

# Using Interactive Multimedia to Teach Parent Advocacy Skills: An Exploratory Study

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**Objective:** To examine the efficacy of *Brain Injury Partners: Advocacy Skills for Parents*, an interactive multimedia intervention that provides training in educational advocacy skills for parents of children with traumatic brain injury (TBI). **Design:** Randomized trial, with participants assigned to treatment (*Brain Injury Partners* CD-ROM) or control (alternate CD-ROM) conditions. **Main Outcome Measures:** Knowledge; skill application; and attitude, behavioral intention, and self-efficacy to use key advocacy skills. **Participants:** Thirty-one parents of children with TBI. **Results:** The *Brain Injury Partners* group reported higher postintervention adjusted means for application, knowledge, and attitudes scale scores than did the control group. **Conclusions:** The result demonstrates the utility of a computer-delivered intervention for training parents in key skills for communicating with school personnel. **Key words:** *advocacy, communication skills, interactive multimedia, parent training, traumatic brain injury, Web-based training*

**B**ETWEEN 1995 and 2003, the Centers for Disease Control and Prevention reported that each year an average of 44,000 children between the ages of 5 and 18 sustained brain injuries, requiring hospitalization as a result of motor vehicle crashes, falls, sports injuries, and physical abuse.<sup>1</sup> During this period, an annual average of an additional 335,000 children were seen in hospital emergency departments for traumatic brain injury (TBI) and released.<sup>1</sup> It is estimated that each year, 29,000 children are left with long-lasting, significant alterations in social, behavioral, physical, and cognitive functioning following TBI.<sup>2</sup>

Serving students with TBI in today's schools is challenging because few educators understand the complex and unique issues faced by this population.<sup>3,4</sup> Although TBI is generally characterized by wide variability in functioning—both among children and within a given child over time and task,<sup>5</sup> trauma to the brain clearly affects all aspects of a child's functioning. Effects include impairment in memory and learning,<sup>6–8</sup> academic skills,<sup>9</sup> executive functions,<sup>10,11</sup> and changes in behavior.<sup>12</sup> Deficits in social behavior also pose significant problems for peer relationships,<sup>13</sup> often leading

to a loss of friends, decrease in social activities, and absence of social support.<sup>14</sup>

While special education training addresses the academic and behavioral needs of students with other types of disabilities, it rarely prepares teachers for the unique and complex constellation of issues presented by each student with TBI.<sup>15</sup> Furthermore, the programs and supports available to children with TBI in schools are often limited and fail to provide appropriate long-term levels of assistance.<sup>16–18</sup>

The negative impact of childhood TBI on family functioning has been well documented.<sup>19–21</sup> Compounding the problem is the fact that families may also be dealing with the financial repercussions of a lengthy hospitalization, the ongoing medical needs of the child,<sup>22</sup> and, in some cases, protracted legal negotiations or litigation. In some cases, there can be a sharp disconnect between services medical professionals recommend and what schools can provide. Rehabilitation staff may contribute to adversarial school relationships by suggesting that medically based goals be incorporated into an education setting without considering school contexts, available resources, and academic objectives.<sup>23</sup>

Unfortunately, the picture for families often does not improve with time, and familial distress is enduring.<sup>24–26</sup> Furthermore, there is a correspondence between family functioning and child outcomes following injury. Studies have demonstrated that psychological stress, postinjury burden, low socioeconomic status, and poor preinjury family functioning contribute to poorer cognitive and behavioral outcomes for children.<sup>27–31</sup> Recent research suggests that family-centered interventions based

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on partnerships between parents and professionals can have a positive impact on child outcomes.<sup>32-34</sup> For example, Braga et al<sup>32</sup> demonstrated that children of families who implemented cognitive and physical interventions in the home showed greater gains 1 year later than did children who received rehabilitation in a rehabilitation facility.

Parent involvement in educational planning for students with TBI is essential to ensure informed educational decisions that reflect each student's unique needs.<sup>35</sup> Because prior to the injury, most children with TBI progressed typically through school, and parents are often not familiar with the provisions of the Individuals with Disabilities Education Act and their role and rights in the educational process.<sup>36</sup> Unfortunately, parent-professional relationships can easily become adversarial because of the many stressors both families and school staff face in designing educational programs for students with TBI.<sup>15,22</sup> When parents and educators—the two most influential agents for change in the child's learning experience—have trouble working in partnership, conflicts arise and the student's education suffers.<sup>37-39</sup>

For children to have successful school experiences, their parents and teachers must work collaboratively.<sup>40-42</sup> However, parents report needing assistance to help school personnel understand the nature and consequences of brain injury<sup>43</sup> and to secure school-based interventions.<sup>44</sup> There is some evidence to suggest that parents can acquire skills to advocate more effectively for children with disabilities.<sup>45,46</sup> For example, Walker<sup>47</sup> found that when both parents and teachers used effective communication skills (taking the other's perspective, expressing appreciation for helpful behavior, and maintaining frequent contact), parent-professional contacts became more frequent and were rated by both teachers and parents as more satisfactory, positive, and productive.

Recently, Web-based and other computerized technologies have been utilized to provide effective and efficient delivery of information and services to families affected by brain injury. Wade et al<sup>48</sup> developed a Web-based intervention that allowed families of children with brain injury and therapists to communicate online. They noted both a therapeutic benefit (ie, reduction in problem behaviors and increased knowledge) and participant satisfaction with the technology and therapeutic relationship. Similarly, Rotondi et al<sup>49</sup> demonstrated the effectiveness of a Web-based intervention for female caregivers of adults with brain injuries. Computerized applications have the potential to reach a large number of families who may otherwise not receive services and training.<sup>50,51</sup>

This study is the first randomized trial examining the efficacy of a computer-based intervention to improve

parental advocacy skills in the educational context. *Brain Injury Partners: Advocacy Skills for Parents* is an interactive CD-ROM-based program for parents that teaches specific techniques related to effective communication in school settings. The program is a modification of a text-based training program for family members advocating for an adult with brain injury.<sup>52</sup> The primary research question was: Does use of the *Brain Injury Partners* program by parents of children with TBI increase knowledge of effective communication skills?

## METHODS

### Participants

Participants were recruited in January and February 2004 through state Brain Injury Associations' e-mail lists and notices in brain injury-related newsletters and Web pages. Inclusion criteria were as follows: (a) parent, guardian, or adult family caregiver of a child with a brain injury; (b) child with injury in grades kindergarten through 8; (c) access to a computer with CD-ROM, video, and audio capability; and (d) no other family member participating in the project. Interested individuals were screened through phone interviews to determine whether they met criteria and were willing to participate. All participants completed an informed consent form, which they returned through the mail. Participants were paid \$40.00 upon return of the informed consent and pretest.

A total of 31 participants from suburban, rural, and urban communities in 12 states participated in the evaluation. Demographic characteristics for the evaluation participants are given in Table 1, along with selected information about the child with the brain injury for whom the participant was a caregiver; that is, age of child at injury, current grade in school, and the number of years the child had been in the school system since sustaining the brain injury.

Using a 5-point Likert-type scale (from very easy to very difficult), parents rated on a checklist of common problems associated with TBI the range of cognitive, behavioral, and physical challenges experienced by their child, such as learning new information, organizing materials, controlling anger, speech and language problems, walking, and vision problems. Parents reported that their children had significant difficulties (ie, areas rated as difficult or very difficult for their child) in the following areas: memory (71%), attention (61%), organization (90%), speech and language (48%), social behavior (65%), mobility (23%), and vision (26%). All but 4 parents (13%) reported multiple areas of difficulty for their child, with 48% ( $n = 15$ ) endorsing 6 to 9 of the areas listed. The overall effect of injury on the child's functioning ranged from mild-moderate (eg, requiring academic help and some to no behavioral support) to severe (eg,

**TABLE 1** *Brain Injury Partners evaluation participants: January–April 2004 (N = 31)*

Demographic characteristics							
Gender	n (%)	Race/ethnicity	n (%)	Education	n (%)	Relationship with child	n (%)
Female	29 (94)	Caucasian	23 (74)	Some college or specialized training	15 (48)	Parent	28 (90)
Male	2 (6)	Hispanic/Latino	4 (13)	College graduate	11 (36)	Other relative	2 (6)
		African American	1 (3)	High school	3 (10)	Guardian	1 (3)
		Asian American	1 (3)	Graduate degree	2 (6)		
		Other	1 (3)				
		No response	1 (3)				
Characteristics of child with brain injury							
Age of child at injury, y	n (%)	Current grade in school	n (%)	Years in school after injury was sustained	n (%)		
Birth to 1	13 (41)	Kindergarten	3 (10)	1–3	14 (45)		
1–5	11 (36)	1–5	16 (52)	4–6	10 (32)		
6–12	7 (23)	6–8	10 (32)	7–9	5 (16)		
		No response	2 (6)	No response	2 (6)		

cognitive, visual, and mobility issues requiring significant support). Most parents (84%) indicated that their child received special education services at school.

### Procedures

The evaluation of the CD-ROM-based program consisted of a randomized trial, with participants assigned to treatment (training using the *Brain Injury Partners* CD-ROM) or control (alternate CD-ROM) conditions. The control group viewed a CD-ROM-based informational resource for parents of students with TBI, *Project B.R.A.I.N.*<sup>53</sup> This CD includes information about the family's experience with TBI and appropriate school services. All participants were mailed the consent form and pretest, which they completed and returned. They then received via mail either the *Brain Injury Partners* or the *Project B.R.A.I.N.* CD and the posttest, which they returned by mail. Both groups were assessed pretraining and posttraining on measures of communication skill knowledge, application, attitudes, behavioral intentions, and self-efficacy. At posttest, we also asked for open-ended comments regarding their satisfaction with the program. Following the posttest, the participants received the other CD-ROM that was not part of their experimental condition.

### *Brain Injury Partners* program

Content for the *Brain Injury Partners* CD-ROM was developed from the text-based Family Advocacy Skills Training program,<sup>52</sup> which provides communication skills training and peer support for family members of adults with brain injury. Field testing of the Fam-

ily Advocacy Skills Training program yielded positive outcomes for parents and spouses of adults with TBI. Family members who participated in the 6-week field training program reported a pre-post decrease in anxiety and an increase in satisfaction with interactions with service providers.<sup>54</sup> In addition, interview data from parents and professionals with experience in brain injury guided content, creation of the video examples, and the navigation format of the computer-based program. In-depth, semistructured interviews with 8 parents and school professionals were conducted on the phone or in person. In particular, their input provided examples for authentic video scenarios, specific strategies for effective parent-educator cooperation (eg, suggesting a technique that had worked well in another setting), and ideas for depicting school personnel and their limitations in a realistic and respectful manner.

The CD-ROM-based program was developed to train a core skill area for parent advocacy and effective communication. The content consists of key communication skills shown to improve parent-professional relationships,<sup>47</sup> and is presented in 4 sections: (a) Prepare (preparing for a meeting), (b) Listen (active listening with professionals), (c) Advocate (specifying a request), and (d) Negotiate (working toward a solution when parent and professional disagree). The program uses text and video to present information about each key skill. For each behavioral skill, the program provides rationale via text and testimonials by a range of parent models and shows a parent model demonstrating effective and ineffective use of the skill. This intervention approach has been shown to be effective in a variety of behavior change applications, including family caregivers of persons with dementia,<sup>55</sup>

for drug refusal skills,<sup>56</sup> and for healthy eating/diet.<sup>57</sup> For example, in the "Listen" unit, the parent of a young boy with TBI who has trouble staying focused in class meets with the teacher about strategies to help her son pay attention better. The example shows how she makes eye contact, paraphrases what the teacher says, and does not interrupt. After the positive example, the program shows the same parent model using the skill ineffectively (eg, the parent model sits with arms crossed, makes no eye contact, and interrupts). The user is asked to determine what is ineffective about the video example (eg, poor eye contact, interrupts). Incorrect answers are remediated by explaining correct and incorrect elements used by the parent models. All users view a corrected, positive version of each ineffective communication example. The average length of time to complete the program is approximately 1 hour.

### Measures

Demographic variables assessed at pretest included gender, race/ethnicity, level of education for the participant, as well as participant's relationship to the child with brain injury. Descriptive information collected relating to the child was current age and grade level in school, age at occurrence of brain injury, challenges associated with TBI, and whether or not the child received special education services.

According to the Expanded Theory of Reasoned Action,<sup>58,59</sup> individuals are more likely to take action if they believe that there will be positive consequences and few negative aspects to engaging in the action. Furthermore, Bandura's Social Learning Theory<sup>60</sup> states that there is a relation between self-efficacy and outcome behavior. According to Bandura,<sup>61,62</sup> a change in one's belief about his or her ability to successfully execute a given behavior will mediate the initiation and maintenance of change in that behavior. Following this theoretical framework, dependent measures assessed knowledge, attitudes, behavioral intention, and self-efficacy to use key advocacy skills. The pretest and posttest measures were identical.

### Knowledge

Knowledge scales were constructed for each of the 4 communication skills: Prepare, Listen, Advocate, and Negotiate. The knowledge scales consisted of 13 items that asked the user to identify behavioral components of each communication skill. For example, to test knowledge of the Advocate section, the user was asked to identify the 3 critical behavioral skills involved in advocating (be brief, explain the impact, and suggest a solution or make a request). Each item contained 5 choices and contained foil answers. The total number correct for each

section was summed to form each of the 4 knowledge scales.

### *Skill application, self-efficacy, and behavioral intention*

We assessed (a) skill application, (b) self-efficacy, and (c) behavioral intention regarding the key communication skills using 6 hypothetical educator-parent interaction scenarios. Each text-based situation presented a typical parent-teacher interaction and possible parent responses (eg, parent negotiating effectively with the special education teacher to get individualized instruction in reading for her child). For *skill application*, the parent rated the effectiveness of the skills depicted by indicating whether the portrayal was effective or not effective. We assessed *self-efficacy* in using the behavioral strategy by asking parents to rate how confident they were in the ability to use the targeted strategy (using a 5-point Likert-type scale, where 1 = not at all confident and 5 = very confident.). Finally, we assessed *behavioral intention* by asking parents how likely they would be to respond the same way as the parent in the scenario (again on a 5-point Likert-type scale, where 1 = not likely and 5 = very likely). Each scenario focused on one communication skill (eg, checking for understanding), and all questions related to that skill were combined to form each of the 4 composite self-efficacy and intentional scales. For example, all situations assessing the skill of listening were combined and a composite listening scale was created across the scenarios.

### *Attitudes*

Parents' attitudes were assessed with a 5-item scale on which they rated how effective they felt as a parent advocate (1 = not at all effective and 5 = very effective). In addition, treatment users were asked to comment on user satisfaction at posttest.

### *User satisfaction*

Parents in the experimental condition were asked to comment on program content and their overall satisfaction with the *Brain Injury Partners* program in an open-ended format.

## RESULTS

### Program effects

The goal of the program evaluation was to examine the impact of the CD-ROM-delivered advocacy training program versus the CD-ROM informational resource on outcome measures.

To test the overall efficacy of the program effects, a multivariate analysis of covariance was conducted to compare the two conditions on the posttest-adjusted

means across the 5 outcome measures (covariate adjusted for pretest levels of the 5 outcome measures). The covariates were entered as a block. A significant multivariate group effect was obtained  $F_{(5,20)} = 5.05, P = .004$ , with an overall  $\eta^2$  (variance explained) equals to 0.56. Table 2 presents the pre-post means and standard deviations by condition and the univariate analysis of covariance group effect statistics for the 5 dependent measures. Significant univariate effects were obtained in the predicted direction for 3 of the 5 outcome measures. Thus, the treatment group reported higher postintervention adjusted means for the application, knowledge, and attitudes scales than did the control group.

### Effect sizes

Effect size calculations are an informative statistic about program impact because they are a relative indicator of how much an intervention has influenced the dependent measures. Cohen<sup>63</sup> defines a medium effect size as  $\eta^2$  of more than 0.06 and large effect size as  $\eta^2$  of more than 0.14. The effect sizes were 0.56 overall, 0.28 for application, 0.28 for knowledge, and 0.52 for attitudes. Thus, the intervention produced large effect sizes for posttest group differences on application of skills, knowledge, and attitudes.

### User satisfaction with program

On the open-ended questions about their overall satisfaction, participants responded favorably to the delivery format, usability, and content. Some commented on how they applied (or would apply in the future) information contained in the program. For example, one parent commented on the "...brevity of the material and yet how specific and informative it was." Other parents commented on the usefulness of specific strategies. For example, one parent reported having learned the importance of body posture to an effective discussion.

## DISCUSSION

The purpose of this study was to test the efficacy of a CD-ROM-based program targeting parent-teacher communication—the *Brain Injury Partners* program. The results of the randomized trial indicate that the program had a very large overall effect size of 0.56 and very large to medium-large effect sizes on 3 of the outcome scales (skill application, knowledge, and attitudes). Two scales—intention and self-efficacy—did not attain statistical significance, presumably due to ceiling effects at pretest. Overall, these results are extremely encouraging. In comparison with the control group, participants in the treatment group demonstrated considerable improvement in understanding and discriminating the key communication skills in typical parent-teacher interactions, despite

the rather limited statistical power of a sample size of 31. Skilled communication is an essential component of parental advocacy,<sup>39</sup> and leads to better educational and social outcomes for students with TBI.<sup>35,64</sup> The skills learned by parents participating in this preliminary study may translate to decreased confrontation and more effective, focused meetings between parents and educators.

Parents of children with TBI experience significant, ongoing stress that contributes to difficulty navigating complex educational services. They require accessible tools to gain specific skills necessary for effective advocacy for their children. Computer-based interventions have previously been shown to be effective for intervening with families of school-aged children with a variety of disabilities<sup>45,46</sup> and with caregivers for children and adults with TBI.<sup>48,49</sup>

It appears that the method of training and delivery contributed to the effectiveness of the program. First, the use of video as a training tool had advantages over other training approaches. Video examples allowed modeling of subtle verbal and nonverbal skills using content familiar to parents of children with TBI—for example, Individualized Education Plan meetings, making requests of teachers about educational programming. Research indicates that messages and modeling are more effective when tailored for the audience.<sup>65</sup> Through video, the program presented both effective *and* ineffective examples, enhancing the participant's ability to discriminate successful application of communication skills. Second, program content was grounded in parents' own experiences and resonated with the participants. The program both normalized their frustrating experiences and provided strategies to deal with difficult school interactions. The program taught skills that, when applied to everyday interactions with school personnel, should improve ongoing relationships between parents and school personnel. This was evident in parents' reports after using the program (eg, "I've tried to compromise more and not use so many medical terms with the teachers. I've also tried to take and understand the school's perspective more often.") Finally, the CD-ROM-based program was accessible. Participants could view the program at their own pace at any convenient time, rather than scheduling time with a counselor or attending a training program. The accessibility of the program is important for families who may otherwise not seek help.<sup>50,51</sup>

### Limitations

A number of limitations exist for this initial study that provide a focus for future research. The small sample of participants limits generalization of our results to other parents. Generalizability is also limited by a fairly homogenous sample in terms of ethnocultural diversity, making it difficult to determine differential effects of the

**TABLE 2** Analysis of covariance results of treatment and control groups comparisons, with means and standard deviation by treatment condition

Outcomes measure	Pretest, <i>M</i> (SD)		Posttest, <i>M</i> (SD)		Group effect ( <i>df</i> = 1, 24)		
	Control	Treatment	Control	Treatment	<i>F</i>	<i>P</i>	$\eta^2$
Knowledge	13.0 (1.8)	13.3 (2.0)	13.0 (2.0)	16.6 (3.0)	9.28	.006	0.28
Application	1.2 (0.6)	1.5 (0.8)	1.2 (0.9)	2.2 (0.9)	9.51	.005	0.28
Attitudes	1.0 (1.0)	1.0 (0.7)	0.6 (0.7)	2.2 (0.9)	25.87	<.001	0.52
Intentions	4.5 (0.3)	4.2 (0.8)	4.4 (0.3)	4.4 (0.3)	0.27	.605	0.01
Self-efficacy	4.3 (0.3)	4.2 (0.9)	4.5 (0.2)	4.6 (0.4)	0.06	.810	0.00

program on individuals from other backgrounds. Participation was constrained by the requirement that parents should have the computer access to view the *Brain Injury Partners* program or the control program. Providing computers to evaluate the intervention (eg, Wade et al<sup>66</sup>) could lead to a broader sample of parents not limited by computer access. An additional sampling limitation is that the majority of the parents participating in the study were fairly well educated. While our sample size was not sufficient to analyze the effect of educational level, other studies of computer-based interventions have found that parents with more education do not derive greater benefits from participation than those with less education or familiarity with computers.<sup>33</sup>

Also, a majority of the parents in our sample had many years of experience recognizing and, conceivably, advocating for the needs of their child; 64.5% of the children sustained their injury between birth and age 5. The families of children who were injured in the first few years of life likely experienced different challenges than those of children injured during the school years and had more prior experience with systems of support. Also, parents were recruited from state Brain Injury Associations, possibly resulting in a sample that was unusually motivated to be effective advocates. Furthermore, both the treatment and control groups had very high pretest scores (ie, mean scores >4 on a 5-point scale) on the 2 outcome measures that were nonsignificant (ie, intention and self-efficacy scales, which restricted the potential for measuring significant differences at posttest due to ceiling effects). The ceiling effect may also stem from our sample's experience, as family members likely had encountered multiple opportunities to advocate for their children over the years. The families may have developed other skills related to advocacy (ie, those not included in the pilot program) that led to perceptions of self-efficacy prior to viewing the program. Finally, our evaluation protocol contained some inherent limitations due to the pen-and-paper administration at remote locations. Although treatment participants clearly demonstrated increased knowledge on the posttest, this improvement

may be attributable to participants referring to the CD to access additional information to complete items on the measure. It is unlikely, however, that participants' scores on skill application items were influenced by referencing the program, as these items required analysis of novel scenarios. Similarly, scores on the self-efficacy scale are unlikely to have been influenced by referring to the program. More recent technology that allows online tracking of program use and blocks access to the program while completing online assessments will be used in future programs to prevent this potentially limiting issue.

The program itself was limited to only one key area of effective advocacy, communication skills. The need for additional resources and access to ongoing social support is also essential to reduce family burden<sup>67-69</sup> and promote more effective problem solving with schools. These content areas were not covered in the *Brain Injury Partners* program.

Our control program did not allow us to demonstrate that the *Brain Injury Partners* training program was more effective than other *advocacy* training programs for parents. The control program provided information about childhood brain injury and strategies for helping students in the school setting but did not provide advocacy training. Subsequent studies should utilize a comparison between the training program and the resources parents currently obtain to learn about advocacy for their children (eg, advocacy counseling or parent training seminars). In addition, it would be important to capture information about the degree to which participants actually complete the program, a measure that was not available for the *Brain Injury Partners* program. Finally, expanding the measures would yield important information about skill application in real-life contexts. Our data showed that parents could not only describe key communication skills but also recognized situations in which parents were/were not appropriately applying those skills. Following the Theory of Reasoned Action, this would predict the application of skills in real-life situations. However, we cannot determine the extent to which parent will use the skills effectively during

school interactions. It is possible that parents would need follow-up coaching and/or booster sessions to apply the skills in real-world settings. Future research should measure behavioral change in parent-school interactions (eg, observation of skills demonstrated in Individualized Education Plan meetings) to determine the effect of training materials on actual communication skills. Furthermore, the effects of utilizing the skills on obtaining services and parental satisfaction with services as a result of watching the program should be evaluated.

This study demonstrated the utility of a Web-based intervention for training parents in key skills for communicating with school personnel about their child with a brain injury. Interventions delivered through the Internet are particularly advantageous for families affected by brain injury because they are accessible at any time and allow parents to learn and practice skills in a self-paced, private environment. Future research should focus on expanded materials and the outcomes of applying advocacy skills in everyday school contexts.

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[AQ11]

[AQ12]

[AQ13]

**Title:** Using Interactive Multimedia to Teach Parent Advocacy Skills: An Exploratory Study

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### **Author Queries**

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