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A Study of School Personnel's Knowledge

Regarding Traumatic Brain Injury

(TITLE)

BY

Kelly Kay Richardson

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

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CHARLESTON, ILLINOIS

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I HEREBY RECOMMEND THIS THESIS BE ACCEPTED AS FULFILLING
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DEPARTMENT HEAD

Knowledge of TBI

A Study of School Personnel's Knowledge
Regarding Traumatic Brain Injury

Kelly Richardson

Eastern Illinois University

RUNNING HEAD: Knowledge of TBI

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Abstract

This study attempted to determine if school psychologists are more knowledgeable regarding traumatic brain injury (TBI) today than in a study conducted years ago (Mira, Meck, & Tyler, 1988). Since the Mira, et al. study a federal category has been added to special education legislation, and it was hypothesized that school psychologists would be receiving more training in this area as a result of the addition of the special education category. This study also attempted to determine if regular education teachers, special education teachers, and school psychologists differ in their knowledge of (TBI). A survey from the Mira, et al. study was replicated and sent to regular education teachers, special education teachers, and school psychologists in Illinois. The results indicate that school psychologists were not significantly more knowledgeable than in the previous study. Although school psychologists were significantly more knowledgeable than either regular or special education teachers regarding TBI, school psychologists only averaged one and a half more correct answers than the other two groups. The implications of this study are that all three groups, regular education teachers, special education teachers, and school psychologists could all benefit from additional training in this area.

Introduction

Over the past four years, traumatic brain injury (TBI) has become an important topic in education. With the addition of a new category to the Individuals with Disabilities Education Act (IDEA) in 1990, children with TBI are now eligible for special education services (PL 101-476, Federal Register). TBI has been defined by the federal government as

an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. The term applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; language; memory; attention; reasoning; abstract thinking; judgement; problem-solving; sensory, perceptual, and motor abilities; psychosocial behavior; physical functions; information processing; and speech.

This addition to special education legislation guarantees

that all children requiring special education services due to a TBI will receive these services through the school system. This addition will have many implications for the school personnel who will be involved with these children. Because TBI is a relatively new addition to IDEA, many school personnel, including school psychologists and teachers may have little experience or knowledge concerning children with TBI.

The purpose of this study is to investigate teachers and school psychologists' knowledge about children with TBI. The educators working with these children need to know what happens to a child with TBI in order to effectively teach the student. Adjustments may be necessary to assist the child in achieving optimum learning.

For children and adults, the incidence of head injury is approximately 500,000 cases each year (Frankowski, Annegers, & Whitman, 1985). It has also been estimated that there are 110,000 cases of head injury occurring to children each year (Annegers, 1983).

Children with TBI are able to receive better medical care than in the past. DePompei and Blosser (1987) believe that "because paramedic response time has decreased and emergency medical care in trauma centers has increased, the

number of head-injured who survive has also increased" (p. 292).

Brink, Imbus, and Woo-sam (1980) agree that modern medical technology has resulted in more children with TBI being kept alive and recovering following the head trauma, but they suggest the outcome is not always optimal. These authors investigated and followed cases of severe brain injury in 344 children and adolescents. The researchers found that although the majority of the subjects were able to walk and care for themselves a year after injury, as few as 10% were considered physically normal one year after the brain injury.

Children who sustain brain damage are at risk for severe intellectual impairment (Rutter, 1981; Chadwick, Rutter, Shaffer, & Shrout, 1981). Children with TBI may have difficulties in school when expected to combine new material with old information as well as when they are expected to sustain concentration (Savage, 1987). Klonoff and Paris (1974) have found that children with even minor head injuries often display problems with memory and learning in school. Long and Williams (1988) note that after head injury, children may also have problems with short attention spans.

The degree of impairment in the child depends on many

variables, including type of injury, the location of the brain in which the damage occurred, age of the child, etc. (Levin, Benton & Grossman, 1982). Another important variable is the amount of time the child was in a coma following the injury. Research has shown that the longer the child was in a coma, the more severe the resulting brain damage and a longer recovery period may be expected for the child (Brink, Imbus, & Woo-Sam, 1980).

Telzrow (1987) believed that children often encounter major difficulties when they re-enter the school setting after a head injury. She stated that these children often have problems that are overlooked by educators. Telzrow (1987) stated that a child's recovery may not be complete at the time when the child returns to school. In fact, although most cognitive recovery occurs immediately after the injury, the recovery period may slow down and continue for as long as two years after the trauma (Chadwick, et al., 1981). Thus, students with TBI may be unlike children with other physical, mental, or emotional problems, because children with a head injury may be frequently changing neurologically for a long period of time after the injury (Shaw & Yingst, 1992).

Telzrow (1987) recommends that because children with TBI may vary from a fast to a slowly progressing recovery, school

personnel should be aware of the special concerns and characteristics associated with children with TBI. Telzrow (1987) believed that if educators are knowledgeable of TBI they will allow these children to benefit as much as possible in the school system.

When deciding on the best intervention to help a child with TBI, an individualized education plan (IEP) is drawn up to state exactly what services the school will provide for the child. According to Savage and Carter (1984), this IEP needs to be kept up-to-date with the child's progress. These authors believe that since the child may be changing very rapidly that care must be taken to ensure the IEP is appropriate for the child's needs. Savage and Carter (1984) also acknowledge that a child's recovery usually does not follow a smooth progression; they believe the child will experience many ups and downs in the recovery process. These researchers recommend that the IEP is updated frequently to make sure the child is receiving the care that he or she needs.

Children with severe TBI also have an increased risk of psychiatric disorders when compared to normal subjects (Rutter, 1981). Children with even minor head injuries have shown changes in personality and exhibit irritability

(Klonoff & Paris, 1974). Bijur, Halsum and Golding (1990) have found that children with mild head injuries are more likely than normal subjects to have high rating on scales of hyperactivity. These children may also exhibit conduct disorders and problems with anger and social functioning (Hynd & Willis, 1988). Additionally, adolescents with a head injury often have problems simply adjusting to the school situation when they return to school (Hynd & Willis, 1988). Furthermore, children with behavior problems before TBI are likely to display increased behavior problems following the injury (Chadwick, et al., 1981).

DePompei and Blosser (1987) note that there are other problems as a child with a head injury returns to school. These authors state that one of the most frustrating problems for these children is that often when they re-enter the school system, they are placed in their same classroom as before the injury. DePompei and Blosser (1987) point out that children with TBI are often no longer able to cope with the demands of that situation, especially in the first few weeks of returning to school. These authors state that these children may have special medical needs which the regular classroom is unable to handle. Educators should be aware that these children do have special needs, and be prepared to

cope with them.

Fatigue is also a common problem among children with TBI (Savage & Carter, 1984). As these children often require many special education services, each day may be hectic as the children proceed through their classes. Savage and Carter (1984) recommend that educators plan a time where students can take a break or short rest period if it is needed. These authors believe that the most learning will be accomplished is the student is fresh for each academic session. Savage and Carter (1984) also advocate shortening and/or discontinuing the breaks as the child recovers and can handle the full school day.

According to Telzrow (1987), one method to optimize the head-injured child's re-entry into the school system is for educators to make the environment more structured. She believes that the child may have difficulty organizing and prioritizing his or her time. Also, Telzrow notes that the student with TBI may require more on-on-one contact with the teacher. This author advocates planning programming for behavioral problems which may occur, experiences which enhance opportunities to transfer skills to new environments, and counseling to be made available to the child.

Teachers do not always receive important information

concerning children with TBI in their undergraduate training. One study (Savage, 1987) reported that only 5% of the special education teachers in one Vermont had been trained in teaching head-injured children, and only 8% of those with graduate training had received information in this area.

Two recent studies of the general public in the United States attempted to discover if most people were aware of the characteristics of persons with TBI. Gouvier (1988) surveyed 221 people in a large shopping mall in Louisiana and found the majority of the people surveyed were misinformed about TBI. In fact, 45% of the subjects believed that a second blow to the head would help restore memory, and 29% thought a little brain damage does not have any effect on most people.

Willer, Johnson, Rempel and Linn (1993) replicated Gouvier's (1988) study in New York and Canada and found similar results. The researchers found that most people were ignorant to the characteristics and outcomes for persons who undergo a severe head trauma. Willer et al. (1993) concluded that the majority of the general public is misinformed about TBI.

A similar study surveyed 79 school psychologists in an attempt to determine how much knowledge these professionals had in regard to children with TBI. Mira, Meck and Tyler

(1988) found that 65% of the participating school psychologists had had no training in TBI, although 46% reported having worked with children with TBI. The subjects answered questions regarding assessment techniques, incidence, educational sequelae, and general characteristics of children with brain injury. The researchers found that the school psychologists responded correctly to only 57% of the items.

The study conducted by Mira, et al. indicates that further training should be required for school psychologists. It is important to note that Mira, et al. study was done before the addition of TBI to IDEA. Perhaps school psychologists are currently getting more training in this area to assist them in working with children with TBI.

The purpose of this study is to investigate teachers' and school psychologists' knowledge about children with TBI. This study will attempt to determine if there has been an increase in the amount of knowledge since the Mira, et al. (1988) study. It is hypothesized that school personnel will now demonstrate greater knowledge due to the addition of TBI as a special education category. The Savage (1987) study indicated that school teachers also have little knowledge in regard to children with TBI. Because teachers are

responsible for working with these children when they return to school, they also need to be knowledgeable to the characteristics of these children. This study will attempt to determine if there is a difference in the knowledge of TBI between school psychologists, regular education teachers, and special education teachers.

Method

A questionnaire was sent to 100 randomly selected members of the Illinois School Psychologists' Association. Also, the questionnaire was mailed to 100 randomly selected regular education teachers and to 100 randomly selected special education teachers in Illinois. Special education teachers in this study were defined as teachers with certification in learning disabilities, behavior disorders, or mental impairments.

The examiner replicated the questionnaire of the Mira, et al. (1988) study and mailed it to the subjects who were chosen to participate in the study. Each participant also received a cover letter, a stamped envelope, and instructions for the questionnaire.

The research questions which this study attempted to answer included:

- 1) Has the addition of TBI as a new category of

eligibility of special education services increased school psychologists' knowledge regarding children with TBI?

2) Do school psychologists, regular education teachers, and special education teachers differ in their knowledge of TBI based on the 21-item questionnaire?

Design and Analysis

An internal consistency coefficient was computed to examine the 21 items on the questionnaire and their reliability. A T-test was computed to determine if psychologists in the current study have more knowledge of TBI than in the Mira, et al. (1988) study. A one-way ANOVA was computed to determine if school psychologists, regular education teachers, and special education teachers differ in their knowledge of TBI.

Results

A t-test indicated that school psychologists of today are not significantly more knowledgeable about children with TBI ($t(33)=1.30, p<.05$). A one-way ANOVA indicated that regular education teachers and special education teachers do not differ significantly in their knowledge of TBI ($M=10.0$ vs. 10.1 , respectively). The one-way ANOVA also revealed that school psychologists are significantly more knowledgeable than both regular education and special

education teachers sampled ($F(2, 101)=5.53, p>.05$). The psychologists averaged one and a half more correct answers than either of the other two groups. A Kuder-Richardson internal consistency statistic of .30 suggests that the questions in the survey were not highly correlated with one another. There was much variability in the accuracy depending on the individual question.

Discussion

Thirty-nine percent of those sampled returned the survey. Some (approximately 2%) returned the survey but declined to answer the enclosed questions. These respondents commented that they did not feel comfortable answering the questionnaire because TBI was not their area of expertise. Two people even commented that they did not know any of the answers and would be merely guessing at each item. Three respondents noted that some of the questions on the survey were confusing. It is important to note that a comparison of each item's correlation with one another indicated that the items in the questionnaire are not highly correlated, suggesting poor internal consistency. Indeed, items questions regarding tissue damage and mechanisms of the brain appeared to be easier than items regarding educational placement options and behavior patterns after a brain injury.

One item that was yielded the lowest number of correct answers asked which special education category is most appropriate for a student with a traumatic brain injury. Only 25% of those surveyed responded that TBI is the most appropriate category. Evidently, many teachers and school psychologists are unaware that a special education category for these children even exists.

A hypothesis of this survey was that school psychologists today would be more knowledgeable than the school psychologists surveyed in the Mira, et al. (1988) study due to the addition of TBI as a category of special education. The hypothesis was that school psychologists would be receiving more training in TBI as a result of the addition of the special education category. Demographic information indicates that 54% of the school psychologists included in this study had received some training in TBI. However, most of this training consisted of only attending a one- or two-day workshop and many respondents commented that they did not feel adequately trained in this area. Only 5% of the respondents acknowledged taking a college course in this area. This study indicates that school psychologists' knowledge of TBI is commensurate to a national sample of school psychologists in 1988. Apparently the addition of TBI

as a federal special education category has not strengthened school psychologists' knowledge of children with brain injuries.

This survey also attempted to determine if a significant difference existed among regular education teacher, special education teacher, and school psychologists in regard to their knowledge of TBI. It was found that school psychologists were significantly more knowledgeable. However, the school psychologists only average one and a half more questions correct than the other two groups, which suggests that although the difference was statistically significant, it may not be practically significant.

The results of this survey suggest that all three groups, regular education teachers, special education teachers, and school psychologists could benefit from additional training in TBI. School psychologists are often involved in the assessment of and programming for children with TBI, and teachers are responsible for carrying out these plans. It is very important that all three groups be knowledgeable about the general characteristics of TBI and its long-term effects. Indeed, several respondents from each group noted that they would appreciate further training in this area.

Appendix

Age _____
 Sex M F
 What is your present position?
 What is your degree?
 B.A/B.S. _____
 M.A. _____
 Specialist _____
 Working on doctorate _____
 Ph.D or Ed.D _____

Have you received any training in or information about children with traumatic brain injury (TBI)? _____

If so, where did you receive this and how extensive was the training? _____

In your practice, have you worked with children with TBI? _____

If so, how many? _____

Did you receive information or in-service about TBI when the child re-entered the school? _____

What was the extent of this information? _____

1. In a school district with an enrollment of 10,000 children, about how many would we expect to be hospitalized with TBI in one year?
 _____ 2 to 5
 _____ 20
 _____ 100 or more

2. When a child returns to school following a TBI he/she often shows difficulties in which areas (choose all that apply).
 _____ Cognitive function (i.e. organizing information)
 _____ Psychosocial adjustment (i.e. impulsivity; apathy; lack of initiative)
 _____ Physical and motor functions (i.e. stamina; speed)

3. A standardized individual intelligence test is the best indicator of how a student is doing following a TBI.
 _____ True
 _____ False

4. When a child's head receives a significant blow the part of the brain that is damaged (and consequently the functions that will be impaired) is the area directly beneath the part of the skull that is hit.

_____ True
 _____ False

5. The special education category of handicapping condition which is most appropriate for meeting the needs of the TBI child is _____.

6. We can be more optimistic about the recovery from TBI of children below age 5 than of adolescents.

_____ True
 _____ False

7. Considering all TBI children, including those with mild injury, what percent experience later school problems to the degree that they are retained, require special education resources, or special class placement?

_____ 10%
 _____ 20%
 _____ 50%
 _____ Almost all

8. In an accident, if there is no actual blow struck to the head, children's brains are so well protected by the skull and fluid that there is generally is little physical or mental residual.

_____ True
 _____ False

9. Indicate by numbering from 1 (for first) to 4 (for last) the order in which the following skills recover after TBI.

_____ Speech and memory
 _____ Global IQ
 _____ Sensory problems
 _____ Higher level information processing

10. Even if there is actual damage to brain tissue and prolonged unconsciousness, there may be complete recovery of physical function. In this case, there is usually complete recovery of complex cognitive and emotional functioning as well.

_____ True
 _____ False

11. Your best guess regarding ultimate prognosis can be made

- a year after injury
- a month after injury
- when the child has recovered immediate memory function.

12. Studies of the effects of age on cognitive outcome shows that there is greatest impairment when TBI occurs

- under age 5
- elementary age
- adolescence
- at any time; there are not age effects

13. Criteria for doing a formal, complete assessment of cognitive function (check all that apply).

- child is not seriously confused
- rapid recovery is still going on
- attention span is at least 30 minutes

14. Following TBI you generally see a cognitive pattern characterized by

- verbal better than nonverbal skills
- nonverbal better than verbal skills
- verbal and nonverbal skills are uniformly low
- none of the above

15. The course of cognitive recovery after TBI is generally substantial improvement in the first year and smaller gains in the second, especially with those with the most severe injuries.

- True
- False

16. The major cause of severe head injury in school age children is

- sports accidents
- traffic accidents
- falls
- abuse

17. A comprehensive knowledge of what cognitive function are impaired following TBI tells us what part of the brain was damaged.

- True
- False

18. The duration of post traumatic amnesia is strongly related to eventual intellectual functioning.

- True
 False

19. Controlled studies of children sustaining head injuries reveals that prior to injury (check all that apply).

- those severely injured in traffic accidents are not different from non-injured controls
 those sustaining mild injuries differed from controls
 families of children sustaining mild head injuries differ from controls

20. Following TBI, there is an increase in behavioral/emotional disorders which diminishes, more rapidly the first year and less so in the second.

- True
 False

21. Diffuse, generalized damage following TBI has greater debilitating effects on

- specific, already developed functions
 development of higher level cognitive functions

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