

Evaluation of a Brief, Skill-Building, Supportive, and Educational Intervention for Couples After Brain Injury

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Objective: To examine the effectiveness of an intervention (Therapeutic Couples Intervention, TCI) designed to improve relationship quality for couples after acquired brain injury. **Setting:** Outpatient brain injury rehabilitation center. **Participants:** Persons with brain injury ($n = 75$) and their intimate partners ($n = 75$). **Design:** Two-arm parallel, randomized, controlled trial with wait-listed control. **Methods:** Composed of 5 to 6 2-hour sessions, the TCI is a manualized, treatment program designed to enhance relationship quality by addressing issues and concerns most often identified by persons with brain injury and their partners. **Main Measure:** Revised Dyadic Adjustment Scale completed by the persons with brain injury and their partners. **Results:** Persons with brain injury and their partners in the treatment group showed an improvement in relationship quality, both compared with their own baseline values and the control group. **Conclusions:** Investigation provided evidence that a curriculum-based education, skill-building, and supportive intervention can benefit couples for up to 3 months after treatment. Additional research is needed to ascertain the long-term benefits of intervention and the efficacy of alternative delivery methods (eg, Internet, telephone, and group). **Key words:** couples, intervention, marital quality, relationship

RESEARCH INDICATES that at least one-third of caregivers for individuals with a brain injury are spouses,^{1,2} and there is little doubt of their important long-term role in facilitating recovery and adaptation. While early research presented a bleak picture, often describing relationship breakdown rates hovering between 50% and 78%,^{3,4} more recent exploration into marital

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stability presents a stark contrast to early reports.^{5–8} The most comprehensive study to date investigated nearly 1000 couples and found a relationship breakdown rate of less than 18% at 2 years postinjury for moderately to severely injured patients and their spouses.⁸ A similar study with service members and veterans found that 22% of couples either divorced or separated at 2 years postinjury.⁹ When couples do separate after injury, health outcomes for patients may be negatively affected. For example, single survivors report greater challenges with self-care than married survivors.¹⁰

Although many couples remain married, research suggests that there is an adverse impact on marital quality.^{11–14} The negative impact on postinjury marital quality is not surprising, given what research tells us about the broad-ranging, adverse effects of injury on survivors and their partners. Consequences for survivors are well documented and include physical limitations, cognitive impairments, neurobehavioral and personality changes, and emotional distress.^{15–19} In response to these changes experienced by the survivors, many partners experience ambiguous loss²⁰ as well as anxiety, depression, and caregiver burden.^{21–24}

The benefits of improving couples' postinjury marital quality and stability may seem obvious, yet only a

single investigation has been reported in the literature.²⁵ Backhaus and colleagues²⁵ examined the efficacy of a 16-week, manualized, small group intervention designed to enhance relationship satisfaction and communication. A total of 22 couples completed the randomized wait-list-controlled trial. As measured by the Dyadic Adjustment Scale (DAS)²⁶ and the Four Horsemen of the Apocalypse communication questionnaire,²⁷ the authors found that treatment yielded improvement in dyadic adjustment and communication.

Outside of brain injury, marital intervention is recognized as an effective approach to addressing declining marital quality²⁸ and combating marital instability.²⁹ Targeting the quality of a couple's relationship has been shown to be a powerful force in mitigating individual factors, which correlate with poor marital quality.^{30,31} Marital intervention has been established as a significant factor in improving overall health outcomes broadly for many injury and illness populations.^{32,33} Moreover, research in the general population has shown a direct link between marital intervention and sustained improvement in individuals' psychological distress.^{30,34}

Within the brain injury field, whole-family interventions have demonstrated some benefits to caregiver burden³⁵ and improvement in numbers of unmet family needs.^{36,37} Yet, interventions directly targeting the marriage, which may have a more profound impact and

affect more long-term changes, have included only one to date. Marital intervention has the potential to remediate declining relationship quality, relieve couples' psychological distress, and diminish caregiver burden. Unfortunately, there is a striking gap in the literature delineating and evaluating couples-focused interventions.

In summary, recent research has indicated low rates of postinjury marital breakdown despite high rates of dissatisfaction. The present investigation evaluated the efficacy of a couple's intervention designed specifically to improve relationship quality. The intervention addressed issues and challenges commonly confronting couples after brain injury. The primary hypothesis was that participants receiving intervention would demonstrate improvement in relationship quality as compared with those not receiving intervention.

METHODS

Participants

One hundred sixty-eight couples were assessed for eligibility (see Figure 1). A total of 75 couples in which one partner had an acquired brain injury were consented into the 2-arm parallel, wait-listed control (WLC), clinical trial between January 2013 and June 2018. Overall, 45 couples (60%) were randomized to the treatment group and the remaining 30 (40%) were

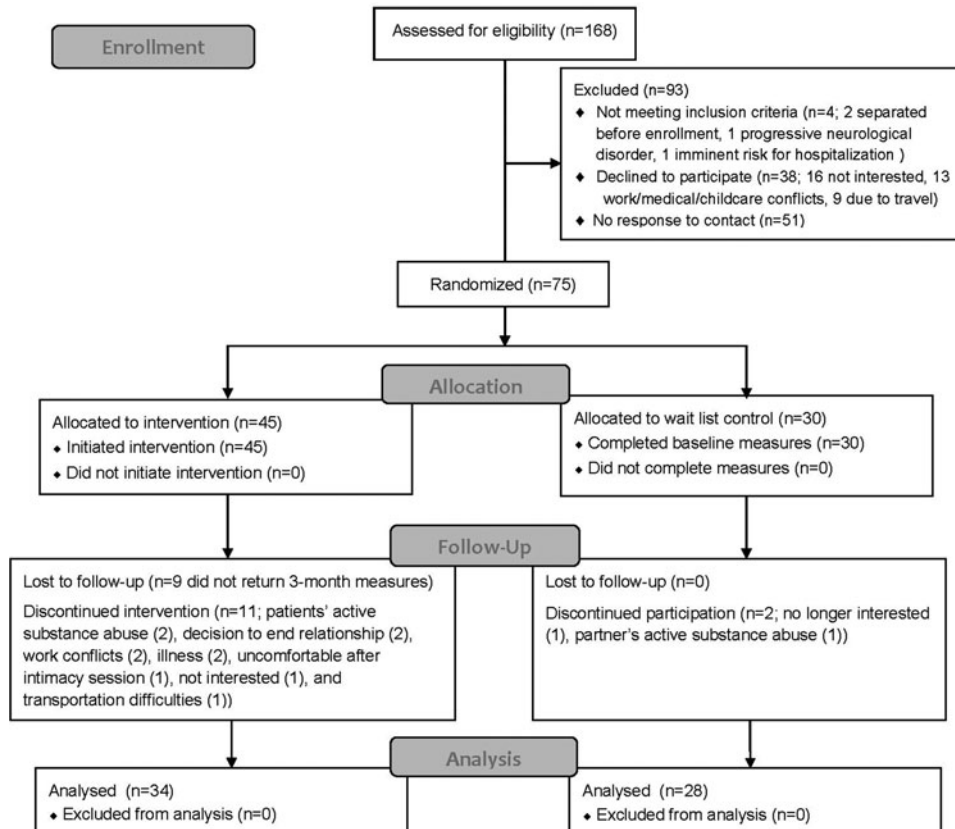


Figure 1. CONSORT flow diagram.

randomized to the WLC group. Eleven treatment group couples (24%) discontinued the intervention. In the WLC group, 2 couples did not complete the follow-up measures.

Patient characteristics

As indicated in Table 1, the majority of the patients were male and white. Causes of brain injury included traumatic brain injury (TBI) (91%), stroke (3%), aneurysm (1%), and other nonprogressive neurological problems (5%). With regard to TBI severity, 41% had sustained a moderate or severe injury. The remaining sustained mild injuries (59%) based on the American Congress of Rehabilitation Medicine criteria.³⁸ Of those with a TBI, nearly half were injured by motor vehicle accidents (49%), with a smaller number caused by falls (16%), pedestrian (8%), motorcycle or bicycle accidents (8%), assaults (5%), hit by falling or flying object (5%), or other causes (3%).

Partner characteristics

The majority of partners were female and white, with a mean age of 46.6 years (standard deviation [SD] = 12.8), and 76% had a least some college-level education. Most (75%) partners identified themselves as a spouse. The vast majority of partners (84%) reported spending at least 1 hour a day caring for the patient.

Relationship characteristics

The average length of relationship was 11.4 years, with the majority (75%) married at the time of study enrollment. While the majority of couples were in relationships at the time of injury, a small number of couples ($n = 13$, 17%) began their relationship postinjury. Most couples reported having at least 1 child living in the home (53%), and of those couples, the number of children ranged from 1 to 6, with 64% having 1 to 3 children. The age of children ranged from 1 to 29 years. Additional patient, partner, and relationship characteristics are presented in Table 1.

Intervention structure and content

The Therapeutic Couples Intervention (TCI) is a structured treatment program designed to enhance relationship quality and stability after brain injury via education, skill-building, and psychological support. The curriculum-based intervention was created to address issues and concerns most often identified by persons with brain injury and their partners. The TCI is unique in that rather than focusing on the needs of individuals or whole families, the TCI addresses issues and challenges commonly confronting couples after brain injury.

Adapted from the Brain Injury Family Intervention, the TCI is guided by 8 assumptions (see Table 2).³⁹

To enhance relationship quality and stability, the TCI relies heavily on several specific therapy techniques, including normalization, reframing, empathic reflection, and validation. The key tenants and techniques of Cognitive Behavioral Therapy⁴⁰ have provided a foundation for other interventions developed for individuals with brain injury⁴¹ and their families³⁹ and were utilized and adapted for the TCI.

The intervention protocol was implemented over the course of five 2-hour sessions. Many couples were parents, and parenting is typically far more challenging for both partners after brain injury.⁴² To address the needs of parents, couples with children in the home participated in an additional session focused on effective parenting. Sessions topics and goals are displayed in Table 3.

Clinicians relied on the TCI manual to provide the intervention systematically. For each session and topic, the manual details goals, necessary materials, and if needed, accommodations for disability. The step-by-step approach delineated in the manual provided clinicians with detailed scripts and suggested talking points for each topic, instructions for therapeutic activities, and homework.

The 4 clinicians conducting the TCI were doctoral-level psychologists and counselors who received training from the first author. Initially, clinicians carefully studied the treatment manual and met regularly with the first author to address procedures, questions, and concerns. Clinicians were observed and given feedback.

Measures

The measures chosen for the present investigation were selected for their psychometric properties and relevance. The Revised Dyadic Adjustment Scale (RDAS) was selected as the primary outcome measure, with the Marital Status Inventory (MSI) and Neurobehavioral Functioning Inventory (NFI) serving as covariates. Other variables collected included annual household income, time that the partner spends caring for the patient, history of mental health counseling, and alcohol use (as measured by the Behavioral Risk Factors Surveillance System).⁴³ As measures of treatment acceptability, satisfaction ratings and willingness to recommend the program to others were collected from TCI group participants.

Revised Dyadic Adjustment Scale

Couples' appraisal of their relationship quality was measured via the RDAS.⁴⁴ The RDAS has 14 items rated using a Likert-type scale, with values ranging from 0 to 5 or 0 to 4. Total scores range from 0 to 69, with

TABLE 1 *Patient, partner, and relationship characteristics^a*

Characteristic	Treatment	Control	P
<i>Patient characteristic</i>			
Age, y	47.3 (13.1)	47.4 (14.0)	.966
Time from injury, mo	33.0 (51.6)	62.8 (95.8)	.086
Male	30 (67%)	24 (80%)	.208
White	36 (80%)	23 (77%)	.730
Moderate/severe injury	19 (42%)	12 (40%)	.848
Heavy alcohol use	6 (13%)	4 (13%)	1.000
History of mental health counseling	33 (73%)	20 (67%)	.534
Competitively employed (baseline)	24 (53%)	8 (27%)	.022
Education			
Less than HS/GED	2 (4%)	3 (10%)	.574
HS or GED	10 (22%)	5 (17%)	
Any college	33 (73%)	22 (73%)	
Years in relationship	12.0 (11.3)	10.6 (13.0)	.624
Relationship prior to injury			
Married	32 (71%)	17 (57%)	.209
Unmarried, living w/partner	7 (16%)	4 (36%)	
Unmarried, living separately	6 (13%)	9 (30%)	
Relationship at baseline			
Married	34 (76%)	22 (73%)	.923
Unmarried, living w/partner	9 (20%)	7 (23%)	
Unmarried, living separately	2 (4%)	1 (3%)	
Marital Status Inventory group			
Stable	26 (58%)	16 (53%)	.900
Moderately unstable	9 (20%)	6 (20%)	
Severely unstable	10 (22%)	10 (27%)	
<i>Partner characteristic</i>			
Age, y	46.7 (12.9)	46.5 (12.9)	.943
Male	16 (36%)	5 (28%)	.074
White	37 (82%)	23 (77%)	.556
Heavy alcohol use	11 (24%)	3 (10%)	.116
History of mental health counseling	21 (47%)	16 (53%)	.572
Competitively employed (baseline)	31 (69%)	16 (53%)	.172
Annual household income (baseline) ^b			
<\$60 000	17 (42%)	20 (67%)	.074
\$60 000-\$90 000	9 (21%)	3 (10%)	
>\$90 000	15 (37%)	6 (23%)	
Time caring for patient/d			
0 h	10 (22%)	2 (7%)	.150
1-4 h	26 (57%)	18 (60%)	
5-12 h	5 (11%)	3 (10%)	
≥13 h	4 (9%)	7 (23%)	
Partner identity			
Spouse	34 (76%)	22 (73%)	.080
Boyfriend/girlfriend	6 (13%)	8 (27%)	
Fiancé	5 (11%)	0 (0%)	
Marital Status Inventory group			
Stable	20 (44%)	14 (48%)	.073
Moderately unstable	16 (36%)	4 (14%)	
Severely unstable	9 (20%)	11 (38%)	

Abbreviations: GED, general education diploma; HS, high school.

^aMean (standard deviation) or frequency (percentage) presented. *P* values associated with covariates for treatment and control group participants.

^bRestricted to partners who currently reside with the patient.

TABLE 2 *Foundational assumptions of the Therapeutic Couples Intervention*

<ol style="list-style-type: none"> 1. Injury causes drastic changes in couples' relationships. 2. Most people want their old life and relationship back. 3. The losses that follow injury are often ambiguous, challenging couples' ability to effectively manage stress, set goals, and problem solve. 4. Well-informed people do better. 5. Each partner is important and deserves respect. 6. Each partner has the right to provide input when decisions are made. 7. In the long-term, spouses often assume primary responsibility for helping the survivor. 8. Spouses must take care of themselves to effectively help their partner.

TABLE 3 *Overview of Therapeutic Couples Intervention sessions, topics, and goals*

<i>Session 1. Effects of brain injury on the survivor, partner, and couple</i>	
What is normal for brain injury? Common problems after brain injury Recognize and appreciate common injury consequences Recognize that many changes they and their spouse notice are common effects of injury Understand why discussing ABI symptoms is important Identify the types of injury symptoms that are most bothersome to each person Learn how to share and respond to opinions about postinjury changes	How are we different now? Common changes to relationships after brain injury Recognize and appreciate common injury consequences for relationships Identify how the injury has impacted their relationship Understand the ways in which each partner's life has been impacted by the injury Recognize the importance of supporting one another in difficult times
<i>Session 2. Healthy communication and managing stress</i>	
Healthy communication Identify the importance of communication in a relationship Determine how communication has been impacted by ABI in their relationship Determine which common postinjury communication challenges are relevant for the couple; and, identify specific strategies for overcoming challenges Use i-statements as a strategy for improving the tone of relational communication	Managing stress effectively Realize that stress is common postinjury Be able to define stress Understand the components of a stress management plan Identify the current level of stress Recognize their personal "red flags," which may signal stress Understand present sources of stress and obstacles to effective stress management Implement a comprehensive stress management plan
<i>Session 3. Setting goals and solving problems</i>	
Setting reasonable goals Identify the qualities and dangers of unreasonable goals Identify ways to tell whether goals are reasonable and achievable Understand how unstated goals, for both self and relationship, can impact choices Critically identify shared goals for their relationship	Solving problems effectively Understand that feeling overwhelmed and having difficulty solving problems are common after brain injury Identify obstacles to solving problems efficiently Identify effective/ineffective problem-solving strategies Learn and apply a framework of strategies for effective and efficient problem-solving
<i>Session 4. Rebuilding Intimacy</i>	
Establishing emotional intimacy Define emotional intimacy Identify how emotional intimacy may be impacted after brain injury Identify strategies for improving emotional intimacy State which tips would be most effective for improving emotional intimacy in their own relationship	Renewing physical intimacy Understand the common impacts on sexual relationships after ABI Identify the ways in which their sexual relationship has been changed after injury Utilize strategies to improve their sexual relationship

(continues)

TABLE 3 *Overview of Therapeutic Couples Intervention sessions, topics, and goals (Continued)*

<p>Explain intimacy styles and the importance of knowing how both you and your spouse show and feel love</p> <p>Identify their own preferred methods for experiencing intimacy</p> <p>Identify their spouse's preferred methods for experiencing intimacy</p> <p>Understand how to improve emotional intimacy by communicating with their partner's preferred intimacy style</p>	<p>Feel comfortable using positive touch and affirmations to improve physical intimacy with their partner</p>
<p><i>Session 5. Parenting: New challenges and strategies (optional)</i></p>	
<p>Parenting 101: Parenting education and skills</p> <p>Define the concepts of parenting stress and parenting styles and understand why these concepts are important to marital satisfaction</p> <p>Explain different parenting styles and the benefits and drawbacks associated with each style</p> <p>Identify which style of parenting they and their partner use most frequently</p> <p>Apply some strategies for using a more authoritative style of parenting</p>	<p>Parenting after ABI: Common hurdles to effective parenting</p> <p>Understand which parenting challenges are common after ABI</p> <p>Identify which parenting challenges are most difficult for their family</p> <p>State which tips will be most helpful in addressing current parenting challenges</p> <p>Use new parenting skills to address the most impactful parenting struggles they currently face</p>
<p><i>Session 6. Strategies for optimal recovery</i></p>	
<p>Taking care of yourself and your relationship</p> <p>Recognize whether or not they are taking care of themselves and understand the benefits of and strategies for self-care</p> <p>Recognize whether or not they are taking care of their relationship</p> <p>Understand the benefits of and strategies for relationship—care</p>	<p>Focusing on gains and looking forward</p> <p>Develop a plan for continued improvement after the TCI program is completed</p> <p>Understand why focusing on progress is difficult, but important</p> <p>Better recognize strengths and progress in their attempts to improve their relationship with one another</p>

Abbreviations: ABI, acquired brain injury; TCI, Therapeutic Couples Intervention.

higher values indicating greater marital quality. Scores 48 or less are indicative of a distressed relationship.⁴⁵ The RDAS has been found to be successful at distinguishing between distressed and nondistressed couples and is sensitive to treatment effects.^{46,47} Busby and other investigators have substantiated the validity and reliability.^{44,45} Internal consistency is adequate as well, with a Cronbach α of 0.90. Patient and partner scores were analyzed separately.

Marital Status Inventory

The MSI served as a measure of baseline marital stability and determines the potential for separation or divorce.⁴⁸ The MSI includes 14 true/false items, with scores ranging from 0 to 14. A partner who scores either 0 or 1 is in a stable relationship, whereas a male who scores a 4 or higher, or a female who scores a 5 or higher, is in an unstable relationship. Scores falling between the cut-off points are considered moderately unstable.⁴⁹ In addition, predictive validity has been established by comparing MSI scores to divorce rates of

couples who were administered the instrument.⁵⁰ Good reliability has been reported with the Spearman-Brown split-half reliability of 0.86 to 0.87.^{50,51}

Neurobehavioral Functioning Inventory

The NFI is composed of 70 items and assesses for problems in 6 categories based on principal components and confirmatory factor analytic methodology: Depression, Somatic, Memory/Attention, Communication, Aggression, and Motor.⁵² Problem frequency is based on a 5-point scale, ranging from never to always. Two parallel forms of the NFI were developed to describe patients, one for completion by patients and the other for completion by family members. Research has provided support for criterion-related validity and high internal consistency within NFI scales.⁵³ The Cronbach α for individual scales ranged from 0.86 to 0.95. Criterion-related validity was established through correlational analyses, which compared inventory responses to standardized neuropsychological and personality measures.

Procedures

Couples were referred by rehabilitation providers and community organizations and agencies. In addition, self-referred participants learned about the TCI via conference presentations, support groups, and newsletters. The TCI was conducted in an outpatient rehabilitation setting in a major academic medical center. During the intake sessions, the project coordinator or research assistant provided an overview of the research program, confirmed eligibility and interest in participation, and obtained informed consent. This study was approved by the university's institutional review board. The trial was registered with ClinicalTrials.gov (NCT01935609).

Upon providing informed consent, the project coordinator or research assistant administered the baseline assessment and randomized the couple to either the TCI or the WLC group, based on a computer-generated table prepared upon study initiation. WLC group participants were scheduled to return in 5 weeks to complete a second assessment, labeled herein as the "posttreatment assessment." As a courtesy, WLC group couples were offered an opportunity to receive the intervention following the posttreatment assessment.

The TCI couples worked individually with a single therapist throughout the intervention. The 5 (or 6) sessions were completed over a 5- to 6-week period. Participants were asked to complete worksheets and review and discuss materials between sessions. Posttreatment data were collected by a research assistant at the conclusion of the final session. Three-month follow-up data were collected from the TCI group 10 to 14 weeks following the last session.

Data analysis

Patient, partner, and relationship information were summarized with means and SDs or frequencies and percentages. Separate summaries are provided for the TCI and WLC groups. *P* values from Pearson χ^2 tests and *t* tests comparing the TCI and WLC groups were also

reported. For patients and partners, relationship quality at each time point (baseline, post-treatment, and follow-up) was summarized by the mean and SD of the RDAS as well as the frequency and percentage of individuals reporting a distressed relationship.

A doubly repeated linear mixed-effect model was used to estimate the RDAS scores over time. This model included an adjustment for the temporal relationship within each participant, as well as the potential dependence of the RDAS scores between patients and partners. Due to significant differences ($P < .05$) between treatment groups, NFI Depression, Memory/Attention, Communication scores, as well as patients' baseline employment status, were included as adjusted factors. The primary analysis was executed in an intent-to-treat fashion, so that all participants randomized were analyzed belonging to their assigned treatment group. In addition, this strategy enabled all participants having any of the baseline, posttreatment, or follow-up outcomes to be included in the analysis.^{54,55} Dropout was assumed to be missing at random based on the factors included in our model, and thus, should yield unbiased estimates. A Kenward-Rogers adjustment was made to the model degrees of freedom for inference and confidence interval construction to account for estimation of the random effects.⁵⁶ Specifically, the difference in the posttreatment to baseline change between the TCI and WLC groups was evaluated to assess intervention efficacy. This difference, separately for each partner, was estimated with a Bonferroni-adjusted 97.5% confidence interval (aCI). All other inference was performed at the .05 level, as it pertained to secondary aims or description.⁵⁷ A descriptive analysis of the change in RDAS scores was conducted separately for each combination of the treatment and injury severity groups.

RESULTS

Unadjusted RDAS scores for patients and partners are provided in Table 4. For patients in the TCI group,

TABLE 4 Unadjusted RDAS scores for patients and partners

	Treatment Mean (standard deviation)	Control Mean (standard deviation)
Patient		
Baseline	44.0 (11.3)	45.9 (10.5)
Posttreatment	48.1 (8.5)	45.3 (10.9)
Follow-up	48.5 (10.0)	n/a
Partner		
Baseline	44.9 (9.7)	42.6 (12.0)
Posttreatment	49.4 (9.1)	42.3 (11.3)
Follow-up	47.6 (9.6)	n/a

Abbreviations: n/a, not applicable; RDAS, Revised Dyadic Adjustment Scale.

RDAS scores increased from baseline to posttreatment and remained stable between the posttreatment and follow-up (see Figure 2A). Conversely, RDAS scores for patients within the WLC group remained roughly the same at baseline and posttreatment. Similar patterns were observed for partners (see Figure 2B). Considering RDAS cut-off scores, the rate of TCI patients in a distressed relationship dropped from 53% ($n = 24$) at baseline to 38% at both posttreatment ($n = 13$) and follow-up ($n = 10$). For WLC patients, marital distress rates remained roughly the same at both baseline and posttreatment (baseline: $n = 15$, 50%; posttreatment: $n = 13$, 48%). A similar pattern was evident for partners in both the TCI (baseline: $n = 26$, 58%; posttreatment: $n = 13$, 38%; follow-up: $n = 11$, 46%) and WLC groups (baseline: $n = 18$, 62%; posttreatment: $n = 20$, 71%).

At baseline, partners in the WLC group perceived more neurobehavioral problems on the NFI Depression, Memory/Attention, and Communication scales than partners in the TCI group (see Table 5). In addition, patients in the TCI group were more likely to be employed than those in the WLC group. After adjusting for these variables, a statistically significant improvement was found in RDAS scores for TCI group patients following intervention while WLC group patients' scores actually decreased (see Table 6). For TCI group patients, RDAS follow-up scores continued to be higher in comparison to baseline scores, but not different from those observed at posttreatment. Similar patterns and magnitudes of RDAS score changes were also observed for partners.

For both patients and partners, the TCI group exhibited larger baseline to posttreatment improvements

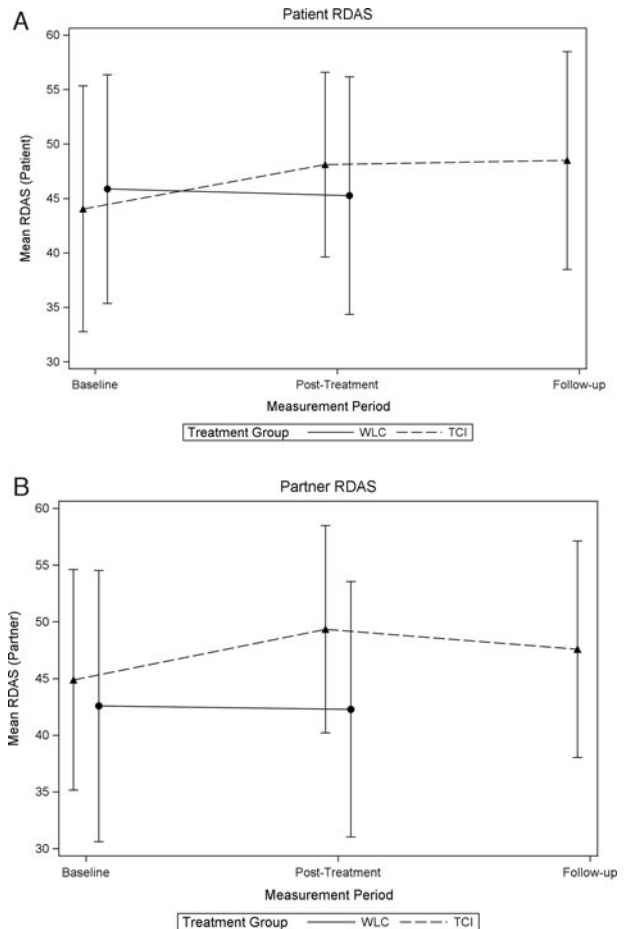


Figure 2. Raw mean scores with 1 SD bars for the RDAS scores at baseline, posttreatment, and follow-up, separately for patients (A) and partners (B). RDAS indicates Revised Dyadic Adjustment Scale; SD, standard deviation.

TABLE 5 Patients' baseline neurobehavioral functioning as perceived by patient and partner^a

	Treatment	Control	t ^b	P
Patient report				
NFI Depression	2.81 (0.95)	2.92 (0.93)	-0.51	.610
NFI Somatic	2.47 (0.88)	2.54 (0.78)	-0.34	.735
NFI Memory/Attention	2.97 (0.96)	3.09 (0.77)	-0.57	.573
NFI Communication	2.88 (0.88)	2.90 (0.76)	-0.11	.915
NFI Aggression	2.10 (0.81)	2.24 (0.74)	-0.72	.474
NFI Motor	2.79 (0.98)	2.72 (0.71)	0.33	.740
Partner report				
NFI Depression	2.69 (0.71)	3.09 (0.85)	-2.20	.031
NFI Somatic	2.23 (0.61)	2.52 (0.73)	-1.85	.068
NFI Memory/Attention	2.60 (0.77)	3.27 (0.68)	-3.84	<.001
NFI Communication	2.36 (0.82)	2.85 (0.70)	-2.73	.008
NFI Aggression	2.04 (0.73)	2.21 (0.78)	-0.96	.339
NFI Motor	2.36 (0.77)	2.57 (0.74)	-1.16	.250

Abbreviation: NFI, Neurobehavioral Functioning Inventory.

^aMean (standard deviation) presented. P values associated with covariates for treatment and control group participants.

^bdf = 73.

TABLE 6 Estimated increases in the RDAS for each intervention group over time

	Treatment group			Control group		
	RDAS increase (95% CI)	t (df)	P	RDAS increase (95% CI)	t (df)	P
Patient						
Posttreatment—baseline	3.9 (1.1 to 6.7)	2.84 (48.7)	.007	-2.19 (-4.3 to -0.0)	1.05 (29.3)	.046
Follow-up—baseline	3.3 (0.4 to 6.3)	2.29 (28.5)	.032	... (...)		...
Follow-up—posttreatment	-0.6 (-3.4 to 2.3)	-0.40 (35.2)	.689	... (...)		...
Partner						
Posttreatment—baseline	4.8 (2.2 to 7.4)	3.67 (50.1)	<.001	-1.15 (-3.5 to 1.2)	-1.02 (28.3)	.320
Follow-up—baseline	2.9 (0.0 to 5.9)	2.03 (39.9)	.049	... (...)		...
Follow-up—posttreatment	-1.9 (-4.6 to 0.9)	-1.39 (32.7)	.175	... (...)		...

Abbreviations: CI, confidence interval; RDAS, Revised Dyadic Adjustment Scale.

compared with the WLC group (patient: $t(df) = 3.52(78.2)$, $P < .001$; partner: $t(df) = 3.44(76.9)$, $P < .001$). Differences in change scores between the TCI and WLC groups of 6.1 (97.5% CI: 2.2 to 7.4) and 5.9 (97.5% CI: 2.0 to 9.9) were observed for patients and partners, respectively.

Questions might be raised regarding the extent to which injury severity related to treatment effects from baseline to posttreatment. However, the relatively small sample size severely limited empirical evaluation. For the TCI group, patients with mild injuries and their partners' RDAS scores improved by 4.3 (SD = 9.3) and 2.7 (SD = 7.2), respectively. Patients with moderate and severe injuries and their partners' scores improved by 2.7 (SD = 5.7) and 7.1 (SD = 8.0), respectively.

Investigators used the established RDAS cut-off score (≤ 48) to evaluate the extent to which couples were in a

distressed versus nondistressed relationship.⁴⁵ This analysis was restricted to participants who had valid baseline and posttreatment RDAS scores. Approximately equal numbers of patients in both study groups reported at baseline that they were in a distressed relationship compared with those in a nondistressed relationship (treatment: 16 vs 18; control: 15 vs 12) (see Table 7). For those in the TCI group, following intervention, 21 patients reported that they were not in a distressed relationship while only 13 reported that they were in a distressed relationship. Six patients transitioned from being in a distressed to a nondistressed relationship. A single patient changed from rating their relationship as not distressed to distressed. For those in the WLC group, only 1 patient reported an improvement in relationship status while 2 reported a decline. Similar patterns were observed for the partner data (see Table 7).

TABLE 7 Change in marital distress rates (RDAS < 48) from baseline (rows) to posttreatment (columns)^a

Baseline	Treatment group		Control group	
	Not distressed	Distressed	Not distressed	Distressed
Patient				
Not distressed	15	1	13	2
Distressed	6	12	1	11
Partner				
Not distressed	13	1	8	3
Distressed	8	12	0	16

Abbreviation: RDAS, Revised Dyadic Adjustment Scale.

^aA single wait-listed control couple neglected to complete the second page of the baseline RDAS and their data are not included herein.

TCI group participants were asked to rate treatment helpfulness. Of patients, 82% rated the intervention as “very helpful” as did 88% of partners. All (100%) of patients and partners indicated that they would recommend the program to others.

DISCUSSION

Couple-focused interventions have been developed and evaluated for a variety of illness groups other than brain injury. The present investigation, a randomized controlled trial, was innovative in evaluating a manualized intervention designed to improve the quality of couples’ relationships after brain injury. The intervention was designed to address common postacute challenges including communicating effectively, managing stress, setting achievable goals, rebuilding intimacy, parenting, and solving problems. Our hypothesis was that couples receiving the intervention would demonstrate improved relationship quality as compared with those not receiving the intervention. The hypothesis was supported. Both patients and partners in the TCI group showed increased RDAS scores after completing the intervention, while WLC participants did not. Furthermore, our hypothesis was supported by the fact that a number of individuals in the TCI group (62%) no longer met the cut-off for relationship distress. Still, a good number of couples in the TCI group met the cut-off for relationship distress even though RDAS scores improved significantly. Comparison of TCI RDAS scores posttreatment and 3 months following provides support for the notion that treatment effects were durable.

The pattern of data suggests that patients and partners with mild, moderate, and severe injuries benefitted from intervention. Partners of individuals with moderate to severe injuries apparently benefitted more than partners of individuals with mild injuries; however, this assertion was not statistically tested due to small sample sizes.

The findings of the present investigation parallel those of Backhaus and colleagues.²⁵ Both groups of researchers found that treatment was beneficial to improving marital quality. Designs were similar with both investigations using manualized treatment, a wait-list-control, standardized outcome measures, and assessment of

treatment outcomes at 2 intervals. Both interventions relied on psychoeducation, cognitive-behavioral strategies, and skills building (eg, communication and stress management). The 2 studies differed in several ways. The present study administered treatment to couples individually, spanned a maximum of 6 sessions, and relied on the RDAS as the primary outcome measure. In contrast, Backhaus and colleagues²⁵ utilized a group format spanning 16 sessions, and relied on the DAS as a primary outcome measure.

The limitations of the present investigation warrant discussion. First, the sample was relatively small with a number of couples discontinuing the intervention (24%). Other researchers have reported similar dropout rates.^{58,59} Furthermore, the study was carried out in a single center, limiting generalizability. In addition, participation in the study was limited by practical matters, scheduling conflicts and transportation difficulties. Regarding blinding procedures, research assistants were not blinded to treatment conditions when collecting posttreatment data, and randomization was based on a premade list of random numbers rather than full concealment of group assignment. Finally, questions remain about the durability of treatment effects beyond 3 months following program completion.

In conclusion, investigators have provided convincing evidence that brain injury often has an adverse impact on relationship quality. The present investigation is only the second to empirically explore the benefits of a structured, couples-focused intervention. Analysis provides evidence that a manualized treatment can benefit couples’ relationship quality. Questions remain as to whether improving relationship quality will reduce relationship breakdown rates. Further investigation is needed to ascertain whether additional sessions, including boosters, will enable more relationships to shift from “distressed” to “nondistressed.” Future multicenter studies with longer follow-up, treatment fidelity assessment, and larger sample sizes also appear warranted. Such studies could add valuable information regarding factors relating to intervention discontinuation. Alternate formats of intervention delivery including Internet, group, and telephone also seem worthy of exploration.

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