from the initial assessment (e.g. child's severity of ID and behaviour problems and family social disadvantage score). There were no significant differences on any of them, but parents of children with a diagnosed psychiatric disorder were somewhat more likely to participate at follow-up than those that did not (23·2% *v.* 7·7%, effect size = 0·71). However, on the other 11 comparisons, the effect sizes of the differences between participants and non-participants were 0·04–0·42, i.e. between 'small' and 'medium' (Cohen, 1992).

Behaviour problems

As shown in Table 1, there was no significant difference in overall DAS behaviour problem scores or in rates of many individual behaviour problems between the initial and follow-up assessments. However, there was a statistically significant reduction in the severity of overactivity. The rate of sleeping difficulties also fell and the rate of sexually inappropriate behaviour increased, although in both cases, given the number of comparisons made, the differences fell short of statistical significance.

Table 2 shows mean factor scores for parent and teacher ABCs initially and at follow-up. All factor scores on the parent ABC decreased somewhat between childhood and adolescence, and the reductions in irritability, stereotypies and hyperactivity factors were statistically significant. By contrast, none of the differences on the teacher scale was statistically significant.

Persistence of behaviour problems

Fig. 1 shows the proportion of cases that continued to show each DAS behaviour problem at follow-up out of those who had shown it at the initial assessment. The persistence rates for 'any severe behaviour problems' was 89·7% with rates for individual behaviour problems

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Table 1. *Severe behaviour problems*

	Initial study ($n=82$)	Follow-up ($n=82$)	Wilcoxon test[a]	
			z	p
Physical aggression towards others	27 (32·9%)	25 (30·5%)	0·52	0·663
Destructive behaviour	23 (28·0%)	22 (26·8%)	0·58	0·590
Overactivity	21 (25·6%)	13 (15·9%)	2·76	0·005*
Self-injury	13 (15·9%)	16 (19·5%)	0·80	0·449
Screaming, making disturbing noises	21(25·6%)	18 (22·0%)	0·32	0·779
Sleeping difficulties	23 (28·0%)	13 (15·9%)	2·30	0·023
Inappropriate sexual behaviour[b]	3 (3·7%)	9 (11·1%)	2·26	0·027
Other difficult or objectionable[b] personal habits	30 (37·0%)	28 (34·6%)	0·00	1·000
Stereotypies	32 (39·0%)	27 (32·9%)	1·60	0·125
	Mean (S.D.)	Mean (S.D.)	t(80 df)	p
Total behaviour problem score[b]	6·79 (4·37)	6·26 (3·73)	1·20	0·235

* Statistically significant.
[a] Calculated with individual DAS behaviour problems rated absent/mild/severe.
[b] $n=81$.

Table 2. *Aberrant Behaviour Checklist ratings*

	Initial study Mean (S.D.)	Follow-up Mean (S.D.)	Wilcoxon test	
			z	p
Parent ratings				
Irritability ($n=51$)	14·3 (12·5)	9·9 (9·6)	2·84	0·004*
Lethargy ($n=50$)	9·5 (9·4)	6·3 (9·4)	2·40	0·015
Stereotypies ($n=53$)	5·1 (5·0)	3·0 (4·5)	3·11	0·001*
Hyperactivity ($n=51$)	17·4 (14·3)	12·1 (11·6)	3·39	0·000*
Inappropriate speech ($n=53$)	3·0 (3·4)	1·9 (2·7)	2·21	0·026
Teacher ratings				
Irritability ($n=30$)	7·6 (9·2)	7·1 (11·1)	0·34	0·740
Lethargy ($n=30$)	6·9 (9·1)	7·4 (7·6)	0·20	0·850
Stereotypies ($n=30$)	2·3 (3·4)	2·4 (3·2)	0·44	0·673
Hyperactivity ($n=30$)	14·0 (14·5)	10·2 (12·8)	1·33	0·187
Inappropriate speech ($n=30$)	0·4 (1·3)	1·3 (2·5)	2·06	0·044

* Statistically significant.

ranging from 62·5% for stereotypies to 19·0% for screaming.

In order to identify factors associated with the persistence of behaviour problems, children whose DAS behaviour problems at initial assessment remained present at the same level of severity at follow-up were compared with those whose initial behaviour problems had reduced over time. Unfortunately, few such predictors could be identified. Children whose stereotypies persisted had lower Vineland scores ($t=2·43$, df$=38·3$, $p=0·020$, effect size$=0·65$) and more severe stereotypies ($\chi^2=4·47$, df$=1$, $p=0·045$, effect size$=0·71$) at initial assessment than those whose stereotypies remitted. When effect sizes were aggregated across behaviour problems, mean effect sizes for age ($-0·02$), sex ($-0·02$), Vineland score ($-0·04$) and severity of behaviour problem at initial assessment ($-0·07$) were very small, and although the effect size of 'diagnosis of ASD' in predicting the persistence of behaviour problems was larger (0·21), it was still 'small' by conventional standards (Cohen, 1992).

Psychiatric diagnoses

As shown in Table 3, 32·9% of cases had been diagnosed with a psychiatric disorder by the

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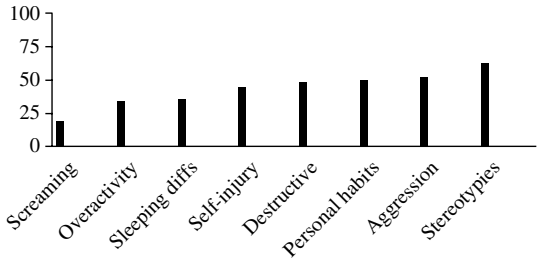

FIG. 1. Proportion of cases with the behaviour at time 2 from those who showed it at time 1.

time of follow-up, a slight increase over the rate at the earlier assessment (25·6%). ASD was by far the most common diagnosis, present in 24·4% of the sample and 74·1% of diagnosed cases. Attention deficit hyperactivity disorder (ADHD) was the second most common diagnosis, present in 6·1% of the sample and 18·5% of diagnosed cases. Two boys with ASD and three with ADHD were diagnosed for the first time during the interval between the two assessments. However, inspection of their initial assessment data showed that all but one of them (a child with ADHD) had been rated by the research team as showing the main features of the disorder at initial assessment, suggesting that the condition may have been present at that time even if it was not diagnosed until later.

Three youngsters were diagnosed with episodes of bipolar disorder for the first time in adolescence. Delusional thinking was reported in two of them. Each of the youngsters was seen by a different psychiatric service (suggesting that the diagnosis was not simply idiosyncratic to one particular person or service). All three were post-pubertal. In one case the onset was sudden; in the other two it was gradual. All three were treated with antipsychotic medication and sodium valproate as a mood stabilizer, two as in-patients, one as an out-patient. The episodes lasted between 5 and 8 months before each of the youngsters recovered fully to their premorbid state.

Three young people were receiving stimulant medication (Ritalin) and four antipsychotic medication (three risperidone, one amisulpride). All seven had been diagnosed with a psychiatric disorder.

Psychiatric disorders were significantly more common among boys (47·8%) than among girls (13·9%) ($\chi^2 = 10{\cdot}53$, 1 df, exact $p < 0{\cdot}002$). Sixteen (80·0%) of the 20 cases of ASD and all five cases of ADHD were male.

Table 3. *Psychiatric diagnosis*

	Initial study ($n = 82$)	Follow-up[a] ($n = 82$)
None	61 (74·4%)	55 (67·1%)
ASD	18 (21·9%)	20 (24·4%)
ADHD	2 (2·4%)	5 (6·1%)
Bipolar disorder	0 (0·0%)	2 (2·4%)[b]
Anxiety disorder	1 (1·2%)	2 (2·4%)[c]

ASD, Autistic spectrum disorder; ADHD, attention deficit hyperactivity disorder.

[a] Numbers exceed sample size because more than one diagnosis was made for two cases.

[b] A third case was diagnosed with bipolar disorder during the interval between the initial and follow-up assessments, but had fully recovered by the time of follow-up.

[c] With one of these two cases, there were concerns that his presentation might reflect the early stages of the development of a psychotic disorder in adolescence. He was the twin brother of one of the two cases classified as showing bipolar disorder.

Relationship between puberty and mental health and behaviour problems

Information on the child's puberty status was obtained for 49 of the children, 27 boys and 22 girls. However, there were no significant differences between pre-pubertal and pubertal children in overall DAS behaviour problem scores or rates of individual DAS behaviour problems.

DISCUSSION

The findings on the course behaviour problems between childhood and adolescence indicated that with most behaviour problems, including aggression, destructive behaviour and self-injury, there was little difference in rates between the two assessment occasions. This overall pattern of stability is consistent with the findings of the very limited number of previous longitudinal studies discussed in the Introduction (e.g. Richardson & Koller, 1996; Tonge & Einfeld, 2000, 2003), although the present study suggests more specifically that this pattern of stability applies between childhood and early adolescence and appears to be broadly unaffected by the child's puberty status in adolescence.

Nevertheless, in spite of this overall pattern of stability, ratings of the severity of overactivity on the DAS and irritability, hyperactivity and

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stereotypies scores on the ABC showed statistically significant reductions between childhood and adolescence. It is unclear why the teacher ABC ratings showed no significant changes on any of the measures. However, teacher questionnaires were completed on both assessment occasions for a smaller sample than parent questionnaires. Furthermore, 90% of the sample had changed school between the initial and follow-up assessments, and changes in school (and hence in rater) will have contributed error to the teacher ratings.

Other evidence is consistent with the finding of a decrease in overactivity in children with ID over the childhood years. Rutter (1970) described how in children with autism, severe overactivity may be replaced by severe underactivity in adolescence and both Richardson & Koller (1996) and Tonge & Einfeld (2003) found significant decreases in rates of hyperactivity over the course of their follow-up studies.

In terms of psychiatric outcome, approximately a third of the present sample of adolescents with severe ID were reported to have been diagnosed with a psychiatric disorder. This prevalence rate is slightly lower than, but not markedly dissimilar from, the range of rates found in other recent studies of psychiatric disorders in children with ID (Stromme & Diseth, 2000; McCarthy & Boyd, 2001; Emerson, 2003), as well as in studies that have used questionnaires such as the DBC to estimate the rate of disorder (Einfeld & Tonge, 1996*a*, *b*; Cormack *et al.* 2000; Emerson *et al.* 2004). The similarity in rates is in some respects surprising because young people were not systematically assessed for the presence of psychiatric disorder in the present study and the diagnosis of disorder was based simply on whether, according to the parents, a disorder had been *clinically* diagnosed. Psychiatric disorder among children with ID often goes clinically unrecognized and, even where a diagnosis has been made, parents might not always be aware of this. The rate of disorder in this study might, therefore, have been expected to be substantially lower than in the prevalence studies cited above. One factor that may have contributed to the higher than expected rate of disorder in the present sample is the over-representation of children with diagnosed psychiatric disorders among those who participated at follow-up. Another stems from the fact that the present study took place in an area with relatively well-developed psychiatric services, with specialist expertise in more than one centre in the diagnosis of autism and ADHD.

ASD was by far the most common diagnosis in the present study, diagnosed in nearly three-quarters of those with a psychiatric diagnosis. In keeping with this finding, Gillberg *et al.* (1986) found that among adolescents with severe ID, 79% of those with a psychiatric disorder had an ASD. However, in the present study, ADHD was diagnosed in just under one in five in contrast to none of those in the study of Gillberg *et al.*

The number of cases with a diagnosed psychiatric disorder increased slightly between childhood and adolescence, but there was evidence that four of the five 'new' cases of ASD or ADHD had in fact shown the main features of the disorder at the time of the initial assessment although it was not clinically diagnosed until later. However, with the three cases that experienced episodes of psychotic symptoms, the episodes each arose *de novo* in adolescence.

Taken together, the findings suggest that the prevalence of mental health and behavioural problems in young people with severe ID remains relatively stable between childhood and adolescence, although some problems including overactivity may diminish. However, a small minority of children show episodes of severe psychiatric disorder for the first time in adolescence.

An important question concerns the extent to which these developmental trends are specific to children with severe ID. The overall pattern of stability in rates between childhood and adolescence contrasts sharply with the adolescent increase in rates of disorder found in follow-up studies of general population samples. Some of the possible reasons for this difference have been noted in the Introduction. Nevertheless, several findings from the present study concerning specific behaviours show strong similarities in developmental trends. For example, the findings that overactivity and sleeping difficulties tended to diminish over the childhood years are consistent with the results of studies of children of normal intellectual ability on the developmental course of childhood overactivity (Hart *et al.* 1995; Willoughby, 2003) and sleeping problems

(Gregory & O'Connor, 2002). Similarly, the finding that the rate of physical aggression remained roughly constant or declined only slightly over the childhood years is in agreement with the outcome of many recent studies of behavioural development in the general child population (Broidy *et al*. 2003; Maughan *et al*. 2004).

In contrast to these similarities, it is often believed that behavioural problems in children with severe ID are unusually persistent. In the present study, a persistence rate of 90% was found, a figure comparable to the 80% reported by Turner & Sloper (1996) in their 5-year follow-up study of children with Down's syndrome. While these rates are certainly higher than those found in general population samples, the lower rates in the general population might simply be due to the fact that emotional disorders are not only much more likely to be diagnosed in those without ID, but they are also much more transient than conduct disorders. In the Isle of Wight study, Graham & Rutter (1973) found that three quarters of children with conduct disorder at the age of 10 years continued to show disorder at age 14 years, in contrast to less than half of those with emotional disorder, while Esser *et al*. (1990), in Mannheim, found persistence rates of nearly 100% for conduct disorder, but only 25% for emotional disorder, in a sample of children followed from 8 to 13 years of age. Thus, when like is compared with like, the persistence rates for behaviour problems in children with severe ID would appear to be comparable to those reported for conduct disorder in the general child population.

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DECLARATION OF INTEREST

None.

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