Impact of Early Intervention on Outcome After Mild Traumatic Brain Injury in Children

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ABSTRACT. Objectives. The impact of mild head injury or mild traumatic brain injury (TBI) in children is variable, and determinants of outcome remain poorly understood. There have been no previous attempts to evaluate the impact of interventions to improve outcome. Results of previous intervention studies in adults have been mixed. This study aimed to evaluate the impact of providing information on outcome measured in terms of reported symptoms, cognitive performance, and psychological adjustment in children 3 months after injury.

Methods. A total of 61 children with mild TBI were assessed 1 week and 3 months after injury, and 58 children with mild TBI were assessed 3 months after injury only. They were compared with 2 control groups (N = 45 and 47) of children with minor injuries not involving the head. Participants completed measures of preinjury behavior and psychological adjustment, post concussion symptoms, and tests of attention, speed of information processing, and memory. Children with mild TBI seen at 1 week were also given an information booklet outlining symptoms associated with mild TBI and suggested coping strategies. Those seen 3 months after injury only did not receive this booklet.

Results. Children with mild TBI reported more symptoms than controls at 1 week but demonstrated no impairment on neuropsychological measures. Initial symptoms had resolved for most children by 3 months after injury, but a small group of children who had previous head injury or a history of learning or behavioral difficulties reported ongoing problems. The group not seen at 1 week and not given the information booklet reported more symptoms overall and was more stressed 3 months after injury.


ABBREVIATIONS. TBI, traumatic brain injury; PTA, posttraumatic amnesia; GCS, Glasgow Coma Scale; CBCL, Child Behavior Checklist; BRI, Behavioural Rating Inventory; PCSC, Post Concussion Syndrome Checklist; WRAML, Wide Range Assessment of Memory and Learning; CHIPASAT, Children’s Faced Auditory Serial Addition Task; CNT, Contingency Naming Task.

In recent years there has been growing interest in the impact of mild head injury, or mild traumatic brain injury (TBI), in children. It is estimated that approximately 180 children per 100,000 population sustain closed head injury each year. Eighty percent of these injuries are classified as mild.1 Most of these children are not admitted to a hospital and therefore receive variable medical attention. Studies of children with mild head injury suggest that headaches and some cognitive and behavioral symptoms are common in the early days after injury2 but that the majority of children make a good recovery.3–7 However, some children appear to experience ongoing cognitive and behavioral difficulties, demonstrating cognitive impairments in attention, speed of information processing, memory, fatigue, and sensorimotor function.8–10 Some research groups attribute these impairments to preexisting problems.11–13 Moreover, premerit concentration difficulties and impulsivity have been identified as risk factors for traumatic head injury in children.14

In view of the significant demands placed on children to pay attention and learn, particularly in school, optimal management of any sequelae of mild head injury is essential. Children who sustain mild TBI usually do not show visible signs of being unwell or incapacitated, resulting in the expectation that they will perform at school as usual. Distractibility or restlessness may be interpreted as laziness or deliberate misbehavior, resulting in punishment and isolation rather than support and assistance.

Protocols designed to minimize ongoing problems after mild head injury in adults have been described by several authors.15–22 These generally involve providing information about expected symptoms and suggested coping strategies, in some cases a brief screening assessment, and follow-up telephone contact. However, there have been few investigations of the impact of such strategies. Relander et al,19 Miinderhoud et al,20 and Wade et al21 found a positive impact of specific instructions and supportive follow-up contact on outcome. On the other hand, Gronwall15 and Alves et al22 found no significant impact of an information booklet alone or with supportive follow-up contact in reducing reported postconcussion symptoms.

To our knowledge, no such evaluative studies have been conducted in children with mild TBI. Providing information about expected sequelae and sug-
gested coping strategies to children with mild TBI and their parents can ensure that parents and children are adequately informed about what to expect and how best to minimize stress on the injured child and ensure that preexisting problems are not attributed to the injury. The present study was conducted to determine management guidelines for children with mild TBI. It aimed to investigate cognitive and behavioral outcomes at 1 week and 3 months after injury and to establish whether early assessment and the provision of written information and coping strategies would reduce the incidence of cognitive and behavioral problems in children with uncomplicated mild head injuries who were not admitted to the hospital.

METHODS

Participants

Participants were recruited from consecutive presentations to the emergency departments of 2 major hospitals over a 30-month period from 1995 to 1997. Human ethics approval was obtained. The definition of mild TBI used was that adopted by the American Congress of Rehabilitation Medicine.23 The children were recruited if they were 6 to 15 years old at the time of injury, spoke English, and had a history of trauma or acceleration–deceleration movement applied to the head, resulting in loss of consciousness <30 minutes, a posttraumatic amnesia (PTA) <24 hours, and a Glasgow Coma Scale (GCS) score of 13 to 15 on presentation to the emergency department. A GCS of 13 to 15 means that the child would have had spontaneous eye opening, obeyed commands, and responded verbally, but possibly in a disoriented, confused, or inappropriate fashion or with inability to remember ongoing events. Children with focal neurologic signs or for whom there was any deterioration or concerns during the period of observation were excluded from the study. The injuries were those not considered sufficiently severe to warrant computed tomography or magnetic resonance imaging. Children were recruited only if they had no need for surgery under general anesthesia to avoid any potential confounding effects of anesthesia. Children with a history of previous head injury or other psychological or neurologic problems or learning difficulties were not excluded because these factors have been shown to be associated with poorer outcomes in some previous studies of mild TBI in children.

Design and Procedures

The children with mild TBI were kept under observation; their orientation and amnesia test was used. Only 5 children were kept under observation until they were fully oriented and able to recall events. Children with focal neurologic signs or for whom there was any deterioration or concerns during the period of observation were excluded from the study. The injuries were those not considered sufficiently severe to warrant computed tomography or magnetic resonance imaging. Children were recruited only if they had no need for surgery under general anesthesia to avoid any potential confounding effects of anesthesia. Children with a history of previous head injury or other psychological or neurologic problems or learning difficulties were not excluded because these factors have been shown to be associated with poorer outcomes in some previous studies of mild TBI in children. No specific feedback was given regarding the results of the assessments conducted.

The parents of children in the mild TBI intervention group were also given an information booklet outlining the most common symptoms associated with mild TBI, their likely time course, and suggestions as to how best to cope with them. The booklet was adapted for children from one written by Dorothy Gronwall and Phillip Wrightson from the Auckland Hospital, New Zealand. Descriptions of a mild head injury and its effects are given in simple language, with cartoon illustrations. For example, “I can’t concentrate so well. . . . After a mild head injury, you might have trouble listening to the teacher in class, watching TV or playing games like Sony Playstation and Nintendo. This is because the ‘sleepy’ brain can’t concentrate as well. If you can’t concentrate, take a break or change to another activity.” Other problems covered include headaches, dizziness, fatigue, trouble remembering things, anger, noise problems, and eye problems. Advice is given about returning to sports and to school. Children are reassured that the problems should resolve and advised to ask for help from a doctor if problems persist.

The children in the intervention group were reassessed using the same procedures 3 months after injury. Participants in the nonintervention mild TBI group received standard emergency department treatment and did not receive the information booklet. They were assessed 3 months after injury only.

Two control groups were also selected to control for the impact of any minor injury on cognition and behavior and for the impact of the child’s admittance of the test measures. The control groups also comprised children aged 6 to 15 years presenting to the same emergency departments with minor injuries not involving the head. Seventy percent of controls had soft tissue injuries, and 30% had bony injuries. None of these children needed surgery with general anesthesia or had a hospital stay of more than 24 hours. Neither of the control groups received the information booklet.

Measures

To evaluate developmental and behavior patterns in the mild TBI and control intervention groups before injury, a detailed interview was conducted with the child’s parent or guardian at the 1-week assessment. The Child Behavior Checklist (CBCL)27 and the Rowe Behavioural Rating Inventory (BRI)28 were completed at this time by the child’s parent or guardian as they applied to the child’s preinjury behavior. Because each subscale on the Rowe BRI had a different total, scores for each subscale were standardized, so the maximum score was 5. The Post Concussion Syndrome Checklist (PCSC)29 was used to document injury-related symptoms via discussion with the parent and child.

Neuropsychological measures included the Peabody Picture Vocabulary Test30 as an estimate of intelligence. Measures of memory, attention, and speed of information processing included the Wide Range Assessment of Memory and Learning (WRAML) Verbal Learning/Delayed Recall and Visual Learning/Delayed Recall subtests,31 the Wechsler Intelligence Scale for Children–III Digit Span and Coding subtests,32 the 2.8-second pacing of the Children’s Paced Auditory Serial Addition Task (CHIPASAT),33 the children’s version of the Paced Auditory Serial Addition Task, and the Contingency Naming Task (CNT).34 These measures were repeated 3 months after injury, and parents and children again completed the PCSC, the CBCL, and the Rowe BRI, as they applied to the child’s current behavior. The Vineland Adaptive Behavior Scales35 were also administered at this time to evaluate the impact of the injury on behavior patterns and proficiency in carrying out daily activities. Any other form of assistance sought in relation to effects of the injury was also documented.

Data Analysis

To analyze neuropsychological measures for which no standardization data were available (ie, CHIPASAT and CNT), mean z scores were calculated for 3 chronological age bands: 6 to 9 years, 10 to 12 years, and 13 to 15 years, based on control participants’ performance. Because some of the data were not normally distributed, nonparametric univariate analysis (Mann–Whitney U) was used for univariate comparisons. χ² analysis was used for analyses involving categorical variables. Kruskal–Wallis analysis was used when comparing more than 2 groups on 1 variable. An alpha level
of .05 was used. Multivariate analyses were not conducted because of the small sample sizes and large number of variables.

**RESULTS**

A total of 130 children with mild TBI agreed to participate in the study, 72 of whom were allocated to the intervention group, seen 1 week after injury, and 58 to the nonintervention group, seen 3 months after injury only. The numbers of participants in these groups were unequal because fewer of those allocated to the nonintervention group agreed to participate when contacted 3 months after injury. The control groups consisted of 96 children, 49 allocated to the intervention control group and 47 to the nonintervention control group. These groups were well matched in terms of age, education, IQ, socioeconomic status, and, for the 2 mild TBI groups, PTA duration, which ranged in both groups from a few seconds up to 24 hours. Loss of consciousness was also similar in both groups, with 96% of those in the TBI intervention group and 95% of those in the nonintervention TBI group having loss of consciousness <5 minutes and 50% <1 minute. One child in the intervention group had a loss of consciousness >20 minutes, and 1 from the nonintervention group had a loss of consciousness of 10 to 15 minutes.

Sixty-one (85%) of the original group of 72 children with mild TBI and 45 (92%) of the 49 controls seen 1 week after injury returned for reassessment 3 months after injury. Another 58 children with mild TBI and 47 controls were assessed for the first time 3 months after injury. Demographic details and measures of injury severity, premorbid psychological adjustment, and life stressors for these groups are set out in Table 1. There were no significant differences between groups on any of these variables. To evaluate the impact of the intervention, this article focuses on the groups assessed 3 months after injury.

From Table 2, it is evident that both the mild TBI groups had a higher percentage of children with previous head injury, other psychological or neurologic problems, or learning difficulties than controls. However, none of the differences between mild TBI and control intervention and nonintervention groups was statistically significant.

Most children with mild TBI were injured in falls (40%), cycling accidents (22%), or sporting injuries (21%). Only 7% were injured in motor vehicle accidents and 2% as a result of assault. In 8% of cases there was some other cause. Most controls were also injured as a result of falls (33%), sporting injuries (36%), or other causes (31%).

An earlier article based on the study has focused on factors influencing outcome 1 week and 3 months after injury. To summarize these findings, 1 week after injury, children with mild TBI reported significantly more frequent headaches, dizziness, and fatigue (all $P < .01$) than did controls. Children with mild TBI also demonstrated a modest but significant slowing on the Wechsler Intelligence Scale for Children–III coding subtest, $z(97) = -2.15, P < .03$. No other significant differences were apparent on other cognitive measures.

By 3 months after injury, the differences between the combined mild TBI and the combined control groups in symptom reporting were small. The mild TBI groups were reporting greater memory problems, $z(186) = -2.13, P < .03$. On the other hand, controls were reporting greater anxiety, $z(186) = -2.039, P < .04$. The only significant impairment evident on neuropsychological measures was on the CHIPASAT in the 10- to 12-year age group, $z(58) = -2.15, P < .03$. No significant differences were evident on the Rowe BRI or the CBCL.

However, a subgroup of 24 children with mild TBI (20%) showed significant ongoing difficulties at this time. They did not have more severe injuries, as measured by PTA duration, or perform more poorly than the rest of the group on neuropsychological measures. However, there was a significantly higher incidence of previous head injury in this problem subgroup and a higher incidence of premorbid stressors, such as family breakdown, preexisting psychiatric or neurologic problems, and learning difficulties.

Only 7 children from either mild TBI group had sought or received additional help in relation to the mild head injury before the 3-month review. Three of these participants sought additional medical assistance on 1 occasion within the first week after injury because of persisting symptoms such as vomiting, headache, or dizziness (2 from the intervention group and 1 from the nonintervention group). The symptoms subsequently resolved. Two participants (1 intervention, 1 nonintervention) sustained a second mild head injury between 2 and 3 months after injury.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Intervention (71% Males)</th>
<th>Nonintervention (81% Males)</th>
<th>Controls (67% Males)</th>
<th>Nonintervention (60% Males)</th>
<th>$P$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>($n = 61$)</td>
<td>($n = 58$)</td>
<td>($n = 45$)</td>
<td>($n = 47$)</td>
<td></td>
</tr>
<tr>
<td>Age (y)</td>
<td>11.0 (2.6)</td>
<td>11.4 (3.2)</td>
<td>10.9 (2.4)</td>
<td>12.3 (2.1)</td>
<td>.09</td>
</tr>
<tr>
<td>SES rank</td>
<td>4.6 (0.9)</td>
<td>4.7 (0.8)</td>
<td>4.6 (0.9)</td>
<td>4.4 (1.1)</td>
<td>.36</td>
</tr>
<tr>
<td>PTA (min)</td>
<td>84 (185)</td>
<td>113 (202)</td>
<td>—</td>
<td>—</td>
<td>.07</td>
</tr>
<tr>
<td>PPVT (standard)</td>
<td>96.9 (12.9)</td>
<td>— —</td>
<td>94.7 (12.3)</td>
<td>— —</td>
<td>.34</td>
</tr>
<tr>
<td>CBCL (total)</td>
<td>49.9 (9.6)</td>
<td>— —</td>
<td>53.3 (10.4)</td>
<td>— —</td>
<td>.28</td>
</tr>
<tr>
<td>Rowe BRI (total)</td>
<td>43.4 (13.1)</td>
<td>— —</td>
<td>44.5 (13.5)</td>
<td>— —</td>
<td>.64</td>
</tr>
</tbody>
</table>

PPVT indicates Peabody Picture Vocabulary Test.
Dashes indicate that this measure was not obtained because it was not appropriate.
the first and needed medical attention. Only 2 other children sought help in relation to persisting symptoms. One participant from the intervention group went to a naturopath for massage and manipulation for headaches. The other, from the nonintervention group, sought help from an ophthalmologist in relation to persisting double vision. There did not seem to be significant differences between groups in terms of other forms of intervention received.

Impact of Intervention

To evaluate the impact of the intervention, results on all measures obtained 3 months after injury by the intervention groups were compared with those of the nonintervention groups, who were seen for the first time at 3 months using Kruskal–Wallis analysis. Where significance was indicated, Mann–Whitney U was used to examine where the differences lay. As can be seen in Table 3, practice effects were manifested in significantly better performances by both the intervention mild TBI and control groups at 3 months on the WRAML verbal learning and visual learning subtests and the CNT in the 10- to 12-year age group. The controls also displayed significant practice effects on the coding subtest, z(88) = −2.62, P < .01. No other specific impact of the intervention was evident on neuropsychological measures.

From Table 3 it can also be seen that both mild TBI and control nonintervention groups obtained higher scores on the CBCL 3 months after injury. No other differences were apparent between the intervention and nonintervention control groups at 3 months. However, there were some interesting differences between the 2 mild TBI groups at 3 months. Parents of nonintervention mild TBI participants reported a significantly greater overall frequency of postconcussive symptoms on the PCSC at 3 months than the intervention group, particularly headaches, irritability, sleeping difficulties, and problems with judgment: PCSC headaches, z(107) = −2.96, P < .003; sleeping difficulties, z(107) = −2.36, P < .02; judgment problems, z(107) = −2.04, P < .04; and total symptom frequency, z(107) = −2.2, P < .03 (Fig 1). They also tended to report more problems on the Rowe BRI, particularly on the irritability, inattentiveness, and conduct subscales: irritability, z(103) = −1.99, P < .05; inattentive, z(103) = −2.02; P < .04; conduct, z(103) = −2.06, P < .04; and total score, z(103) = −1.99, P < .05 (Fig 2).

The mild TBI nonintervention group also obtained significantly higher scores on most subscales of the CBCL: somatic, z(104) = −2.74, P < .01; anxiety/depression: z(104) = −2.67, P < .01; social, z(104) = −2.02, P < .04; thought, z(104) = −2.52, P < .01; attention, z(104) = −2.90, P < .00; delinquency, z(104) = −1.98, P < .05; aggression, z(104) = −2.12, P < .03; total problems, z(104) = −2.98, P < .00; and internalizing, z(104) = −3.03, P < .00. As already noted, however, the nonintervention control group also obtained significantly higher scores on some scales, namely withdrawal z(82) = −2.22, P < .03; thought, z(82) = −2.68, P < .01; total problems, z(82) = −2.23, P < .03; and internalizing, z(82) = −2.07, P < .04 (Fig 3). The proportion of children with significant ongoing problems requiring referral for additional assistance was similar in the intervention (21%) and nonintervention (19%) groups. However, overall it seemed that those who received the intervention were reporting fewer problems 3 months after injury.

DISCUSSION

This study has confirmed that children who sustain mild TBI experience headaches, dizziness, and fatigue in the first week after injury. There was also evidence of slowed information processing on the Wechsler Intelligence Scale for Children–III coding subtest. By 3 months after injury, symptoms and cognitive difficulties had abated in the mild TBI groups as a whole, although some slowing of information processing was still apparent on the CHIPA-SAT in the 10- to 12-year age group. However, there was a subgroup of 20% of children who were reported to have significant ongoing problems. These children did not display significant neuropsychological impairments, nor did they sustain more severe injuries in terms of PTA duration. However, they tended to have a history of previous head injury, learning difficulties, other neurologic or psychiatric disturbance, or family stressors. Indeed, the present study supports the contention that these children seem more likely than others to sustain these injuries. These findings are consistent with those of previous studies by Farmer et al., Fay et al., Asarnow et al., Bijur and Haslam, and Fletcher et al.

There was little evidence of ongoing neuropsychological impairment 3 months after injury in either of the mild TBI groups. However, the presence of significant practice effects in both mild TBI and control groups on the WRAML and the CNT underscores the importance of using a control group to separate practice effects from recovery when serial testing on neuropsychological measures.

The provision of information about expected symptoms, their likely time course, and how best to cope with them resulted in significantly reduced reporting of symptoms and behavioral changes 3 months after injury. Although small, this impact was significant.
Increased symptom reporting was also evident on some subscales of the CBCL in the nonintervention control group, but the mild TBI nonintervention group showed clear relative elevation of scores on the somatic and to a lesser extent the attention subscale. The elevated scores in the nonintervention control group may have reflected the slightly higher incidence of preexisting history of head injury, learning difficulties, and neurologic or psychiatric problems in this group relative to the control intervention group. However, the highest incidence of preexisting problems overall was in the mild TBI intervention group, which showed the lowest scores on the CBCL both 1 week and 3 months after injury. Although there were no premorbid scores on behavioral measures for the mild TBI nonintervention group, there was little evidence of preexisting risk factors in this group.

It is important to acknowledge that the assessment process conducted in the first week after injury may in itself have had some therapeutic value. For this reason, no specific feedback was given to patients at this time regarding the results of the assessment. Nevertheless, it is not possible to fully separate the impact of the neuropsychological assessment and interaction with the research neuropsychologist from that of receipt of the booklet. Because very few of the participants with mild head injuries sought help in relation to their injuries from other sources, it was not felt that this factor would have significantly affected the outcomes.

Clearly, providing information will not entirely

**TABLE 3. Results Obtained by Mild TBI and Control Intervention Groups on Neuropsychological and Psychological Measures 3 Months After Injury**

<table>
<thead>
<tr>
<th>Measures</th>
<th>Mild TBI Intervention (n = 61)</th>
<th>Mild TBI Nonintervention (n = 58)</th>
<th>Controls Intervention (n = 45)</th>
<th>Controls Nonintervention (n = 47)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRAML verbal scale score</td>
<td>Mean (SD) 11.7 (2.9)</td>
<td>Mean (SD) 9.9 (2.5)</td>
<td>Mean (SD) 12.9 (2.4)</td>
<td>Mean (SD) 9.9 (2.6)</td>
<td>.00</td>
</tr>
<tr>
<td>WRAML visual scale score</td>
<td>11.1 (3.1)</td>
<td>9.6 (2.6)</td>
<td>11.2 (2.9)</td>
<td>9.9 (3.2)</td>
<td>.02</td>
</tr>
<tr>
<td>Digit span scale score</td>
<td>9.9 (2.5)</td>
<td>9.9 (2.7)</td>
<td>9.6 (2.6)</td>
<td>10.2 (3.1)</td>
<td>.58</td>
</tr>
<tr>
<td>Coding scale score</td>
<td>10.6 (3.4)</td>
<td>9.6 (3.2)</td>
<td>11.0 (2.9)</td>
<td>9.3 (3.1)</td>
<td>.03</td>
</tr>
<tr>
<td>CNT 4 time taken by age group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>6–9 y</td>
<td>Mean (SD) 84.4 (36.2)</td>
<td>Mean (SD) 97.8 (28.4)</td>
<td>Mean (SD) 102.1 (35.2)</td>
<td>Mean (SD) 82.8 (9.0)</td>
<td>.48</td>
</tr>
<tr>
<td>10–12 y</td>
<td>61.1 (14.3)</td>
<td>77.2 (13.7)</td>
<td>53.5 (7.4)</td>
<td>69.2 (21.9)</td>
<td>.00</td>
</tr>
<tr>
<td>13–15 y</td>
<td>55.8 (18.9)</td>
<td>62.9 (15.3)</td>
<td>55.0 (11.4)</td>
<td>57.6 (15.4)</td>
<td>.17</td>
</tr>
<tr>
<td>CHIPASAT 2 TPCR by age group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10–12 y</td>
<td>Mean (SD) 5.6 (4.3)</td>
<td>Mean (SD) 6.5 (2.1)</td>
<td>Mean (SD) 4.2 (1.4)</td>
<td>Mean (SD) 4.5 (1.5)</td>
<td>.04</td>
</tr>
<tr>
<td>13–15 y</td>
<td>3.5 (0.8)</td>
<td>3.5 (0.4)</td>
<td>4.3 (1.8)</td>
<td>4.5 (1.7)</td>
<td>.18</td>
</tr>
<tr>
<td>Rowe BRI (total)</td>
<td>43.1 (13.9)</td>
<td>49.5 (17.2)</td>
<td>43.7 (12.2)</td>
<td>44.6 (14.3)</td>
<td>.17</td>
</tr>
<tr>
<td>CBCL (total)</td>
<td>46.6 (11.3)</td>
<td>53.1 (11.9)</td>
<td>48.0 (11.6)</td>
<td>53.6 (10.4)</td>
<td>.00</td>
</tr>
<tr>
<td>Vineland Socialization</td>
<td>91.8 (9.4)</td>
<td>93.7 (22.1)</td>
<td>95.7 (14.1)</td>
<td>97.9 (15.8)</td>
<td>.53</td>
</tr>
<tr>
<td>Daily living</td>
<td>96.3 (13.9)</td>
<td>99.7 (19.6)</td>
<td>98.9 (13.0)</td>
<td>96.2 (13.9)</td>
<td>.89</td>
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<tr>
<td>Communication</td>
<td>86.8 (17.7)</td>
<td>87.7 (22.4)</td>
<td>96.5 (14.7)</td>
<td>90.3 (18.2)</td>
<td>.22</td>
</tr>
</tbody>
</table>

CHIPASAT 2 TPCR indicates Children’s Paced Auditory Serial Addition Task Time per Correct Response Trial 2.

**Fig 1.** Results of intervention versus nonintervention mild TBI and control participants on the PCSC 3 months after injury.

consistent across the PCSC, Rowe BRI, and CBCL. Increased symptom reporting was also evident on some subscales of the CBCL in the nonintervention control group, but the mild TBI nonintervention group showed clear relative elevation of scores on the somatic and to a lesser extent the attention subscale. The elevated scores in the nonintervention control group may have reflected the slightly higher incidence of preexisting history of head injury, learning difficulties, and neurologic or psychiatric problems in this group relative to the control intervention group. However, the highest incidence of preexisting problems overall was in the mild TBI intervention group, which showed the lowest scores on the CBCL both 1 week and 3 months after injury. Although there were no premorbid scores on behavioral measures for the mild TBI nonintervention group, there was little evidence of preexisting risk factors in this group.
prevent ongoing problems. Indeed, in the present study there were as many children with significant ongoing problems who received the information booklet as did not. However, it seems that such information can minimize stress in children and parents, optimize early management, and reduce the attribution of preexisting problems to the injury. Given the strong influence of preexisting factors on outcome, this seems to be a potentially important and simple measure, which could be adopted by hospital emergency departments and general practitioners. The use of this booklet has recently been introduced on a trial basis in the emergency departments of all Victorian Hospitals. A copy of the booklet may be obtained by contacting the senior author.

ACKNOWLEDGMENT

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Submitted by Student

**ARTICLES 1303**

**ILLEGAL DRUGS AND SOCIAL CLASS**

“The lower-status the target population, the easier it is to enact prohibitive legislation for nonmedical drugs . . . If “Viagra” had originated in a clandestine inner-city drug lab and had been sold under the street name “Hardy Boy,” its possession and use might well be illegal.”