Social Support and Leisure Activities Following Severe Physical Disability: Testing the Mediating Effects of Depression

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We tested for mediating effects of depression on the association between social support and leisure activities among men with severe physical disabilities. Measures of social support, depression, and leisure activities were administered to men receiving services at a spinal-cord-injury unit in a Veteran’s Administration Medical Center. Path analysis revealed depression and attachment support to be directly predictive of leisure activities; however, support that reassured the worth of the individual was related to leisure activities only when depression was taken into account. Separate analyses revealed that the hypothesized moderating effects of time since injury were nonsignificant. Results are discussed in light of contemporary notions of social support, depression, and leisure activities among persons with chronic medical conditions.

Social support research has proliferated over the past two decades, but theoretical and clinical issues have tended to compromise our understanding of the concept and its relation to adjustment. Generally, social support has been interpreted from either the perspective of the buffering hypothesis...
(Cassel, 1974) or the relationship model (e.g., Cutrona, 1984). According to the buffering model, social support protects a person from the deleterious effects of stressful encounters. In contrast, the relationship model posits that people with supportive relationships have higher levels of well-being regardless of the circumstances. Empirical research has endorsed both positions (Cohen & Wills, 1985).

Unfortunately, these models do not adequately explain the mixed findings concerning the correlates of social support among persons experiencing chronic stress or among those who have long-term physical conditions that can impose recurrent, unfamiliar, or unpredictable strains on the individual and the surrounding interpersonal context. Cross-sectional research has linked higher levels of social support to less depression and greater social mobility among persons with severe physical disabilities (Elliott, Herrick, Witty, Godshall, & Spruell, 1992; Rintala, Young, Hart, Clearman, & Fuhrer, 1992; Schulz & Decker, 1985), but these effects may be enhanced or negated by certain social-cognitive and interpersonal characteristics of the recipient (Elliott, Herrick, & Witty, 1992; Elliott et al., 1991). Longitudinal studies of persons in chronically stressful environments (Lepore, Evans, & Schneider, 1991) and of those coping with chronic medical problems (Brown, Wallston, & Nicassio, 1989; Fontana, Kerns, Rosenberg, & Colonese, 1989; Hobfoll & Lerman, 1989) indicate that social support wanes over time, with corresponding increases in depression and distress.

Critics of the social support construct note that these findings illustrate the explanatory shortcomings of the buffering and relationship models and call into question the theoretical and clinical utility of these conceptualizations. Documented associations between social support and self-reported psychological adjustment are particularly suspect, as other evidence clearly indicates that depressed persons interpret interpersonal events and relationships in a negative manner (Coyne & DeLongis, 1986; Suls, 1982). Depression can have deleterious effects on short-term interpersonal interactions in experimental settings (Coyne, 1976) and on persons in long-term relationships (Coyne et al., 1987; Hokanson, Rubert, Welker, Hollander, & Hedeen, 1989). Although depression is typically construed as a criterion variable in the social support literature, it may mediate the relation between the actual nature and the perception of social relationships (Stokes & McKirnan, 1989).

A significant minority of persons with chronic, debilitating physical conditions meet clinical criteria for depression (e.g., Frank, Elliott, Corcoran, & Wonderlich, 1987), and depression among persons with acquired disabilities has received more empirical attention than any other psychological problem (Elliott & Umlauf, in press). If depression mediates the relation of social support to other aspects of psychological adjustment, then decreases in social support and corresponding increases in distress
among these persons may simply reflect that "people who are depressed are depressed" (Stokes & McKirnan, 1989, p. 279).

Recent research has advanced a mediational perspective of social support, but in these works, social support has been operationalized as the mediator of the stress–adjustment relation (Kaniasty & Norris, 1993; Quittner, Glueckauf, & Jackson, 1990). Other data suggest that individual-difference variables can mediate the relation of social support to indices of well-being (Robbins, Lee, & Wan, 1994). We propose that the mediating effects of depression on the social support–adjustment association remain to be clarified.

To test for mediation, the two variables of interest—in this case, depression and social support—must be related to a third variable of clinical and theoretical importance, which then serves as the criterion (Evans & Lepore, in press). We elected to study leisure activities as the criterion variable for this research. This variable was chosen for several reasons. First, depressed individuals infrequently engage in pleasurable social activities (Lewinsohn, 1975) and they report less positive reinforcement and satisfaction in activities involving others (Hokanson et al., 1989; Youngren & Lewinsohn, 1980). Second, satisfaction with leisure activities is a vital facet of adjustment among persons with severe physical disabilities (Kinney & Coyle, 1992; Krause, 1990; Krause & Crewe, 1987). Not surprisingly, depressed persons with acquired disability report fewer leisure activities (MacDonald, Nielson, & Cameron, 1987). Finally, evidence indicates that social support can play a pivotal role in the pursuit and enjoyment of leisure activities in parental adjustment following childbirth (Cutrona, 1984) and among persons adjusting to long-term career changes (e.g., early retirement; Robbins et al., 1994).

We tested the presumed mediating effects of depression on the relation of social support to leisure activities among men with severe physical disabilities. According to the mediational model, controlling for depression should significantly alter observed relations between social support and leisure activities regardless of time since injury.

In addition to our primary interest in the mediational effects of depression, we were concerned about the possible deterioration of social support among these persons. According to the deterioration hypothesis (e.g., Quittner et al., 1990), the beneficial effects of social support should be pronounced among persons with more recent injuries, but these effects should be negligible among those who had an acquired disability for a longer period of time. The passage of time should gradually erode available support systems, inducing greater dissatisfaction with leisure activities.

We predicted that the mediational model of depression would receive empirical support and would thus offer a cogent explanation of the social support–leisure activity relation. Although the deterioration model has
received support in longitudinal designs (e.g., Lepore et al., 1991), these effects may be more difficult to evaluate in cross-sectional analyses. Additionally, persons who have chronic conditions—like people in general—have varying degrees of success in establishing and maintaining relationships, and in providing and receiving support from others in the process (Fine & Asch, 1988). Nevertheless, the mediating effects of depression on the perceptions of support and leisure activities should be magnified in cross-sectional analyses.

**METHOD**

**Participants**

Participants were 104 men with spinal cord injuries (SCI) receiving services from the McGuire Veterans Administration Medical Center (Richmond, VA). Men incur SCI at a disproportionately higher rate than women (Frank, Elliott, Corcoran, & Wonderlich, 1987), and men may encounter more negative social reactions than their female counterparts (Frank, Elliott, Wonderlich, et al., 1987). Other research indicates that depression among persons with SCI engenders similar attributional and rejection processes observed in reaction to depressed persons in general (Elliott & MacNair, 1991; Elliott, MacNair, Herrick, Yoder, & Byrne, 1991; Elliott, Yoder, & Umlauf, 1990). We employed a cross-sectional design, including men who varied from 1 month to 490 months (40.8 years) since the onset of the disability. The average age was 42.08 years ($SD = 13.16$ years), and participants averaged 12.13 ($SD = 2.58$) years of formal education. Time since the onset of injury (TSI) averaged 125.61 months ($SD = 140.69$ months). We computed a log transformation of the time variable for our analyses.

Patients were approached by a member of the research team and informed that the study examined interpersonal behavior and adjustment to SCI. Informed consent was obtained from interested participants. Trained interviewers verbally administered the measures to patients, because many patients with high-level injuries required assistance. Typically, prospective participants were approached either in their hospital rooms, in clinic waiting rooms, or in public access areas on hospital units during the day and during evening visiting hours. Seventeen persons declined to participate in the study.

**Predictor Variables**

**Social support.** The Social Provisions Scale (SPS; Russell & Cutrona, 1984) is a 24-item questionnaire that requires respondents to rate each item
on a 4-point Likert-type scale according to the degree to which each type of
support listed is currently being provided. Separate scores are computed for
six subscales, each measuring a component of social support postulated by
Weiss (1974). Accordingly, relationships that constitute social support systems
can be categorized into the essential functions that they serve. Relationships
that provide a sense of closeness and security, as exemplified in intimate
relationships, are classified as Attachment (AT) relationships. Social
integration (SI) relationships are those that provide a sense of
belonging, as exemplified in friendships. Relationships that provide Guid-
ance (GUID) can be obtained from professional relationships that supply
informed advice. Relationships that acknowledge and reinforce a person’s
sense of worth, as exemplified in relationships with co-workers and
colleagues, are described as Reassurance of Worth (ROW) relationships.
Tangible, noncontingent assistance from family members is described as
Reliable Alliance (RA) support. The sense of responsibility for the welfare
of another, often derived from caring for one’s own children, is defined as
provisions have demonstrated differential correlates with depression and
other psychological symptoms among postpartum women (Cutrona, 1984),
elderly individuals (Cutrona, Russell, & Rose, 1986), blue-collar workers
(Mallinckrodt & Bennett, 1992), and college students (Elliott & Gramling,
1990).

Reliability coefficients for the SPS have been quite high (.84 to .92) and
internal consistency markers for the total score have ranged from .85 to .92
(Russell & Cutrona, 1984). Alpha coefficients for the individual subscales
have ranged from .64 to .76, and factor analysis has confirmed a six-factor
structure corresponding to the six provision subscales (Cutrona & Russell,
1987). Test–retest reliability obtained among a sample of elderly adults for
the total score on the SPS was .55 over a 6-month period (Cutrona et al.,
1986). Validity studies comparing the subscale scores to other self-report
measures (Cutrona, 1984; Russell & Cutrona, 1984) and interactional
behaviors in daily encounters (Cutrona, 1986) indicate that the scale has
satisfactory psychometric properties.

Although the SPS measures certain social provisions articulated in a
theoretical framework (Weiss, 1974), no specific, a priori hypotheses can be
made to anticipate the unique relation of a particular social provision to
leisure activities. However, Cutrona (1984) believes that SI support “refers
to feeling part of a group of friends with whom one shares . . . recreational
activities” (p. 387). ROW has been associated with depression in several
studies (Elliott, Herrick, Witty, Godshall, & Spruell, 1992; Mallinckrodt &
Bennett, 1992). These two provisions—which are associated with group
membership (Cutrona, 1984)—may be important factors in the pursuit and
maintenance of meaningful spare-time activities. Moreover, the relation of
ROW support to depression can be substantially mediated by enduring levels of negative affectivity (Elliott, Marmarosh, & Pickelman, 1994), and other social provisions have evidenced indirect effects on criterion variables once certain individual-difference characteristics are taken into account (Elliott et al., 1991; Elliott, Herrick, & Witty, 1992).

This theoretical reasoning can be contrasted with preliminary evidence linking satisfying marital relationships with meaningful leisure activities among persons with severe physical disability (Urey & Henggeler, 1987; Urey, Viar, & Henggeler, 1987). These intimate relationships could be conceptualized as Attachment support. We retained all the SPS subscales in our multivariate procedures to examine direct and indirect contributions of each provision toward the prediction of leisure activities.

**Depression.** The Inventory to Diagnose Depression (IDD; Zimmerman & Coryell, 1987) is a 22-item self-report measure of current depressive behavior over the previous 2 weeks (Zimmerman, Coryell, Corenthal, & Wilson, 1986). Acceptable test–retest reliability (.98 over 2 days) and internal consistency coefficients (.92) have been reported; correlations with interview systems and other self-report measures of depression have been adequate (ranging from .80 to .87; Zimmerman & Coryell, 1987; Zimmerman, Coryell, Corenthal, & Wilson, 1986; Zimmerman, Coryell, Wilson, & Corenthal, 1986). Each item requires a respondent to indicate the severity of a depressive behavior on a 5-point Likert scale. The sum of responses provides a total severity score. Higher scores reflect more depressive behaviors. The IDD has been found to be a sensitive measure of depression among persons with SCI in comparative investigations (Frank et al., 1992), and it has been related to theoretical and clinical factors important in adjustment following SCI (e.g., Elliott, Herrick, Witty, Godshall, & Spruell, 1992).

**Demographic information.** TSI, patient age, and patient level of injury were deemed clinically important for inclusion as predictor variables. The number of months from the onset of injury to the time of interview was recorded. A log transformation of this number (TSI) was used in subsequent analyses. The data of injury were provided either by the patient or the medical chart. Patient age was obtained in the interview. Forty patients were married, 30 were single, 24 were divorced, 9 were separated, and 1 was widowed. Sixty-four patients had paraplegia; 40 had tetraplegia.

**Criterion Variable**

**Spare-time activities.** The Weissman Social Adjustment Scale (Weissman & Bothwell, 1976) was used to measure current spare-time activities. The Weissman scale has several sections; however, only the
section designed to assess spare-time activities with friends was used in this study. Nine questions from this section measure the nature of interactions with friends, engagement in hobbies, recreational activities, participation in social functions (e.g., church attendance), and the degree to which the respondent has felt lonely or bored in the 2 weeks prior to assessment. Items are rated on Likert-type scales, and higher scores are indicative of diminished spare-time activities. Initial research with the original Weissman scale found that the spare-time section correlated well with interviewer ratings (.71; Weissman & Bothwell, 1976). Although the Weissman scale was originally designed for use with psychiatric patients, subsequent research has found the spare-time section to be sensitive to differences between people experiencing chronic stress and comparison groups (Lehman, Wortman, & Williams, 1987).

Data Analysis

Correlational procedures are recommended for conducting tests of mediation (Baron & Kenny, 1986; Evans & Lepore, in press). Path analysis, using a structural-equation-modeling approach (LISREL 8; Jöreskog & Sörbom, 1993), was used to examine the relation between social support and leisure activities and the extent to which this relation was mediated by depression. This analysis provides estimates of the direct and indirect effects and the standard errors of these effects. The presence of significant indirect effects through the depression variable would support our hypotheses regarding the mediating role of depression in the social support–leisure activity relation.

To test for deterioration effects of TSI, hierarchical regression techniques were employed. We included the six SPS scales and TSI at the first step of the equation to predict leisure activities. In anticipation of multicollinearity between predictor variables that would adversely affect computations (e.g., Neter, Wasserman, & Kutner, 1989), we calculated centered interaction terms for each SPS scale and TSI, as recommended by Aiken and West (1991). Centering the means for each SPS scale and the TSI variable prior to generating each interaction term serves to reduce redundancy between terms. Thus, a set of six centered interaction terms (RA × TSI, ROW × TSI, etc.) was entered at the second step to examine moderating effects of TSI on the relation of each social support function to leisure activities.

RESULTS

Means and standard deviations for the self-report measures and the log transformation of TSI are displayed in Table 1. Correlations used in the LISREL analyses and the regression equation are contained in Table 2.
TABLE 1
Means and Standard Deviations of the Predictor and Criterion Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Provisions Scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attachment</td>
<td>13.63</td>
<td>2.09</td>
</tr>
<tr>
<td>Social Integration</td>
<td>13.32</td>
<td>2.04</td>
</tr>
<tr>
<td>Reassurance of Worth</td>
<td>12.71</td>
<td>2.26</td>
</tr>
<tr>
<td>Reliable Alliance</td>
<td>14.11</td>
<td>2.02</td>
</tr>
<tr>
<td>Guidance</td>
<td>14.00</td>
<td>2.28</td>
</tr>
<tr>
<td>Opportunity for Nurturance</td>
<td>12.71</td>
<td>2.25</td>
</tr>
<tr>
<td>Inventory to Diagnose Depression</td>
<td>13.60</td>
<td>10.80</td>
</tr>
<tr>
<td>Spare-time activities</td>
<td>20.02</td>
<td>6.17</td>
</tr>
<tr>
<td>Time since injury*</td>
<td>3.81</td>
<td>1.78</td>
</tr>
</tbody>
</table>

*Log transformation of number of months since the onset of injury.

TABLE 2
Correlation Matrix of Variables Included in Regression Analyses

<table>
<thead>
<tr>
<th></th>
<th>IDD</th>
<th>ROW</th>
<th>AT</th>
<th>SI</th>
<th>OFN</th>
<th>RA</th>
<th>GUID</th>
<th>TSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPARE</td>
<td>.52**</td>
<td>-.43**</td>
<td>-.53**</td>
<td>-.44**</td>
<td>-.20*</td>
<td>-.38**</td>
<td>-.37**</td>
<td>-.08</td>
</tr>
<tr>
<td>TSI</td>
<td>-.16</td>
<td>-.08</td>
<td>-.06</td>
<td>-.16</td>
<td>-.03</td>
<td>-.21*</td>
<td>-.18</td>
<td>-</td>
</tr>
<tr>
<td>GUID</td>
<td>-.32**</td>
<td>.68**</td>
<td>.74**</td>
<td>.71**</td>
<td>.53**</td>
<td>.67**</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>RA</td>
<td>-.31**</td>
<td>.58**</td>
<td>.62**</td>
<td>.58**</td>
<td>.43**</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>OFN</td>
<td>-.12</td>
<td>.40**</td>
<td>.58**</td>
<td>.42**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SI</td>
<td>-.37**</td>
<td>.73**</td>
<td>.75**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>AT</td>
<td>-.31**</td>
<td>.65**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ROW</td>
<td>-.42**</td>
<td>-</td>
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</tr>
</tbody>
</table>

Note. SPARE = Spare-time activities; TSI = log of time since injury (in months); GUID = Guidance subscale; RA = Reliable Alliance subscale; OFN = Opportunities for Nurturance subscale; SI = Social Integration subscale; AT = Attachment subscale; ROW = Reassurance of Worth subscale; IDD = Inventory to Diagnose Depression total score. Higher scores on GUID, RA, ROW, OFN, SI, and AT denote more corresponding support; higher IDD scores denote more depressive behaviors; higher Spare-time scores denote greater difficulties with activities. N = 104.

*p < .05. **p < .01.

Test of the Mediation Model

Significant direct path coefficients to depression and leisure activity are provided in Figure 1. Attachment support had a significant direct effect on leisure activities (p < .05), indicating that a greater provision of intimacy was directly associated with increased leisure activities. Depression also had a significant direct effect on leisure activities (p < .05). As anticipated from clinical findings, depressive behavior was associated with less leisure activity. Although the direct effect of ROW to leisure activity was not significant (gamma = -0.05), the indirect effect of ROW mediated by
depression was statistically significant (indirect effect = \(-0.12, p < 0.05\)). The direct effect of ROW on depression was also significant \((p < 0.05)\). Thus, the relation of ROW support to leisure activities was mediated by depression: Higher levels of ROW support were associated with higher level of leisure activity once depression was taken into account. The final model accounted for 44% of the variance in leisure activities.

**Test of the Deterioration Model**

At the first step of the regression equation to predict leisure activities, we entered the TSI variable and the six SPS subscales in a block. This set was significantly predictive of leisure activities, \(F(7, 96) = 6.82, p < 0.0001, R^2 = .33\). Analysis of beta weights revealed Attachment support was the only significant predictor of leisure activity, beta = \(-0.49, t(96) = -3.20, p < 0.01\). At the second step of the equation, a block containing six centered interaction terms (ROW × TSI, SI × TSI, etc.) was added to test for the moderating effects of TSI on each social provision. This block did not significantly augment the equation, \(F_{\text{Increment}}(6, 90) = 0.45, \text{ns}\). Thus, in our cross-sectional design, the deteriorating effects of TSI on the relation of social support to leisure activities was not apparent.

We computed a second equation in a post hoc fashion to examine possible deteriorating effects toward the prediction of depression among
this sample. TSI and the six SPS subscales were significantly predictive of depression at the first step of the equation, \( F(7, 96) = 4.50, p < .001, R^2 = .25 \). Inspection of beta weights revealed TSI (beta = -.25) and ROW (beta = -.28) were significant contributors in this set (\( p < .05 \)). At the second step, the block of six centered interaction terms was added to examine the moderating influence of TSI on the relation of each social provision to depression. Again, this set did not significantly augment the equation, \( F_{\text{increment}}(6, 90) = 0.90, \) ns. Thus, the duration of injury did not moderate the relation of any social provision to depression or leisure activities in our cross-sectional design.

Finally, to determine the possible confounding role of marital status in the prediction of the criterion variable, we examined potential differences in social support, leisure activity, and depression by marital status. A series of one-way analyses of variance revealed no differences existing on any of the six SPS variables, leisure activity, or depression as a function of marital status (coded as married, single, and divorced/separated/widowed). Thus, it is unlikely that marital status operated as a mediator of the social support-leisure activity relation.

DISCUSSION

Based on cogent criticisms of the social support research and on compelling evidence regarding the social dynamics of depression, we reasoned that depression could mediate social support-adjustment relations by at least two mechanisms. Depression could taint appraisals of existing social support; depression could also trigger genuine disturbances in the psychosocial milieu that would be subsequently reflected in predictor and criterion variables. Therefore, controlling for individual levels of depression would nullify significant associations between social support and spare-time activities among men with SCI. Actual results revealed direct and indirect effects of social support on leisure activities. Consistent with prior research, higher levels of depression were significantly predictive of fewer spare-time activities. One social provision—Attachment support—was the only element of social support to directly affect the quality of leisure activities. A greater satisfaction with intimate relationships was significantly associated with higher levels of leisure activity. However, an unexpected indirect effect was observed: Higher ROW support was significantly associated with meaningful leisure activities once depression was taken into account. In this manner, depression mediated the relation of ROW to leisure activities in a counterintuitive fashion. Rather than nullify the effect of ROW on the criterion variable, controlling for depression revealed a significant path from ROW support to leisure activities.
Despite the well-established effects of depression and other negative-affectivity constructs on cognitive appraisals (e.g., Coyne & Gotlib, 1983; Watson & Pennebaker, 1989), it appears that certain social provisions remain important correlates of psychological adjustment. The current findings converge with other tests of suspected confounds between perceptual-based individual differences and measures of adjustment. For example, cognitive appraisals of threat, personal flexibility, and interference imposed by a stressor remain significant predictors of coping and adjustment after accounting for the variance attributable to trait negative affectivity (Elliott, Chartrand, & Harkins, 1994; MacNair, Elliott, & Harkins, 1994). In a study more germane to the present work, ROW support was shown to be a significant predictor of depression in cross-sectional and prospective analyses after controlling for trait negative affectivity; the prospective relation to negative mood was observed in post hoc analyses after controlling for prior levels of depression (Elliott, Marmarosh, & Pickelman, 1994). Thus, the contaminating effects of other psychological disturbances in self-report constructs may not be as pervasive as some have argued.

Our ability to interpret the present results is hindered by the lack of clear referents for each social provision and the lack of specific a priori hypotheses from the social provisions model. We could not anticipate which social provisions would predict leisure activities, nor those which would be mediated by depression. Consequently, we do not know if our findings are generalizable to other populations, or if they are restricted to men with acquired physical disabilities. Other data have revealed positive associations between satisfying intimate relationships and meaningful leisure activities among persons with SCI (Urey & Henggeler, 1987; Urey et al., 1987). Clinically, these findings stand in contrast to the high rate of divorce occurring among persons who acquire SCI (DeVivo, Hawkins, Richards, & Go, 1995). Intimate relationships—as operationalized and assessed by the Attachment subscale—appear to be vital in the pursuit of spare-time activities, and they are associated with a higher quality of life for these persons.

The observed effect of ROW support on depression replicates previous work (e.g., Elliott, Marmarosh, & Pickelman, 1994; Mallinckrodt & Bennett, 1992). Similarly, the predicted effect of depression on leisure activity converges with past research among people in general and those with physical disability (Lewinsohn, 1975; MacDonald et al., 1987). Depressed persons feel more discomfort than controls in being assertive, and they infrequently engage in social activities overall (Youngren & Lewinsohn, 1980). Presumably, depressed individuals experience a dearth of positive events in the environment, and the subsequent absence of positive reinforcement maintains the depressive behavior (e.g., Lewinsohn,
1975). Alternatively, interpersonal models of depression stipulate that depression disrupts social interactions in short-term and long-term relationships (Coates & Wortman, 1980; Coyne, 1976). For example, many spouses of depressed individuals report a lack of interest in social life outside the relationship (Coyne et al., 1987), and roommates of depressed students similarly report less enjoyment in the relationship (Hokanson et al., 1989). Depression is a problem for a significant minority of persons with SCI, and it is related to a host of psychological factors, including interpersonal dynamics (for a review, see Frank, Elliott, Corcoran, & Wonderlich, 1987). Deficiencies in leisure activities due to depression may reflect problems in assertion, diminished positive reinforcement, or disruptions in social relationships that would contribute toward more optimal psychological adjustment, as indicated by one's involvement in leisure activities.

Unique to the present study, however, is the indirect effect of ROW support on leisure activity. Apparently, this relation is meaningful only when the variance attributable to depression is taken into account. Once placed in this statistical context, the positive benefits of relationships that reinforce an individual's sense of worth and competence becomes evident. This social provision, which functions as a type of group membership, is seemingly filtered through existing levels of depression to then exert a positive effect on leisure activities.

It is possible that intimate relationships among these men were positively reinforced by meaningful leisure activity. More time spent in hobbies, conversation, and recreational pursuits undoubtedly enhanced the quality of close relationships with spouses, lovers, and partners. More important, many partners of persons with SCI assume caregiving duties in helping the person with disability tend to activities of daily living, personal hygiene, and therapeutic self-care regimens, although the degree of assistance varies considerably. Nevertheless, research indicates that these role changes can have detrimental effects on intimate relationships, as partners may encounter difficulties assuming these tasks (Richards, Shewchuk, Elliott, & Bullard, 1994). Persons in caregiving roles subsequently spend less time in recreational activities and have more restricted types of leisure pursuits than matched controls (Quittner, Opipari, Regoli, Jacobsen, & Eigen, 1992).

Attachment support has not emerged in previous research as a consistent predictor of any single index of psychological adjustment. In clinical and developmental models of personality, the notion of attachment is crucial to the infant–caregiver relationship, enabling a child to feel secure, self-confident, and accepted (Ainsworth & Wittig, 1969; Bowlby, 1969, 1977). Children who have a greater sense of attachment may be more willing to explore immediate surroundings; a lower sense of attachment might be marked by fear, avoidance, and trepidation, particularly in novel and strange situations (Goldsmith & Harman, 1994). The individual who
developed a sense of attachment as a child may then be capable of secure attachments as subsumed by the social support construct (Sarason, Pierce, & Sarason, 1990).

Persons with SCI often harbor many concerns about possible mishaps in public situations (including falls and bladder and bowel accidents) and these fears can limit their social activity (Dunn, 1977). In our study, men with a heightened sense of Attachment support may have felt more secure, competent, and willing to pursue leisure activities despite the potential for embarrassing incidents. Engaging in leisure activities could then in turn heighten personal competence and positive affect as these men successfully interacted with their physical environment (White, 1959). In this fashion, Attachment support could prove particularly beneficial to persons with debilitating conditions that fundamentally alter their means of interacting in the environment.

The cross-sectional design of our study—which included men who ranged from 1 month to 40 years postinjury—was probably insensitive to the deteriorating effects of TSI on social relationships. Longitudinal research has documented the gradual erosion of support among persons with disabling conditions (e.g., Quittner et al., 1990) and descriptive data testify to the deleterious effects of acquired SCI on pre-injury marriages (Crewe, Athelstan, & Krumberger, 1979). Our regression analyses were likely inadequate tests of the deterioration hypothesis. Persons with acquired disabilities are capable of initiating, maintaining, and terminating a wide array of relationships, and they are not passive recipients of support as is often implied (Fine & Asch, 1988; Jones et al., 1984). Nevertheless, contemporary data indicate that persons with SCI who marry long after the onset of injury are more likely to divorce than persons without SCI (DeVivo et al., 1995). Further work is needed to explore the possible dynamics that might impair or encumber satisfying, long-term intimate relationships among persons with acquired physical disability.

Several caveats must be applied to the results obtained in this study. The reliance on self-report measures prevents a thorough understanding of the role actual relationships assume in spare-time activities in this sample. Data collected from significant others, friends, and relatives of each patient may have revealed different results. The lack of clear referents in the measurement of social support impedes a clearer appreciation of these findings. Although these data lack generalizability to women with physical disabilities, it should be noted that men constitute a disproportionate percentage of all persons acquiring SCI (approximately 80% in national figures; Frank, Elliott, Corcoran, et al., 1987). Study of support correlates among women with disability is certainly needed. Research that employs a more fine-grained analysis of these relations is justified to advance clinical interventions in SCI rehabilitation.
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REFERENCES


