Psychological Adjustment after Moderate to Severe TBI: A Positive Psychological Approach

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Optimizing Concussion Recovery: Developing Positive Expectations for Concussion Recovery

Concussion Facts

- Each year, approximately 1.7 million people in the United States will sustain a traumatic brain injury (TBI).
- Concussions or mild TBI (mTBI) account for approximately 75 – 90% of these cases.
- The economic cost of mTBI has been estimated at $17 billion annually.
- Approximately 14% of people who sustain mTBI are treated in clinics or their physician’s office, and another 25% do not seek medical care after injury; however, most people who experience mTBI are treated and released from the emergency department.

Classification of Severity of TBI

<table>
<thead>
<tr>
<th></th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
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<tbody>
<tr>
<td>LOC</td>
<td>&lt;30 min</td>
<td>30 min-36 hrs</td>
<td>&gt;36 hrs</td>
</tr>
<tr>
<td>PTA</td>
<td>&lt;24 hrs</td>
<td>1-7 days</td>
<td>&gt; 7 days</td>
</tr>
<tr>
<td>GCS</td>
<td>13-15</td>
<td>9-12</td>
<td>8 or below</td>
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*Exception - Those with GCS of 13-14 with intracranial bleed (mild complicated) may perform more like moderates on neuropsych testing and functional outcomes (Kashluba, Hanks et al, 2008; Williams, Levin, & Eisenberg, 1990).

Cognitive Recovery of Mild TBI

- Early studies: Dikmen, Levin, McLean et al. (1986), Levin et al (1987) used very clean mild TBI sample - no previous head injury, psychiatric disorder, or substance abuse histories, or pending litigation and tested at 1 and 3 months post-injury.
- Cognitive deficits (attention, processing, memory) at 1 month in some but not in all of these patients.
- Normal functioning at 3 months.

Dose Response Relationship

- Rohling, Millis, & Meyers (2003)
  - Took Dikmen’s sample of 436 TBI cases and focused on test scores generated from patients' 1-year neuropsychological assessment.
  - An effect size was calculated on the overall test battery mean score.
  - A significant dose-response relationship between loss of consciousness (LOC) and cognitive impairment was found using effect sizes for the Dikmen sample.
Injury Severity Using Effect Sizes (Hedges' g) for Dikmen's Sample.

<table>
<thead>
<tr>
<th>Severity group</th>
<th>n</th>
<th>Mean SD</th>
<th>Minimum</th>
<th>Median</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1: TFC&lt;1 hr</td>
<td>161</td>
<td>0.02 (0.13)</td>
<td>0.26</td>
<td>0.02</td>
<td>0.20</td>
</tr>
<tr>
<td>Group 2: TFC=1–23 hr</td>
<td>100</td>
<td>0.22 (0.14)</td>
<td>0.47</td>
<td>0.23</td>
<td>0.03</td>
</tr>
<tr>
<td>Group 3: TFC=1–6 days</td>
<td>52</td>
<td>0.45 (0.23)</td>
<td>0.94</td>
<td>0.42</td>
<td>0.09</td>
</tr>
<tr>
<td>Group 4: TFC=7–13 days</td>
<td>37</td>
<td>0.68 (0.27)</td>
<td>1.21</td>
<td>0.66</td>
<td>0.15</td>
</tr>
<tr>
<td>Group 5: TFC=14–28 days</td>
<td>32</td>
<td>1.33 (0.28)</td>
<td>1.67</td>
<td>1.26</td>
<td>0.89</td>
</tr>
<tr>
<td>Group 6: TFC&gt;28 days</td>
<td>53</td>
<td>2.31 (0.41)</td>
<td>2.88</td>
<td>2.24</td>
<td>0.85</td>
</tr>
<tr>
<td>Entire sample</td>
<td>435</td>
<td>0.82 (0.80)</td>
<td>2.88</td>
<td>0.56</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Then the researchers replicated the same effect in an independent group of 150 TBI patients from Meyers dataset.
- Again, the dose response relationship held.
- The shorter the LOC, the less the cognitive effects.
- The one year data was consistent with individuals without TBI.

Sports as a Laboratory Assessment Model (SLAM)

<table>
<thead>
<tr>
<th>Preseason</th>
<th>Competition</th>
<th>Postinjury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline Testing</td>
<td>Repeat Testing</td>
<td>INJURY</td>
</tr>
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</table>

NCAA Concussion Study
- Prospective group of 1631 football players for 15 US colleges.
- 94 players sustained concussion based on the American Academy of Neurology criteria and 56 non-injured controls were assessed with respect to symptoms, cognitive functioning, and postural stability.
NCAA Concussion Study

- Neuropsych deficits (attention, processing, memory) resolved within 7-10 days.
- Symptom reporting was highly correlated with neuropsychological testing with respect to days of recovery (7-10 days).
- The best predictor of full recovery was the SAC – postural instability.
- As such, no need for neuropsychological testing in concussion patients (e.g., ImPACT, or other pencil and paper testing), unless prolonged symptoms and then neuropsychological testing is helpful to determine what other factors may be maintaining symptoms.

Persistent Symptoms

- Overall review of the studies on mTBI/concussion show that over 90% do well and experience spontaneous recovery.
- For those in the 10% who have persistent symptoms, the symptoms are nonspecific and can be related to pain and fatigue from orthopedic injuries, premorbid issues such as ADHD, learning disability, and psychiatric disorder.
- Many of the studies that report persisting symptoms mix in mild complicated patients, so it is not a clean sample.

Prognosis

- The WHO task force on mTBI summarized the results of studies that reported symptoms after mTBI, indicating headache, blurred vision, dizziness, subjective memory problems, and sleep problems are the most common symptoms early on in recovery.
- Most studies indicate a pattern of gradual symptom recovery within the first 1-2 weeks
- The WHO task force found that there was evidence that persistent symptoms beyond the typical recovery period is attributable to factors other than mTBI (e.g., unstable relationships, lack of social support, preexisting psychiatric or personality disorders, comorbid physical conditions, litigation/compensation).
- The only factor that predicted long-term effects was the presence of litigation.

Return to Work after Concussion

- Best predictor of return to work in brain injury is job stability in the 6 months prior to injury (Dikmen et al.)
  - True for those with even moderate to severe injury
  - Preinjury job stability predictive above and beyond injury severity, cognitive functioning (except with those who have profound impairment), and physical issues.
  - Setting positive expectations for return to work paired with good job stability prior to the injury appears to be the most important factor in getting people back to work after injury.

Return to Work – 4 Major Points

1. Empirical findings show that the longer the person stays off of work, the worse the outcome, even in those with moderate or severe injury.
2. At greater risk for depression, apathy, and cognitive/physical deconditioning the longer one is off of work.
3. In concussion, if the person can return to work within 1-2 weeks, best outcome.
4. Literature shows that the vast majority of people return to work after concussion, but those who do not have litigation involvement, orthopedic injuries with pain issues, or psychological comorbidities.
Theories on why symptoms are maintained in the context of neurologic recovery

- A number of psychosocial models have been proposed to explain longstanding symptom reporting after mTBI.

- The "Good Old Days" hypothesis suggests that after negative events, people may attribute all symptoms to that event and ignore any prior history of these same symptoms or other factors that may be contributing to their appearance/maintenance.

- Iverson and colleagues added to this theory in demonstrating that individuals with a mTBI retrospectively endorsed fewer pre-injury symptoms as compared to a healthy control group.

- Similarly, individuals with mTBI who reported significant persisting symptoms overestimated their past academic achievement.

- Expectation as Etiology theory
  
  - The development and maintenance of lingering symptoms is related to the extent to which an individual attributes common complaints to their brain injury.
  
  - Consistent with this theory, Mittenberg et al. found that adults with mTBI overpredicted problems that would likely occur 6 months post mTBI, and they underestimated the prevalence of general complaints as compared to healthy controls.
  
  - For example, it is common for healthy adults to forget where they put their keys; people with mTBI would be more likely to view this incident as signaling a serious problem due to brain injury.

Expectation at Etiology

Suhr and Gunstad evaluated the Expectation as Etiology theory and found that among individuals with a prior mTBI in whom negative expectancies were experimentally induced (diagnosis threat condition), negative expectancies did indeed predict adverse effects on subsequent neuropsychological testing, including self-reported amount of effort put forth on the tasks. In contrast, this effect was not observed among individuals with a prior mTBI who were not experimentally sensitized to negative expectancy.

Taken together, these theories and the empirical studies that support them indicate that individuals who expect negative outcomes after an injury are more likely to experience negative outcomes, akin to a self-fulfilling prophecy.

So, what to do with these individuals?


- Treatment manual that focused on education about expected symptoms, how long they should last, natural recovery curve, expected recovery, etc. given at ED discharge.

- Then followed up by a nurse shortly after to see if there were any questions about the information or about their recovery.
Prevention of Prolonged Symptoms

- For those who got the intervention, it decreased symptom reporting and subsequent disability by half!
- Further replicated in his own lab, but also by others (Kashluba, Ponsford, etc.)
- These other studies have also shown that if you give information early on about the expected symptoms, how long they should last, and expected recovery, people do much better in the long run.

State of Michigan TBI Prevention and Services Committee

- The training subcommittee of this group has developed a revised manual for mTBI based on Mittenberg’s original manual.
- Has been updated and shortened so that it can be printed out with discharge information from the ED and given directly to the patient and/or family.
- The original Mittenberg manual was piloted in the Flint area by Dr. Tom Gola approximately 10 years ago with good success. ED physicians and nurses loved it because it brought fewer patients back to the ER with non-specific symptoms.

Background

- Early education and development of positive expectancies for recovery after mild traumatic brain injury (mTBI) can decrease disability substantially, in some cases by half.
- Yet, mTBI educational materials are typically cumbersome due to their length and complexity; therefore, emergency department (ED) personnel understandably resist providing educational interventions with patients routinely.
- Lack of knowledge to support an effective intervention that can be used by ED personnel is a costly and important problem, because it is the portal for the majority of persons who sustain mTBI.

Objectives

- The main objectives of this study are to evaluate the clinical utility of a Brief Concussion Educational Intervention in adults with mTBI, and to determine the effectiveness of a brief concussion recovery guide in comparison to a longer, but well validated guide, with regard to protection against long-term consequences of mTBI.
- Our central hypothesis is that the new intervention using the Brief Concussion Recovery Guide protects against the formation of persistent symptoms at 1 week and 3 months post mTBI, and that it will also have a beneficial impact on resumption of community integration and return to work.

Available at the www.biami.org
Methods

• Sample and Setting: The study will sample 153 adults with mTBI (n = 51 in three groups) who presented at the ED, were treated, and discharged to home.

• Main Outcome Measures: The primary outcomes of interest are severity of mTBI symptoms (as measured by the Concussion Symptom Checklist), perceived community integration (as measured by the Community Integration Measure), and return to work. Ancillary measures include a Patient Review Questionnaire to assess comprehension and retention of information provided in the concussion recovery guides, and a Consumer Satisfaction Questionnaire to assess satisfaction and utility of the recovery guides.

Design and Procedures

Participants will be randomized to one of three groups:

(1) a group that receives an intervention using the Brief Concussion Recovery Guide;

(2) a group that receives an intervention using the original, well-validated, but lengthy concussion recovery guide; and

(3) a usual care group that receives standard instructions for patients with mTBI provided by the emergency department upon discharge (e.g., told to follow-up with primary care physician and return to the emergency room if they experience continued headaches, dizziness, vomiting, or blurred vision).

Expected Results

It is expected that the brief educational intervention will result in fewer symptoms, higher frequency of return to work, and greater community integration at 1 week and 3 months postinjury as compared to usual care (e.g., printed discharge instructions).

Furthermore, it is expected that the Brief Concussion Recovery Guide will be more effective in preventing these short- and long-term consequences of mTBI as compared to a similar intervention using the original, lengthy recovery guide, because it is more parsimonious, understandable, and efficient to use.

If we can’t get to them in the ED, we can still work on minimizing the effects of negative expectancies

Brief Psychotherapy

Cognitive Behavioral Therapy for Somatoform Disorder

• CBT for somatoform disorder modified for individuals with prolonged symptoms after concussion.

• Brief psychotherapy that combines education, exercises, and cognitive restructuring around negative attributions of return to productive life after an injury.

• Focuses on the effects of misattribution, mood, social factors, and motivation on symptom maintenance.
Acceptance and Commitment Therapy (ACT)

- Brief therapy that focuses on mindfulness and acceptance of issues, with motivation to move past the “analysis paralysis” portion of therapy.
- Focused on processing emotions in the moment and moving forward rather than getting stuck on the reasons for problems.
- For concussion, very good at moving past the concussion and focusing on the values that the person has in life and how he or she can be the most successful at actualizing those values.

Conclusion

- Uncomplicated concussions spontaneously remit within 7-10 days, or a few months at the most (usually in older individuals).
- Return to work is best predicted by job stability in the 6 months prior to injury and positive expectations for recovery.
- Return to work is less affected by cognitive and physical factors, although pain can be problematic if there are orthopedic fractures.
- Developing positive expectancies in the ED is the best way of decreasing symptoms and optimizing outcomes.
- If not done in the ED, there are brief psychotherapeutic interventions for doing so as an outpatient.
- Most importantly, get the person to return to work as soon as possible for optimal outcome.

Peer Mentoring as a Method for Improving Community Integration: A positive psychology approach

Background

- Some of the greatest challenges for persons with TBI are the unmet psychosocial needs after discharge from inpatient rehabilitation (Morton & Wehman, 1995).
- With the advent of managed care in the US insurance industry and the increasing pressures on the rehabilitation system, the inpatient rehabilitation team must focus on the skills that will allow the person with TBI and SCI to return to living in the community (Kolakowsky-Hayner et al., 2012).
- The individual with the disability continues the recovery process in a post-acute service delivery environment that can be difficult and confusing to negotiate.

Social Support

- Social support has been shown to be important in adjusting to physical and psychological changes in rehabilitation populations (Piazza et al., 1991; Schulz & Decker, 1985; Hanks et al., 2005; Elliot et al., 2015; Hanks et al., 2015) and higher quality of life (Holicky & Charlifue, 1999).
- As well as for caregivers of those with TBI (Ergh, Rapport, et al., 2002; Ergh, Hanks et al., 2003; Vangel et al., 2011).

Background

- Mentor programs are widely recognized as effective interventions to enhance:
  - Academic and Vocational success (Clifford & Green, 1996).
  - Provide community support to persons with chronic problems.
  - Although the field of rehabilitation has been called to extend mentoring processes to TBI survivors and their families (Jacobi, Pleiss, and Feldhusen, 1995; Blosser and DePompei, 1995; Moreci, 1996; Hibbard et al., 2002, 2005); very little had been done to systematically study the effects of such a program.
Mentoring in Persons with SCI

- Peer mentoring interventions were found to be especially compelling in the SCI population when the mentor was also a peer who shared similar characteristics with the person receiving support and services (Topping, 1996; Veith, Sherman et al., 2004).
- Relationship quality in mentoring has been shown to be related to factors such as age and friendliness.
- Credibility, equitability, mutuality, acceptance, and normalization have all been identified as unique to peer mentoring (Veith, Sherman et al., 2004).

Peer Mentoring in TBI

- Hibbard et al. (2002) developed a mentoring program for 11 individuals with TBI and 9 family members.
- Mentees reported that participation in this program increased their knowledge about TBI, as well as feelings of empowerment, overall quality of life, and self-efficacy about their ability to manage depression.
- Established the feasibility of successful peer-mentoring interventions in TBI; however, the small sample, relatively high rate of attrition (61.5%), and lack of a control group were limitations.

- Also, this program did not match caregiver mentors with caregiver mentees, but rather matched mentors with TBI to family-member mentees.
- This was replicated in a larger group of 64 persons with TBI and 30 family members, but there was a very small comparison group with no randomization to treatment vs. no treatment (Hibbard, 2005).

- Struchen and colleagues (2011) developed a social mentoring program aimed at improving integration and social participation in 12 TBI “peer partners” who were matched with “social peer mentors” who were trained to facilitate skills in activity planning and communication abilities over 3 months.
- Both the mentors and mentees were highly satisfied with the program; moreover, perceived social support among the mentees was significantly greater compared to 18 waitlist controls.

Mentoring for Persons with TBI

- Yet, Struchen et al., found an increase in depressive symptoms.
- Also, an increase in social activity and improved size of social network were not found.
- Small sample size was a problem, and the amount of mentoring was limited, which was thought to affect the outcome of this study.

Peer Mentoring in TBI

- Although social activity level and social network size were not facilitated by the program, the authors observed a trend toward increased satisfaction with social life among the peer-partner group.
- It was a preliminary study, but provided support for peer mentoring as an effective intervention among persons with TBI.
Peer Mentoring in TBI

• Not all evidence is positive with regard to peer mentoring.

• Rini et al. (2007) reported that 23% of their participants noted situations in which learning about experiences of fellow patients was unhelpful or harmful.

• Mentees also reported an increase in depressive symptoms in the study by Struchen et al. (2011).

• Although information and peer mentoring was generally seen as favorable, for some, this intervention was unhelpful or even harmful.

Peer Mentoring at RIM

• This program includes:
  - One-to-one peer mentoring with persons with TBI and their significant others, on a regular basis
  - Includes structured sessions that involve active listening, development of rapport, provision of resource guides and materials, and ongoing support via direct personal contact and the telephone.

Design for Peer Mentoring Study

• Expanded on the limited research examining peer mentoring in TBI and addressed some methodological issues identified by prior programs.

• Improvements in experimental design included random assignment of participants to mentoring condition, matching mentor to mentee based on same gender and role, and incentives for sustained and committed mentor involvement.

RCT for Peer Mentoring

Objectives:
To examine the efficacy of a peer-mentoring program for persons with TBI and their significant others, and to determine the relationship of this mentoring program to quality of life and community integration.

Participatory Action Research

• A participatory action framework was employed for the program, as well as for implementation, dissemination, and evaluation.

• PAR is grounded in the philosophy that participants’ personal experiences and knowledge can be shared with trained researchers in a collaborative model of research (Park, 1993).

Mentors

• To maximize engagement in the study, a supported-employment model was used.

• Mentors were hired as contingent employees and involved in weekly in-person supervision from a psychologist, a nurse, and community outreach coordinator.

• These supervisors were available for 24-hour emergency assistance.
Training of Mentors

- Mentor candidates were interviewed based on referrals from hospital and research staff, as well as staff from the Brain Injury Association of Michigan and the HRSA-funded State of Michigan TBI Grant.
- Individuals were evaluated on social competency (as rated by the supervisory/training staff), as well as their willingness to talk openly about their disability and life experiences, motivation to participate in the program and help others, and give a 2-year commitment to the project.
- Once the mentors were selected, they participated in 20 hours of training via the “RIM Peer-Mentor Retreats” during which they were presented with the manual, a description of the overall intervention, and a description of the data collection procedures.

Hypotheses for study

- Expected that mentored individuals in the TBI and Significant-other groups would demonstrate better emotional well-being and higher levels of community integration as compared to non-mentored controls.
- Specific outcomes assessed for the groups included adaptive coping, behavioral dyscontrol and chaos in the home environment, alcohol use, and general mental health.
- The TBI groups also were assessed for health-related quality of life.

Main Outcome Measures

- Family Assessment Device
- SF-12
- Coping Inventory for Stressful Situations
- Community Integration Measure
- Short Michigan Alcohol Screening Test (SMAST)
- Brief Symptom Inventory – 18 item version
- Peer Mentoring Questionnaire – Parts 1 & 2.

Sample and Setting

- 96 persons with TBI who had been discharged from inpatient rehabilitation and were living in the community and included in our model system dataset.
- 62 significant others of persons with TBI who met those criteria, and were then randomly assigned to either a treatment or non-treatment control group.
- 53% parents, 25% spouses/romantic partners, 10% friend or other person, 6% siblings, 6% adult children, and 1% other relative.
Mentors and Mentees

- Mentors and mentees were matched by the study coordinator for gender and role (e.g., person with TBI vs. significant other/caregiver), and each mentee only had one mentor.

Mentoring Sessions

- Mentors arranged for a meeting within 2 weeks of initial contact and were requested to meet and/or talk via telephone at least weekly for the first month, biweekly for the next 2-3 months, and then monthly for the remainder of the first year.
- Contact more frequent than these minimum guidelines was encouraged as appropriate.
- Discussions in mentoring sessions were focused on three main areas:
  - 1) emotional well-being;
  - 2) post-TBI quality of life;
  - 3) community integration.

Mentoring Sessions

- The control group was discharged to the community and received the usual socialization that occurs after discharge from inpatient rehabilitation.
- Formal mentoring lasted for 1 year, although mentees were encouraged to continue the relationship with their mentors during the second year if desired.
- Final data collection occurred 12 months after the mentoring was completed.

Statistical analyses

- T tests and chi-square tests were conducted to examine group differences in demographic and injury characteristics, as well as differences in the outcomes, and statistical significance was determined as a p-value less than .05.
- Effect sizes were calculated via Cohen’s d to reflect the impact of the intervention on emotional, quality of life, and community integration outcomes.

Equality of Groups

- The groups (mentored vs. control) were statistically equivalent in demographic and injury characteristics.
- After accounting for participants who expired or were incarcerated, the attrition rate was 20%.
- Loss to follow-up was equivalent between groups (t(157) = 0.09, p = .93).
- Thus, originally there were 199 individuals enrolled in the study, but due to attrition, the resulting participants were 96 persons with TBI and 62 adults who were significant others of individuals who sustained a TBI who received the full mentoring experience.

Mentor/Mentee contacts

- Average number of mentor-to-mentee contacts was 5.4 (SD = 0.4, Range 1 to 66).
- Majority of contacts via telephone (M = 4.8, SD = 8.4, Range 0 to 60).
- There were only 11 in-person meetings after the initial contact.
- Mode of contact was determined by the mentee because it was believed that their preference would optimize outcome, as the first year after brain injury can be very hectic and chaotic.
- Six email contacts were reported (from a single significant other).
Mentor/Mentee Contacts

- Contacts were mostly 5-15 minutes (36%), followed by contacts lasting 16-30 minutes (30%), 31-60 minutes (19%), and 15% greater than an hour.
- Mentors primarily described mentees as very responsive to contacts (71%), with fewer as moderately responsive (19%), and not responsive (10%).
- For the mentors, 76% felt comfortable with their role as a mentor, 20% felt moderately comfortable, and 3% did not feel comfortable.

Peer Mentoring Satisfaction

- The majority of mentees were satisfied with their experience, and felt that it helped with social support, amount of happiness, accumulation of knowledge about TBI, emotional functioning, and community resources.
- Whereas, 75% of mentees felt that the length of the program (months) was "just right", 47% wanted more sessions.
- Of those mentored, 88% expressed satisfaction with their mentor, and 92% felt comfortable.

“Are there any other areas in which your mentor was helpful?”

- 85% mentioned social support primarily (e.g. "just being able to talk to somebody that had similar experience was nice")
- 10% focused on mutual understanding of adjustment issues (e.g., "we talk about my husband and she tells me what goes on in her family," "what to expect with TBI,")
- 5% of the comments reflected help in managing emotional and spiritual needs.

“What were your expectations for the mentoring program before you began?”

- 56% indicated that they did not know what to expect or had no expectations
- 24% indicated that they expected help and support.
- Other responses included thoughts of being helped to put things into perspective, and understanding what life would be like with a brain injury.

“How would you describe the nature of your relationship with the mentors?”

- 81% included positive descriptors ranging from excellent to good.
- Eighteen percent of responders indicated that they did not know or were unsure how to describe the relationship.

“What are the things that make a good mentor?”

- 47% indicated that good communication and listening skills were qualities of a good mentor
- 28% indicated the qualities of a good mentor were being a friendly and kind person
- 23% noted that the persons’ experience with brain injury made them a good mentor.
- The rest of the individuals were unsure.
“What are the most helpful parts of the program?”

- 29% indicated the most beneficial part of the program was just having someone to talk to.
- 12% indicated that having someone to rely on who had experience with brain injury was most helpful.
- 12% indicated that the mentor’s advice was most beneficial.
- 7% reported that the self-discovery process involved in mentoring was most helpful, and the rest of the respondents were unsure.

“What suggestions do you have to make the program better?”

- 67% noted that they had nothing to suggest and were happy with the program as it was.
- 16% suggested allocating more time for mentoring.
- Miscellaneous suggestions included items such as getting more resources for home repair or assistance and more information about pain and coping.

Findings

- A theme of increased knowledge about brain injury, the emotional and social effects of brain injury, and services available to help with adjustment, were chief among the aspects experienced as most helpful.
- This finding is especially encouraging because it validates the usefulness of peer mentoring as an acceptable vehicle for education about TBI and related resources.

“What areas of advocacy you learned while you were involved in the programs? For example, what are some ways the mentoring program helped you learn to stand up for yourself?”

- 19% revealed that mentees learned about new community resources that they could use.
- 16% indicated they learned to be advocates for their needs.
- 10% reported that they learned to strive for “balance” in their lives.
- The rest of the individuals were unsure.

Findings

- Another key theme that mentees found helpful about the peer-mentoring relationship involved providing support:
  - Most mentees felt that the program improved their lives via support from their mentors and family members, as well as decreased feelings of being alone.
Group differences: Persons with TBI

- Mentored participants with TBI showed better physical functioning and reported fewer distressing somatic symptoms than did non-mentored controls.
- Additionally, they reported less use of alcohol.
- Mentored participants with TBI also viewed their families as less chaotic and maintaining better behavioral control as compared to the counterpart controls.
- Mentored participants with TBI reported healthier coping styles, using less emotion-oriented and avoidance-oriented coping relative to active coping than did non-mentored participants.
- One explanation for this cluster of findings is that peer-mentoring facilitates healthier coping response, which leads to improved well-being outcomes including physical health benefits and less reliance on unhealthy coping (e.g., alcohol use).

Findings

- The distress in the significant others noted in this study remained within normal limits and did not reach clinical impairment.
- Users of peer-mentoring programs should be vigilant to the possibility that mentees become more aware of problems with regard to the family environment and their lack of community integration, which may cause mild anxiety or discomfort with regard to processing these issues may ensue.
- It would be best to monitor and track distress during the mentoring process, but given the mild levels observed, it should not necessarily inhibit significant others from participating in mentoring experiences.

Group differences: Significant Others

- Overall, the mentored significant-other group endorsed experiencing substantial benefit from the peer-mentoring program, however, the pattern of benefits differed in some regard from the TBI group.
- Among significant others, mentored participants reported less community integration than individuals who did not receive such services.
- This was paired with the notable trend towards greater family dysfunction and anxiety in the mentored group than in the non-mentored controls.
- Such findings could reflect increased awareness of the issues related to family functioning after TBI, in particular, being in an environment where it is deemed safe to talk about the effects of TBI on the family may direct attention to potential problems in this area.

Conclusions

- The peer-mentoring relationship did not require face-to-face meetings, nor did the positive impact require frequent encounters.
- The majority of sessions occurred through conversations over the telephone, and the average number of contacts was five.
- Peer-mentoring can be an effective way to assist persons with TBI with healthy coping responses, which in turn leads to improved well-being outcomes including physical health benefits and less reliance on maladaptive coping behaviors.