

## INTERPERSONAL RELATEDNESS AND PSYCHOLOGICAL FUNCTIONING FOLLOWING TRAUMATIC BRAIN INJURY: IMPLICATIONS FOR MARITAL AND FAMILY THERAPISTS

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*Recovery from a mild-to-moderate traumatic brain injury (TBI) is a challenging process for injured persons and their families. Guided by attachment theory, we investigated whether relationship conflict, social support, or sense of belonging were associated with psychological functioning. Community-dwelling persons with TBI (N = 75) and their relatives/significant others (N = 74) were surveyed on relationship variables, functional status, and TBI symptom severity. Results from this cross-sectional study revealed that only sense of belonging was a significant predictor of postinjury psychological functioning, although interpersonal conflict approached significance. No relevant preinjury or injury-related variables impacted these relationships, except marital status. Our findings suggest that interventions targeting strengthening the injured persons' sense of belonging and lowering interpersonal conflict may benefit those living with TBI.*

A traumatic brain injury (TBI) can result in significant functional changes that affect thinking, language, learning, emotions, behavior, and/or sensation (Centers for Disease Control and Prevention [CDC], 2011). While there are various levels of injury severity after TBI (CDC, 2011; Teasdale & Jennett, 1974; Vitaz, Jenks, Raque, & Shields, 2003), those with even more mild injuries can have significant brain or behavioral dysfunction (Bay & McLean, 2007; Bay, Sikorskii, & Gao, 2009; Bazarian, Hartman, & Delahunta, 2000). Further, regardless of injury severity, a wide range of psychological disorders are likely after TBI, including depression, anxiety, and posttraumatic stress disorder (PTSD; Arciniegas, Anderson, Topkoff, & McAllister, 2005). Chronic psychological disorders have been associated with relationship discord and chronic stress (Bay, Hagerty, Williams, Kirsch, & Gillespie, 2002; Bay, Kirsch, & Gillespie, 2004; Jorge & Starkstein, 2005).

Following a TBI, the emphasis of care is initially focused on restoring brain and physical function. Afterward, attention turns to rehabilitation therapies aimed to ameliorate psychosocial difficulties such as fatigue, returning to work, and mood or anxiety disorders. These difficulties all can contribute to impairments in psychological function (Bay, Sikorskii, & Gao, 2009; Satz et al., 1998, 1999) and may lead to long-standing problems, reduced quality of life, and difficulties with community and family integration (Mayou & Bryant, 2001; Mayou, Bryant, & Ehlers, 2001; Whitnall, McMillan, Murrar, & Teasdale, 2006). Together, these difficulties contribute to stress in interpersonal relationships for both the injured person and the relative/significant other (R/SO).

Previously we have reported that in those with mild or moderate severity of TBI, increased depressive symptoms were associated with declines in psychological functioning and that chronic psychological stress mediated this relationship (Bay, Sikorskii, & Gao, 2009). Our

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sample reported feeling overwhelmed, easily angered, and without control. In that analysis, we did not examine whether relationship stress might have been involved. This subsequent analysis allows us to begin to examine interpersonal relatedness and its association with depression and psychosocial functioning. Results may guide intervention planning and could inform clinical practice.

The purpose of this study was to determine to what extent interpersonal relatedness (interpersonal conflict, social support, and sense of belonging) and related covariates are associated with postinjury psychosocial functioning in persons with mild-to-moderate TBI. For this analysis, interpersonal relatedness is the central construct, operationalized as (a) interpersonal conflict or “perceived discord in relationships caused by behaviors or absence of behaviors of others” (Tilden, Nelson, & May, 1990, p. 338), (b) social support or helping behaviors provided by a person or group that results in emotional benefits or tangible gain, and (c) sense of belonging or valued fit and involvement with another, a group, an object, or the environment (Hagerty, Lynch-Sauer, Patusky, & Bouwsema, 1993; Hagerty, Lynch-Sauer, Patusky, Bouwsema, & Collier, 1992). Psychosocial functioning or the perceived level of difficulty in performing tasks associated with interpersonal relationships or emotional well-being is the outcome variable of interest (Bay, Sikorskii, & Gao, 2009; Leathem, Murphy, & Flett, 1998).

## THEORETICAL EMPHASIS AND BACKGROUND

Traumatic brain injury affects both young and old, is most commonly caused by falls or motor vehicle crashes, and contributes to impaired functioning and disability (CDC, 2011). Over 90% of persons admitted to hospitals for TBI are considered to have a mild TBI (MTBI), defined as a neurological condition characterized by brief loss of consciousness (< 30 min), or neurological symptoms at the time of the injury, or posttraumatic amnesia (PTA) < 24 hr (ACRM, 1993; Carroll, Cassidy, Holm, Kraus, & Coronado, 2004). Two categories of MTBI have been designated: uncomplicated and complicated. The later typifies those with Glasgow Coma Scale (GCS) scores of 13–15 and abnormal computerized tomography reports (Borgaro, Prigatano, Kwasnica, & Rexer, 2003; Williams, Levin, & Eisenberg, 1990). In this study, those with complicated MTBI were classified as having moderate TBI. The second most prevalent severity level of TBI includes those with moderate severity, defined as those with admitting GCS scores of 9–12 on admission and post-PTA < 1 week (Kashluba, Hanks, Casey, & Millis, 2008; Vitaz et al., 2003).

Following mild-to-moderate TBI, there is priority focus on therapies for the return to preinjury status to the extent possible. While emphasis is on the injured person, family members or significant others are regularly included in prescribed therapies because it is expected they will assist with caregiving needs in the home and facilitate outpatient therapies. In association with focused therapies, interpersonal relationships may experience strain. To date, research suggests that partners of persons with TBI have significant stress that requires professional intervention (Davis et al., 2009; Verhaeghe, Defloor, & Grypdonck, 2005). Further, this stress has been associated with the injured persons’ behavioral, emotional, cognitive, and personality difficulties that emerge following injury. The experience of TBI has been reported to have more impact on partnered relationships than parental relationships (Florian, Katz, & Lahav, 1991).

This analysis is guided by attachment and human relatedness theories (Ainsworth, 1989; Fraley, 2002; Hagerty et al., 1993; Johnson, 2002). In concert with these theories, individuals have an innate need to know that key persons in their lives will be there for them on a day-to-day basis, and offer comfort and support in times of stress. It is well established that the attachment behavior system and the need for ongoing relationships with a few essential attachment figures continues throughout life (Fraley, 2002). Attachment is necessary for the development of human relatedness and the individual’s level of involvement with persons, objects, groups, or the natural environment (Hagerty et al., 1993). Exposure to childhood adversities has been reported to limit one’s ability to form attachments with loved ones (McEwen, 2008; Turner & Butler, 2003). The theory of human relatedness, based on principles of attachment theory, posits that in order for attachments to develop into human relatedness, there is a need for a competency in belonging, mutuality, synchrony, and reciprocity in relationships (Hagerty

et al., 1993). We believe that preinjury characteristics and injury-related factors may interfere with the maintenance or further development of interpersonal relatedness after TBI.

### *Preinjury Characteristics, Interpersonal Relatedness, and Psychological Functioning*

Based on these blended theories, it seems reasonable to question the extent to which demographic factors (family structure or socioeconomic factors) or preexisting health exposures (comorbidities or childhood adversities) impact interpersonal relatedness or psychological functioning. To date, we have reported that early after injury, women are more likely to self-report depression and psychological stress compared to men following TBI (Bay, Sikorskii, & Saint-Arnault, 2009), while exposure to childhood adversity was associated with post-TBI depressive symptoms (Bay et al., 2004). Further, findings within the psychiatric literature claim that exposure to childhood adversity negatively impacts psychosocial outcomes (Turner & Butler, 2003; Whiffen & MacIntosh, 2005; Young, Abelson, Curtis, & Nesse, 1997).

### *Injury-Related Characteristics, Interpersonal Relatedness, and Psychological Function*

In contrast to those with severe brain injuries who typically experience worse functional outcomes (Sherer et al., 2003; Temkin, Machamer, & Dikmen, 2003) because of more organic damage, those with milder injuries, who are more aware of their injury and its impact, may respond with emotional distress to symptoms and change in life circumstances, i.e., underemployment or marital or family discord (Bay & Bergman, 2006; Bay et al., 2004). For example, persons with increased pain and somatic symptoms tend to report more postinjury emotional distress and depression (Bay & Bergman, 2006), and changes in social circumstances can alter interpersonal relatedness and psychosocial functioning (Bay & Bergman, 2006; Bay, Sikorskii, & Gao, 2009). Thus, it seems reasonable to question whether injury-related characteristics, including symptoms, pain, or changes in employment or marital status may also contribute to post-TBI interpersonal relatedness and psychological function.

### *Interpersonal Relatedness (Sense of Belonging, Conflict, and Social Support)*

We have reported that lowered sense of belonging, not degree of social support, predicts post-TBI depression (Bay et al., 2002). Clark et al. (2004) reported that conflict between the caregiver and stroke survivors was associated with increased likelihood for caregiver mental health difficulties. Neurobiological studies are beginning to disentangle the networks involved in conflict and belonging and suggest that brain pathways associated with social exclusion are similar to brain pathways of physical pain (Eisenberger, Liebreman, & Williams, 2003), and that the anterior cingulate is involved in conflict monitoring and adjustments (Kerns et al., 2004). Thus, it seems imminently important that we begin to understand conflict—one component of interpersonal relatedness—and its impact on psychosocial functioning after TBI (see Figure 1).

We explored the following hypotheses for individuals post mild-to-moderate TBI:

*Hypothesis 1.* Interpersonal conflict, social support, and sense of belonging will be associated with preinjury and injury-related factors.

*Hypothesis 2.* Interpersonal conflict, sense of belonging, and social support will be associated with psychological functioning when controlling for related covariates.

## METHOD

### *Design and Sample*

This is a secondary analysis from a parent cross-sectional study, designed to determine whether preinjury or postinjury chronic stress was associated with postinjury depressive symptoms. Findings from the parent study have been previously reported (Bay & Bergman, 2006; Bay, Hagerty, & Williams, 2007; Bay, Hagerty, Williams, & Kirsch, 2005; Bay et al., 2002, 2004; Bay, Sikorskii, & Gao, 2009; Bay, Sikorskii, & Saint-Arnault, 2009).

Seventy-five persons, aged 18–60 years, who sustained a mild-to-moderate TBI and were hospitalized and then living in the community were recruited for this study. All participants were evaluated by a neuropsychologist with brain-injury expertise and were recruited from

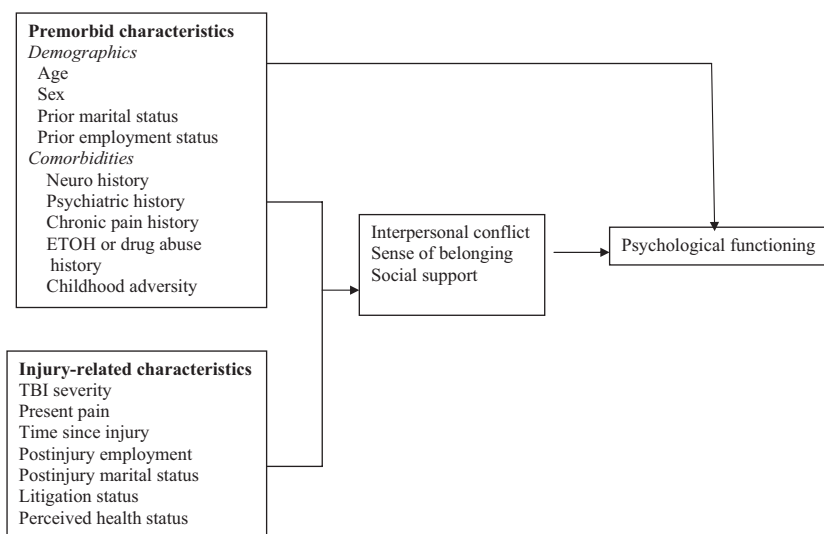


Figure 1. Proposed relationships between preinjury, injury-related characteristics, interpersonal conflict, psychological functioning, and related covariates following mild-to-moderate TBI.

outpatient rehabilitation clinics affiliated with major trauma facilities in the Midwest. The eligibility criteria included the following: (a) speaks English, (b) has no psychosis at the time of their neuropsychological evaluation, (c) absence of severe TBI, as defined as an admitting GCS score <9 (Teasdale & Jennett, 1974) on admission to the emergency department, and (d) without preinjury neurological impairment, such as stroke, Alzheimer’s disease, or Parkinson’s disease. All participants were within 2 years of the injury ( $M = 9.62$  months,  $SD = 6.16$ ). They were asked to identify an R/SO who knew them well prior to their injury to also provide concordance data on functioning. The R/SOs completed survey questions about the injured person’s functional status and symptoms (Prigatano & Klonoff, 1998; Prigatano & Schacter, 1991). Written permissions were obtained from each participant and his or her R/SO, and human subject approval was received from each site’s Institutional Review Board.

### Procedures

In-person data collection was completed over 15 months. At each clinic site, the admitting neuropsychologist or his or her delegate compiled a list of eligible persons. Persons were then approached around the time of their clinic visits either by treating staff, by phone, or by letter to seek permission for the PI to make contact and share more information about the study. Approximately 50% of those approached for permission ended up participating in this study. Individual data were not collected about those who refused to participate. Common reasons for not participating included the following: “too busy,” “I’ve answered all the questions I’m going to answer,” “not allowed by my attorney,” or “I have too much going on.” All interview and self-report data from the injured person and his or her R/SO were completed in the presence of the PI.

### Measures

*Psychological functioning.* This variable was measured with the Patient Competency Rating Scale (PCRS; Prigatano & Klonoff, 1998). The Family Version of the PCRS was completed by the R/SOs to obtain their perception of the injured persons’ functional status (Heilbronner, Millsaps, Azrin, & Mittenberg, 1993). The 30-item PCRS evaluates the perceived level of difficulty with cognitive, emotional, or behavioral tasks after TBI (Prigatano & Altman, 1990). More recently, this instrument was used with normal controls and those with mild-to-moderate TBI to establish functional ratings after less than severe TBI (Bay, Sikorskii, & Gao, 2009; Leathem et al., 1998). It has been used as a total score for evaluation of patients’

functional status (Satz et al., 1998) or as a comparison measure in determining the presence of denial of deficit by noting the difference scores between the patient and family member's perception of performance (Prigatano & Altman, 1990). Four subscales are reported within the PCRS and include activities of daily living (ADL), emotional functioning (EMOT), cognitive functioning (COG), and interpersonal functioning (IPR; Leathem et al., 1998). Ratings on the PCRS include a 5-point Likert scale: 1 = "can't do"; 2 = "very difficult to do"; 3 = "can do with some difficulty"; 4 = "fairly easy to do"; and 5 = "can do with ease." The total range is 30–150, with higher scores indicating higher functional status. Some predictive validity has been established with neuropsychological tests and the ADL subscale (Leathem et al., 1998). Reliability of the PCRS is published at .97 for persons and .92 for relatives, with internal consistency achieving a Cronbach's alpha of .91 and .93 for persons and significant others, respectively (Center for Outcome Measurement in Brain Injury [COMBI], 2005). As done in a previous analysis, we combined the emotional and interpersonal subscales to measure psychosocial functioning (Bay, Sikorskii, & Gao, 2009).

*Interpersonal relatedness.* Two instruments were used to evaluate the injured persons' interpersonal relatedness (conflict, sense of belonging, and social support). First, we used Tilden's Interpersonal Relationship Inventory (IRI) to determine a participant's level of conflict and social support (Tilden et al., 1990). This instrument contains two relevant subscales (reciprocity not used in this analysis): social support and conflict. It has been used with a wide variety of adult populations: cancer patients, battered women, persons with depression, and the homeless. Derived from social exchange theory, its 1–5 Likert scale has reported construct validity, internal consistency, and test–retest reliability (Frohlich & Fournier, 1997; Tilden, Hirsch, & Nelson, 1994). Higher scores denote greater social support and less interpersonal conflict (social support subscale and conflict). For this investigation, the social support score range was 20–64 ( $M = 51.27$ ,  $SD = 9.28$ ), while conflict was 17–57 ( $M = 36.48$ ,  $SD = 9.27$ ).

The second component of interpersonal relatedness was sense of belonging (SoB), measured with Hagerty's Sense of Belonging Instrument-Psychological, an 18-item questionnaire asking persons to rate their sense of connection to others on a 1–4 Likert scale, with lower scores reflecting low levels of belonging. For this investigation, the sense of belonging range was 24–72 ( $M = 54.94$ ,  $SD = 12.05$ ). This instrument has been shown to have evidence of validity and internal consistency with college students, nuns, and persons with clinical depression (Bay et al., 2002; Hagerty & Williams, 1999; Hagerty, Williams, Coyne, & Early, 1996).

*Pain.* We assessed each participant's present pain level and associated descriptors of intensity at the time of testing with the McGill Pain Questionnaire-Short Form (MPQ-SF; Melzack, 1987). The MPQ-SF, a self-report rating of present pain and subjective intensity, was used to provide a pain-rating index and sensory and affective pain descriptors. The intensity scale used is 0 = "none," 1 = "mild," 2 = "moderate," or 3 = "severe." For this study, we examined the persons' present level of pain according to the 0–10 visual analogue scale.

*Childhood adversity.* A Childhood Adversity Checklist was used to determine the self-reported frequency of childhood adversities experienced during childhood (ages 0–12). This 16-item checklist (yes or no) was modified from a questionnaire developed by Kupfer and colleagues (Cohen, Coyne, & Duvall, 1993; Kupfer & Detre, 1974).

## RESULTS

A total sample size of 75 persons (mean age 37.43 years;  $SD = 12.10$ ) with mild or moderate TBI agreed to participate in this study, along with 74 R/SOs. With the sample size of 75, a medium effect with regression analysis using four continuous independent variables in the model was detectable with statistical power of .80 or greater for two-tailed tests (Cohen, 1992). SAS Statistical software version 9.1.3 was used for this analysis (SAS Software, 2002). Correlations between R/SO and injured person ratings of functioning were evaluated while descriptive statistics such as means and standard deviations for continuous variables, and frequencies for categorical variables were obtained. The distributions of the psychological functioning (the outcome variable) and independent variables (preinjury characteristics, injury-related

Table 1  
*Demographic Profile of the Participants' Preinjury and Injury-Related Characteristics*  
 (N = 75)

Variable	N	%	Variable	N	%
Gender			Medical history		
Females	36	48	TBI		
Males	39	52	Yes	12	16.0
Ethnicity			No	63	84.0
Caucasian	68	91	Psychiatric		
African American	7	9	Yes	15	20.0
Education			No	60	80.0
No college	59	79	Chronic pain		
College	16	21	Yes	13	17.0
Current marital status			No	62	83.0
Married	30	40	Substance abuse		
Unmarried	45	60	Yes	10	13.3
Current employment			No	65	86.7
Employed	22	29	Preinjury marital status		
Unemployed	41	55	Married	71	94.7
Other (student or volunteer)	12	16	Unmarried	4	5.3
Involved in litigation <sup>a</sup>			Preinjury employment		
Yes	38	51	Employed	68	90.7
No	32	43	Not employed	7	9.3
TBI injury severity					
Mild (MTBI)	27	36			
Moderate (includes complicated MTBI)	48	64			
Current health rating					
Excellent or good to very good	49	65.3			
Fair or poor	26	34.7			

*Note.* TBI = traumatic brain injury.  
<sup>a</sup>Missing data because of five refusals.

characteristics, and interpersonal relatedness) were evaluated. The regression models were implemented in the generalized linear model (GLM) procedure in SAS.

Table 1 provides detailed demographic data about the study participants. While 48 persons had admitting GCS scores of 13–15 and < 30 min of loss of consciousness, nearly half of these had abnormal CT results, depicting a complicated mild injury (Bay & McLean, 2007) or moderate injury (Kashluba et al., 2008; Vitaz et al., 2003). Thus, this sample reflects nearly equal groups of mild and moderate levels of severity. Further, our sample reflects equal groups according to sex. Sixty-five percent of our sample rated themselves to be in good to excellent health, while 17% reported preinjury chronic pain, 20% reported a preinjury diagnosis of psychiatric disorders, and 16% had a previous TBI. While there was no substantiation of reported income levels, 48% claimed household income below \$45,000 per year. Slightly more than a third of our sample never married (36%), 40% were married, while the remaining were divorced, separated, widowed, or in noncommitted relationships.

Characteristics of the R/SO group included 42% identifying as “spouse,” while 26.7% were parents. For those married, their average length of marriage was 12.73 years. Seven percent of the sample reported a change in their relationship after the TBI, most commonly divorce or separation.

Table 2  
*Descriptive Statistics for Study Variables*

Measures	Range	Mean (SD)	Cronbach's alpha
Interpersonal relatedness			
Social support subscale	20–64	51.07 (8.9)	.91
Conflict subscale	17–57	36.48 (9.27)	.88
Sense of belonging	24–72	55.10 (11.80)	.95
Childhood adversity	0–10	3.66 (2.77)	NA
Psychological functioning (combined EMOT + IPR subscales)	28–70	51.66 (9.83)	.92
McGill Pain Questionnaire	0–8.5	2.1–2.6	NA

*Note.* NA = not applicable.

Table 2 provides mean scores on the variables of interest. This sample appeared to have high reported social support, low levels of pain, and reported some degree of childhood adversity, such as sexual abuse ( $N = 3$ ), drug or alcohol problems in the home (32%), and violence between their parents (18%). Of significance, nearly 50% experienced the death of a close (not parental) family member during their childhood.

#### *Hypothesis 1*

In our analyses to answer hypothesis 1, we determined the relationships between interpersonal relatedness (interpersonal conflict, social support, and sense of belonging) and preinjury and injury-related factors. For these analyses, we used hierarchical regression. At each step, only variables that were statistically significant ( $p < .05$ ) were retained before adding variables at the next step, until the final regression model consisted only of variables that remained statistically significant and were associated with interpersonal conflict, social support, or sense of belonging.

At the first step, the following premorbid characteristics variables were entered: age, sex, prior marital and employment status, comorbidities (previous TBI, psychiatric, chronic pain, ETOH, or drug abuse history), and childhood adversity. Injury-related characteristics (TBI severity, present pain, time since injury, postinjury employment, marital, litigation, and perceived health status) were entered at the second step. The final resulting regression model is presented in Table 3.

From this analysis, we note that interpersonal conflict was positively associated with the frequency of childhood adversity and the number of months since their injury. No preinjury or injury-related variables were associated with social support. As expected, those with low sense of belonging also rated their perceived health status as poor to fair.

#### *Hypothesis 2*

To answer hypothesis 2, we used hierarchical regression analysis, a method similar to that stated above. We first regressed psychological functioning on preinjury, then on injury-related variables. In the third step, we added interpersonal conflict, social support, and sense of belonging to the model. Interpersonal conflict, social support, and sense of belonging were left in the final model to determine the extent to which these three variables of interest were associated with psychological functioning.

The final resulting regression model is presented in Table 4. Only postinjury marital status was a significant injury-related variable that was retained in the final model. According to our final model, lower levels of belonging were associated with worse psychosocial functioning, as

Table 3  
*Final Regression Model for Testing Whether Interpersonal Conflict, Social Support, or Sense of Belonging Will Be Associated With Preinjury and Injury-Related Factors*

Dependent variables	Independent variables	Coefficient	<i>t</i>	<i>p</i> -value	
Interpersonal conflict Step 1 ( $R^2 = .22$ )	Age	.20	2.43	.0174	
	Childhood adversity	1.12	3.14	.0024	
	Step 2 ( $R^2 = .23$ )	Childhood adversity	1.40	4.03	.0001
		Time since injury	.38	2.50	.0146
Social support Step 1 ( $R^2 = \text{NA}$ )	None are significant	NA	NA	NA	
	Step 2 ( $R^2 = \text{NA}$ )	None are significant	NA	NA	
Sense of belonging Step 1 ( $R^2 = \text{NA}$ )	None are significant	NA	NA	NA	
	Step 2 ( $R^2 = .17$ )	Perceived health status (poor and fair)	-10.29	-3.93	.0002

Table 4  
*Final Regression Model for Testing Whether Interpersonal Conflict, Social Support, and Sense of Belonging Will Be Negatively Associated With Psychological Functioning When Controlling for Related Preinjury and Injury-Related Factors*

Dependent variables	Independent variables	Coefficient	<i>t</i>	<i>p</i> -value
Psychological functioning Step 1 ( $R^2 = \text{NA}$ )	None are significant	NA	NA	NA
	Step 2 ( $R^2 = .19$ )	Time since injury	-.41	-2.43
Step 3 ( $R^2 = .51$ )	Postinjury marital status—married	-6.16	-2.87	.0053
	Postinjury marital status—married	-4.67	-2.69	.0089
	Interpersonal conflict	-.19	-1.89	.0635
	Social support	.08	.68	.5000
	Sense of belonging	.41	4.36	<.0001

was being married. Social support was no longer a significant variable, whereas interpersonal conflict approached statistical significance.

## DISCUSSION

In this study with a cross-sectional sample, we describe the relationships between interpersonal relatedness and psychosocial functioning when controlling for significant covariates in individuals experiencing a mild-to-moderate TBI. Persons recruited from outpatient rehabilitation centers (suggesting that all were receiving needed therapies), who were on average within 9 months from their original injury, indicated that aspects of interpersonal relatedness were associated with psychosocial functioning. Specifically, those married and with low levels of belonging were more likely to have poor psychosocial functioning. That is, those who felt they did not have valued fit and involvement with others were more likely to report difficulty with controlling emotions, interacting with others, and displaying confidence and sensitivity to others' feelings. Further, those in a married relationship were more likely to have poor



psychosocial functioning. These findings are particularly novel given that all had been referred for specialized therapies and claimed to have fairly good social support.

We believe that further focus on helping persons with TBI regain their sense of belonging has the potential to improve psychosocial outcomes, an area with very little intervention science. This is further emphasized in a recent randomized controlled clinical trial by Bell et al. (2008), which found that merely focusing on symptom management is not enough. Their study did find that significant improvement in cognitive and physical symptoms was more likely in those who received telephone counseling versus usual care, but this did not apply to psychological factors and outcomes. Given our findings, it may be that a therapeutic focus on improving a sense of belonging as well as on specific interpersonal factors can lead to better psychosocial outcomes.

#### *Interventions Targeting Sense of Belonging*

Items answered on Hagerty's Sense of Belonging Instrument-Psychological include questions related to an individual's identity or place in the world. Items include questions such as "I often wonder if there is anyplace on earth where I really fit in," "I feel like a piece of a jigsaw that doesn't fit into the puzzle," and "I could disappear for days and it wouldn't matter to my family." Therapists working with an individual with a TBI would do well focusing on increasing an individual's confidence, identity, and belonging. Clearly, a TBI strikes at the core of one's identity, and postinjury they struggle with feeling connected. These individuals clearly perceive themselves as "different from before," and focusing on increasing belonging through interpersonal relationships can increase one's ability to function emotionally and interpersonally.

#### *Interventions Targeting Marital and Family Relationships*

Our data suggest that a marital relationship is not protective for individuals recovering from a TBI, but may negatively impact their psychosocial outcomes. Research suggests that marital stability remains after TBI (Arango-Lasprilla et al., 2008). Yet, others reported that marital stability after TBI has no apparent benefits on life satisfaction over time (Johnson et al., 2010). In our data, interpersonal conflict approached significance. Consequences of TBI that directly impact a relationship include mood disorders, inability to inhibit emotions or thoughts, or personality changes (CDC, 2010). Further, the TBI may have resulted following a conflict associated with a troubled relationship. Importantly, interventions for couples that focus on understanding how TBI affects the individual and family, the facilitation of discussions about changing roles, declines in belonging and relationships, as well as painful feelings related to the TBI are all likely to be useful in rebuilding relationships. It is likely that a TBI shakes the secure base of the attachment relationship in the marriage. Interventions for couples such as emotionally focused couple therapy (Johnson, 2002) are likely ideal for working with the changes in connection that occurred as a result of the TBI. Further, clinicians should inform themselves of characteristics of individuals with a TBI and with clinical guidelines, all of which are widely available on the Internet.

#### *Limitations and Strengths*

There are limitations and strengths associated with this study. First, this study can only be generalized to a very specific population: those receiving specialty outpatient therapies following hospitalized care for trauma and mild or moderate TBI. As many persons with MTBI are seen only in the emergency department and then lost to follow-up, we do not know whether these findings can be applied to the vast majority of those with milder injuries. Secondly, interpersonal relatedness is most likely a dynamic process that changes over time. Future studies should be designed to monitor prospective development of interpersonal relatedness over time. This study did recruit persons from multiple programs, thus reducing the likelihood that our results are influenced by the treating facility or staff. Further, all data were collected in person and also from the R/SO, suggesting the results are valid. All measures used were valid and reliable for this population, with the exception of the Childhood Adversity Checklist. To further investigate the relationship, of childhood adversity, it is suggested that standardized instruments

and interview methods of assessment by trained interviewers be used. All persons were hospitalized, and data about the TBI were obtained from the medical record, reducing the likelihood that persons feigning TBI symptoms were in the study.

## CONCLUSION

Our study focused on the ramifications of a TBI on the well-being of an individual and his or her relationships. Results suggest that one's sense of belonging is shaken by a TBI and affects postinjury psychological functioning. Further, a TBI is exacerbated by marital status, likely because interpersonal conflict increases due to the many changes that come about as a result of the injury. Our findings suggest that interventions targeting strengthening the injured persons' sense of belonging, lowering interpersonal conflict, and improving relationships may benefit those living with TBI.

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