ORIGINAL ARTICLE

Return to school after brain injury

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Aims: To examine return to school and classroom performance following traumatic brain injury (TBI).

Methods: This cross-sectional study set in the community comprised a group of 67 school-age children with TBI (35 mild, 13 moderate, 19 severe) and 14 uninjured matched controls. Parents and children were interviewed and children assessed at a mean of 2 years post injury. Teachers reported on academic performance and educational needs. The main measures used were classroom performance, the Children's Memory Scale (CMS), the Wechsler Intelligence Scale for Children—third edition UK (WISC-III) and the Wechsler Objective Reading Dimensions (WORD).

Results: One third of teachers were unaware of the TBI. On return to school, special arrangements were made for 18 children (27%). Special educational needs were identified for 16 (24%), but only six children (9%) received specialist help. Two thirds of children with TBI had difficulties with school work, half had attention/concentration problems and 26 (39%) had memory problems. Compared to other pupils in the class, one third of children with TBI were performing below average. On the CMS, one third of the severe group were impaired/borderline for immediate and delayed recall of verbal material, and over one quarter were impaired/borderline for general memory. Children in the severe group had a mean full-scale IQ significantly lower than controls. Half the TBI group had a reading age ≥ 1 year below their chronological age, one third were reading ≥ 2 years below their chronological age.

Conclusions: Schools rely on parents to inform them about a TBI, and rarely receive information on possible long-term sequelae. At hospital discharge, health professionals should provide schools with information about TBI and possible long-term impairments, so that children returning to school receive appropriate support.

Traumatic brain injury (TBI) is relatively common among children and adolescents.^{1–3} Most injuries are mild; however, in the UK, every year approximately 3000 children acquire significant new neurological or cognitive disability as a result of TBI,⁴ the sequelae of which may remain constant or deteriorate.⁵ Many children return to school after TBI without support or rehabilitation.⁶

It was previously assumed that children made good recoveries after brain injury because of the functional plasticity of the young brain.^{7–8} Current research suggests that as the brain continues to develop until adulthood, the young brain is particularly vulnerable to the effects of TBI.^{9–10} Brain injury in childhood can lead to persistent cognitive and neurobehavioural deficits, and intellectual, academic and personality adjustment problems.^{11–16}

Regardless of injury severity, children with TBI may have difficulties in retaining and retrieving newly learned information,^{17–18} and for children with severe TBI, memory deficits may worsened over time.¹⁹ Memory and concentration impairments are particularly handicapping in the classroom.^{20–23} Nevertheless, few researchers have investigated the effects these impairments may have on learning and educational performance.

The current study investigated issues surrounding return to school after brain injury. The aims were to:

- Examine the support provided by schools for children returning after TBI.
- Assess educational and intellectual performance and school difficulties after TBI.

METHODS

Participants

The study group was identified utilising a register of all children with brain injury aged 5–15 years admitted to North

Staffordshire Hospital NHS Trust. Parents of 139 children with TBI completed a postal questionnaire and consented to be interviewed. All children with moderate or severe TBI were recruited. The mild group was recruited to match the moderate and severe groups for age, sex, and time since injury, resulting in 97 interviewees, of whom 82 were attending school at the time of the interviews and consented to their teachers being contacted by the research team.

Severity of TBI was determined using Glasgow Coma Scale (GCS)²⁴ scores and/or duration of loss of consciousness. Using the British Society of Rehabilitation Medicine classification of severity²⁵ (table 1), 21 (25.6%) of the 82 children in the school group had severe TBI, 16 (19.5%) moderate TBI, and 45 (54.9%) mild TBI.

Interviews

Interviews and assessments took place in 1998/1999. Children and their families were interviewed at home by trained interviewers using a semistructured questionnaire. Areas covered were behaviour, emotion, cognition, physical problems, sensory deficits, mobility, school work, and school problems. Parents were asked about the support their child had been offered on return to school.

Abbreviations: CMS, Children's Memory Scale; FD, Freedom from Distractibility; FSIQ, Full Scale Intellectual Quotient; GCS, Glasgow Coma Scale; KOSCHI, King's Outcome Scale for Childhood Head Injury; NICE, National Institute for Clinical Excellence; PIQ, Performance IQ; PO, Perceptual Organisation; PS, Processing Speed; SENs, special educational needs; TBI, traumatic brain injury; VC, Verbal Comprehension; VIQ, Verbal IQ; WISC-III, Wechsler Intelligence Scale for Children—third edition UK; WORD, Wechsler Objective Reading Dimensions

Table 1 Definitions of injury severity

Severity of traumatic brain injury	Definition
Mild	An injury causing unconsciousness for less than 15 min and a GCS after initial resuscitation of 13–15
Moderate	An injury causing unconsciousness for more than 15 min but less than 6 h and a GCS after initial resuscitation of 9–12
Severe	An injury causing unconsciousness for more than 6 h and a GCS after initial resuscitation of 3–8

Control group

Families with a child with brain injury identified a child of the same age, sex and social background and in the same school class as the injured child to act as a control. Thirty-one control children agreed to participate; none had a history of head injury or neurological impairment. All control families were interviewed, 20 children were still attending school and consented to their teachers being contacted by the research team.

Teacher questionnaires

Questionnaires were sent to head teachers with a request to pass it to the teacher who knew the child best. Non-responders were telephoned and reminded. Of the 82 questionnaires posted, 67 (81.7%) were completed and returned. Response rates were highest for children with severe TBI (90.5%, 19 teachers) and lowest for those with mild TBI (77.8%, 35 teachers). Questionnaires were sent to head teachers for 20 control children; 14 (70%) were completed and returned.

The questionnaire explored teachers' knowledge of the TBI, the child's educational performance, and special educational needs before and after the TBI. Teachers were asked to rate

the pupil with TBI against the ability of his/her classroom peers. These questions were prefixed with: "Compared with other pupils in the class, how would you describe this child's ability in the following areas?" Abilities were then rated as "good", "average", "below average", or "poor".

Ethical approval

This study was approved by the Local Research Ethics Committee. Informed, written consent to participate was obtained from the parent, and for children aged ≥ 13 years of age from the child him/herself.

Measures

The King's Outcome Scale for Childhood Head Injury (KOSCHI) was used to measure clinical outcomes.²⁶ KOSCHI scores were derived from interviews with parents and children and scored by one team member (CH) with experience of the KOSCHI. The KOSCHI contains five categories: 1, death; 2, vegetative; 3, severe disability; 4, moderate disability; 5, good recovery (subdivided into 5A, some residual deficits not affecting daily living, and 5B, full recovery with no identified sequelae).

All psychological assessments were carried out by trained psychology assistants under the supervision of a consultant clinical neuropsychologist. The Wechsler Intelligence Scale for Children—third edition UK (WISC-III)²⁷ was used to assess intelligence. Seven index scores were computed: Full Scale Intellectual Quotient (FSIQ), Verbal IQ (VIQ), Performance IQ (PIQ), Verbal Comprehension (VC), Perceptual Organisation (PO), Freedom from Distractibility (FD), and Processing Speed (PS). The Wechsler Objective Reading Dimensions (WORD)²⁸ were used to compare reading age with chronological age.

Memory and attention

The Children's Memory Scale (CMS)²⁹ was used to assess learning and memory. The CMS has standardized scores where an index score of 100 reflects average performance.

Table 2 Characteristics of the school study group

Variable	Mild (n = 35)	Moderate (n = 13)	Severe (n = 19)	Control (n = 14)
Gender: number male (%)	21 (60%)	11 (84.6%)	8 (42.1%)	6 (42.9%)
Mechanism of injury				
Fall (%)	16 (45.7%)	3 (23.1%)	2 (10.6%)	–
RTA pedestrian (%)	6 (17.1%)	4 (30.8%)	13 (68.4%)	–
RTA in vehicle (%)	0 (0%)	1 (7.7%)	3 (15.8%)	–
RTA cyclist (%)	3 (8.6%)	0	1 (5.3%)	–
All RTAs	9 (25.7%)	5 (38.5%)	17 (89.5%)	–
Fall from bicycle (%)	7 (20%)	2 (15.4%)	0	–
Assault (%)	1 (2.9%)	1 (7.7%)	0	–
Sport (%)	0	1 (7.7%)	0	–
Collision with another child (%)	2 (5.7%)	0	0	–
Kicked by horse (%)	0	1 (7.7%)	0	–
Total	35 (100%)	13 (100%)	19 (100%)	–
Age at injury (yr)				
Mean (SD)	8.89 (2.99)	8.31 (2.98)	9.79 (2.35)	–
Range	5–14	5–15	6–14	–
Age at interview (yr)				
Mean (SD)	11.69 (2.89)	11.85 (3.34)	12.79 (2.49)	11.93 (2.79)
Range	6–18	7–16	8–17	7–16
Years between injury and follow-up				
Mean (SD)	2.03 (1.47)	2.85 (1.77)	1.95 (1.39)	NA
Range	0–5	0–6	0–5	–
Days off school after TBI				
Mean(SD)	21.7 (29.7)	23.2 (17.9)	135.9 (148.4)	NA
Range	0–112	7–62	30–450	–
Therapeutic input for TBI (%)	4 (11.4%)	1 (7.7%)	4 (21%)	–
Townsend social deprivation				
Mean (SD)	+1.13 (2.53)	–0.21 (3.64)	+1.49 (2.71)	–0.64 (2.5)

Table 3 TBI group: teachers' reports of arrangements on return to school and special educational needs

Variable	Mild (n = 35)	Moderate (n = 13)	Severe (n = 19)	Significance (df = 2)
Key teacher aware of TBI	21 (60%)	9 (69.2%)	16 (84.2%)	$p = 0.19$ $\chi^2 = 3.36$
All teachers who teach the child are aware of TBI	14 (40%)	7 (53.8%)	15 (78.9%)	$p = 0.02$ $\chi^2 = 7.51$
Special arrangements on return to school	6 (17.1%)	5 (38.5%)	7 (36.8%)	$p = 0.17$ $\chi^2 = 3.54$
Staggered return to school	0	2 (15.4%)	8 (42.1%)	$p = 0.0001$ $\chi^2 = 17.2$
Special educational needs identified prior to TBI	3 (8.6%)	0	4 (21.1%)	$p = 0.14$ $\chi^2 = 3.93$
Current special educational needs identified	7 (20%)	1 (7.7%)	8 (42.1%)	$p = 0.06$ $\chi^2 = 5.64$

The scale provides a global measure (General Memory Index) and seven further index scores: Attention/Concentration; Verbal and Visual Immediate Memory; Verbal and Visual Delayed Memory; Delayed Recognition; Learning.

Social deprivation

The Townsend Deprivation Index³⁰ was used to measure social deprivation. The higher the positive score the more deprived an area, the higher the negative score the more prosperous an area. For the UK, the mean is zero, for North Staffordshire the mean is -0.49 .

Statistical analyses

Analyses were performed on data for children with completed teacher questionnaires, 67 in the TBI group and 14 in the control group, all using SPSS Version 9.0.

RESULTS

Study group characteristics (table 2)

Time spent absent from school after the TBI varied widely. Some injuries took place during school holidays, so not all children missed school. In the mild group, two children also had orthopaedic injuries and were absent for several months.

Clinical recovery

Most children had made a moderate or good recovery as measured by the KOSCHI. Only one child, with severe TBI, had severe disability, and two thirds (46) had moderate disability (24 mild, eight moderate, 14 severe). Twenty (29.9%) made a good recovery (11 mild, five moderate, four severe); of these, one child with mild TBI made a full recovery with no discernible sequelae. There were no significant differences between severity groups.

Teachers' knowledge of TBI

The majority of parents (55, 82.1%) said that their child's teachers knew about the TBI. Five parents said that the primary school had known, but when their child changed schools teachers were unaware of the TBI. Teachers reported that for 21 children (31%) no one informed the school about

the TBI. The school was informed by parents (34 children, 50.7%); the child him/herself (four children, 6%); "other agencies" (eight children, 12%), and by a hospital (one child, 1.5%).

Special arrangements on return to school

Eighteen parents (26.9%) reported that schools made special arrangements for their child's return after the TBI. There was a significant difference between severity groups ($p = 0.001$, $\chi^2 = 18.79$, $df = 2$). Special arrangements were made for 63.2% (12) of the severe, 23.1% (three) of the moderate and 8.6% (three) of the mild group, usually for physical limitations, for example being excused physical exercise and/or being kept indoors at breaks (11 children), or being watched by teachers (nine children).

Teachers' reports of arrangements are shown in table 3.

Special educational needs

Twenty parents (29.9%) reported that schools provided extra educational assistance when their child first returned after the TBI. No differences were observed between severity groups. Teachers reported that 16 children in the TBI group (23.9%) were currently on the school's special educational needs (SENs) register, seven of whom (43.8%) were on the register prior to the TBI. The Department for Education's Code of Practice recommends a staged approach to meeting children's special educational needs:

- Stage 1—concerns are recorded and discussed between parents and teachers.
- Stage 2—an individual education plan is written by teachers.
- Stage 3—the school is likely to seek specialist advice from external professionals.
- Stages 4 and 5—additional resources should be provided to meet the child's needs.

Of the 16 children on a SENs register, there were four at Stage 1, six at Stage 2, one at Stage 3, two at Stage 4, and

Table 4 Intellectual functioning and special educational needs

	SENs identified (n = 16)	No SENs identified (n = 54)	Significance	95% CI
FSIQ mean (SE)	79.56 (2.4)	96.0 (2.2)	0.0001	9.8 to 23.0
VIQ mean (SE)	81.5 (3.2)	95.96 (2.3)	0.002	5.5 to 23.5
PIQ mean (SE)	82.25 (2.4)	96.44 (2.2)	0.0001	7.6 to 20.8

Table 5 Child's difficulties as reported by parents

Difficulties	Mild (n = 35)	Moderate (n = 13)	Severe (n = 19)	Control (n = 13)	Significance
Memory	14 (40%)	4 (30.8%)	8 (42.1%)	1 (7.7%)	NS
Attention/concentration	20 (57.1%)	8 (61.5%)	14 (73.7%)	4 (30.8%)	NS
Learning new information	15 (42.9%)	4 (30.8%)	10 (52.6%)	2 (15.4%)	NS
School work	23 (65.7%)	7 (53.8%)	14 (73.7%)	3 (23.1%)	$p = 0.024, \chi^2 = 9.4$

NS, not significant.

three at Stage 5. Therefore, 10 children (62.5%) were at the preliminary assessment stages and unlikely to be receiving specialist help. According to parents, the assistance currently provided ranged from daily support to monthly support from a SENs teacher. There was a significant relationship between the provision of SENs and IQ (table 4).

Parental reports of school difficulties

Parents identified the main difficulties for their children as memory, attention/concentration, learning new information, and school work (table 5).

Teacher questionnaires

Teachers reported that approximately half the children in the mild and moderate groups had problems with school work, memory, and attention (table 6). There was a significant relationship between memory problems and difficulties with school work ($p = 0.0001, \chi^2 = 43.6, df = 1$), 94.4% of children with memory problems also had some difficulties with school work.

Table 7 shows the number of pupils with poor or below average classroom performance. Approximately 40% of children with TBI, of any severity, performed below the class average on their ability to focus attention and filter out distractions. There was no association between social deprivation and school performance ($p = 0.23$).

Intellectual ability

The WISC-III assessed general intelligence for 54 children with TBI and 14 controls (table 8). Significant differences were observed between controls and the severe group for FSIQ ($p = 0.027, CI 1.7$ to 25.1), PS ($p = 0.005, CI 6.0$ to 29.4), and VC ($p = 0.047, CI 0.2$ to 22.7); between the mild and severe groups for PS ($p = 0.013, CI 3.0$ to 24.1); and between the mild and control groups for VIQ ($p = 0.05, CI 0.1$ to 21.8), and VC ($p = 0.045, CI 0.3$ to 22.7).

Children living in areas with positive Townsend scores (more deprived) had a significantly lower IQ than those

living in areas with negative scores (more prosperous). Differences were found for FSIQ ($p = 0.02, CI -18.5$ to -1.6) and VIQ ($p = 0.03, CI -18.5$ to -1.2), but not for PIQ ($p = 0.07, CI -16.0$ to 0.6).

Childrens' memory scale (CMS)

Fifty-three children with TBI were assessed using the CMS (table 9). Approximately one third of children with severe TBI were impaired or borderline for immediate and delayed recall of verbal material, and over one quarter were impaired or borderline for both general memory and recall of visually presented material.

Teachers' ratings for each child were compared with scores on the CMS. For most items, children rated as "good" by teachers achieved average or above average scores on the CMS. Significant associations were observed between teacher ratings of attention in class and the CMS Attention/Concentration Index scores for "ability to maintain attention" ($p = 0.014, \chi^2 = 29.52, df = 15$), and "ability to shift attention" ($p = 0.03, \chi^2 = 19.96, df = 10$).

Reading ability

Thirty-six pupils with TBI were assessed for reading ability on the WORD. Overall, there was a mean discrepancy between chronological age and reading age of -0.5 years ($SD = 2.63$). Nineteen pupils (52.8%) were reading at a level ≥ 1 year below their chronological age and 13 (36.1%) at a level ≥ 2 years below. No significant differences were observed between the three severity groups. For the severe group, there was a mean discrepancy between chronological and actual reading age of -1.7 years.

For all measures, there were no significant differences between children assessed >1 year post injury and those assessed ≤ 1 year post injury.

DISCUSSION

Almost one third of teachers were unaware that the child had suffered a TBI. The most usual source of information about

Table 6 Responses to teacher questionnaires

Variable	Mild (n = 33)	Moderate (n = 13)	Severe (n = 19)	Control (n = 14)	Significance (df = 6)
Visual difficulties	1 (3%)	0	2 (10.5%)	1 (7.1%)	$p = 0.49, \chi^2 = 2.41$
Hearing difficulties	1 (3%)	0	0	0	$p = 0.72, \chi^2 = 1.33$
Mobility difficulties	0	0	4 (21.1%)	0	$p = 0.003, \chi^2 = 13.73$
Difficulties with school work	18 (54.5%)	6 (46.2%)	15 (78.9%)	4 (28.6%)	$p = 0.03, \chi^2 = 8.73$
Doesn't pay attention or listen	15 (45.5%)	8 (61.5%)	12 (63.2%)	5 (35.7%)	$p = 0.33, \chi^2 = 3.40$
Memory problems	16 (48.5%)	6 (46.2%)	14 (73.7%)	1 (7.1%)	$p = 0.001, \chi^2 = 21.64$
Has mood swings	9 (27.3%)	7 (53.8%)	11 (57.9%)	2 (14.3%)	$p = 0.002, \chi^2 = 20.38$
Lacks confidence	17 (51.5%)	8 (61.5%)	13 (68.4%)	6 (42.9%)	$p = 0.13, \chi^2 = 13.74$
Fatigue	12 (36.4%)	8 (61.5%)	12 (63.2%)	3 (21.4%)	$p = 0.08, \chi^2 = 11.10$
Problems making self understood	9 (27.3%)	2 (15.4%)	6 (31.6%)	3 (21.4%)	$p = 0.13, \chi^2 = 13.76$
Socially inappropriate behaviours	10 (30.3%)	7 (53.8%)	9 (47.4%)	4 (28.6%)	$p = 0.65, \chi^2 = 4.2$

Table 7 Pupils with ability below class average

Ability	Mild (n = 33)	Moderate (n = 13)	Severe (n = 19)	Control (n = 14)	Significance
Ability to focus attention	15 (45.5%)	5 (38.5%)	7 (38.9%)	2 (14.3%)	$p=0.42$, $\chi^2=6.01$
Ability to maintain attention	12 (36.4%)	3 (23.1%)	7 (38.9%)	3 (21.4%)	$p=0.39$, $\chi^2=6.28$
Ability to shift attention	9 (27.3%)	0	5 (26.3%)	1 (7.1%)	$p=0.27$, $\chi^2=7.64$
Ability to divide attention between topics	11 (33.3%)	2 (15.4%)	4 (21.1%)	3 (21.4%)	$p=0.72$, $\chi^2=3.67$
Ability to analyse a task into component parts	10 (30.3%)	1 (7.7%)	6 (31.6%)	3 (21.4%)	$p=0.48$, $\chi^2=5.53$
Ability to grasp the main concept from detailed information	9 (27.3%)	1 (7.7%)	8 (42.1%)	4 (28.6%)	$p=0.11$, $\chi^2=10.74$
Ability to consider a variety of solutions	11 (33.3%)	1 (7.7%)	6 (31.6%)	2 (14.3%)	$p=0.25$, $\chi^2=7.88$
Ability to plan activities	11 (33.3%)	1 (7.7%)	5 (26.3%)	2 (14.3%)	$p=0.04$, $\chi^2=13.04$
Ability to initiate behaviour (ie start a task without help)	14 (42.4%)	2 (15.4%)	6 (31.6%)	3 (21.4%)	$p=0.36$, $\chi^2=6.61$
Ability to respond to others to ensure that behaviour is always socially appropriate	8 (24.2%)	3 (23.1%)	5 (26.3%)	0	$p=0.53$, $\chi^2=5.09$

the injury came from parents; the discharging hospital informed the school for only one child. Parents reported a lack of communication about the brain injury between one school and another, for example when a child progressed from primary to secondary school. The majority of children in our sample had made a good physical and motor recovery with no obvious visible signs of a brain injury. Teachers are rarely conversant with possible long-term effects of TBI, and many commented that as the TBI had occurred some years ago, they did not consider the child's current school performance to be related to the injury. Consequently, even when teachers did know about the TBI, allowances were not routinely made for the possible effects of that injury. Other investigators have made similar observations, and concluded that there is inadequate educational provision for children after brain injury, largely due to inaccurate or poor information for schools, poor communication between schools and hospitals, and inadequate training of teaching staff into the effects of TBI.³¹⁻³² This situation may improve in the future, as the 2002 National Institute for Clinical Excellence (NICE) guidelines recommend that schools should receive information from hospitals for all children who receive a CT scan following TBI.³³

Only nine children had received any form of rehabilitation following the TBI, most were discharged home without assessment, support, or advice about return to school, findings consistent with those of others.³⁴ It is, therefore, unsurprising that special arrangements were provided for so few children on their return to school, and only 10 had a staggered return to school. Even when special arrangements were made, schools tended to focus upon physical disability rather than cognitive impairments.

A strong relationship was observed between intellectual functioning and the provision of special educational needs (SENs), indicating that children with a low IQ are most likely to receive additional educational support. However, those who perform adequately, but according to their parents not as well as previously, tend to be overlooked. Recent research suggests that even when SENs are identified following a brain injury, those needs are only actually provided for in two thirds of cases.⁶ In the current study, of the 16 children with TBI who were on the school's register of SENs, two thirds (11, 68.8%) were at Stages 1–3, and therefore had not received a statutory assessment of SENs by the local education authority. As such, they were unlikely to be receiving specialist help to meet their needs.

Seven children were identified as having SENs prior to their TBI, and were slow learners before the injury. However, the association between premorbid intellectual functioning and TBI is unclear.^{35–37}

Of those pupils assessed using the WORD, over half the children with TBI were reading at a level at least one year below their chronological age, and over one third were reading at a level two or more years below their chronological age. These findings are virtually identical to those reported by others.³⁸⁻³⁹

This study found that children continue to exhibit impairments of memory and attention up to 5 years after TBI. Problems were most prevalent amongst children who had suffered a severe TBI. Similar findings have been observed by others.⁴⁰ Acquisition of knowledge and skills may be impaired following TBI, and information learnt one day may be forgotten the next.⁴¹ Children with TBI may find it harder to concentrate, and become easily distracted. This

Table 8 Summary of intellectual performance

WISC-III Index Scores	Mild TBI (n = 31)	Moderate TBI (n = 11)	Severe TBI (n = 14)	Controls (n = 14)
FSIQ mean (SE)	90.07 (3.2)	93.82 (4.5)	86.57 (3.9)	99.93 (4.1)
VIQ mean (SE)	89.26 (3.1)	97.09 (5.4)	89.14 (3.7)	100.21 (4.3)
PIQ mean (SE)	94.39 (4.1)	91.36 (2.9)	87.21 (4.1)	98.0 (4.8)
VC mean (SE)	88.84 (3.2)	96.91 (5.4)	88.93 (3.4)	100.36 (4.3)
PO mean (SE)	92.45 (3.2)	91.09 (2.7)	86.21 (3.9)	97.71 (4.6)
PS mean (SE)	99.74 (2.8)	94.64 (3.9)	86.21 (4.8)	103.93 (3.1)
FD mean (SE)	94.94 (2.6)	100.82 (4.4)	97.86 (4.1)	104.79 (4.9)

SE, standard error of the mean.

Table 9 Mean index scores on the Child's Memory Scale

CMS item	Mild (n = 28)	Moderate (n = 11)	Severe (n = 14)	Difference between groups
General Memory Index mean (SD)	98.25 (20.54)	95.36 (18.99)	82.79 (17.04)	p=0.06, F=3.03
Attention/Concentration Index mean (SD)	97.39 (14.09)	105.64 (13.71)	95.43 (23.70)	p=0.40, F=0.93
Verbal Immediate Index mean (SD)	101.5 (18.89)	92.91 (19.05)	85.86 (22.48)	p=0.06, F=3.0
Verbal Delayed Index mean (SD)	100.5 (14.65)	97.82 (18.57)	83.36 (19.35)	p=0.04, F=3.51
Visual Immediate Index mean (SD)	97.29 (16.09)	93.73 (18.87)	84.93 (14.70)	p=0.17, F=1.83
Visual Delayed Index mean (SD)	97.93 (12.98)	95.82 (17.71)	86.29 (13.47)	p=0.05, F=3.22
Delayed Recognition Index mean (SD)	97.46 (18.34)	103.18 (19.46)	94.93 (13.36)	p=0.49, F=0.72
Learning Index mean (SD)	99.86 (17.76)	86.36 (17.49)	86.36 (19.81)	p=0.08, F=2.73

can be a major problem in the school situation, and they may need extra input from teachers and additional supervision to keep them focused and on-task. This does not routinely happen.

CONCLUSIONS

When a child is discharged from hospital after TBI, their school should be provided with information on the injury, and the possible long-term cognitive and behavioural deficits which may arise. Schools should then "tag" the records of children who have sustained a TBI that was serious enough for hospital admission, and information be made available to all teachers who teach the child. This information should be transferred between schools to avoid these children getting "lost" in the system.

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