Subjective Well-Being Among People with Spinal Cord Injuries:

The Role of Self-Efficacy, Perceived Social Support, and Perceived Health

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The purpose of this study was to explore the joint contributions of demographic variables, perceived health, self-efficacy beliefs, and perceived social support to subjective well-being (SWB) in people with spinal cord injuries (SCI). One hundred twenty-seven individuals with SCI participated in the study. The results indicated that general self-efficacy, perceived social support, perceived health, and age at injury accounted for a substantial variance in SWB of the participants. Income was correlated with SWB, but it did not contribute to the prediction of SWB when the influences of general self-efficacy, perceived social support, perceived health, and age at injury were statistically controlled. Gender, ethnicity, and educational level were not significantly correlated with SWB. Implications of the results for rehabilitation counseling practice and research are discussed.

Subjective well-being (SWB) as an indicator of adjustment to disability has recently attracted more attention from researchers in the rehabilitation field (Bracke, 2001; Chase, Cornille, & English, 2000; Cummins, 2002). Researchers tend to agree that SWB should be one of the major goals of rehabilitation (Boswell, Dawson, & Heininger, 1998; Bracke, 2001; Crewe, 1980; Roessler, 1990). In the literature, SWB has been defined as an individual's evaluative reaction to his or her life (Boswell et al., 1998; Fuhrer, 1996; Krause, 1998a). SWB is a hierarchical and multidimensional concept and can be separated into cognitive or affective aspects (Fuhrer, 1996; Krause, 1998a). The cognitive aspect includes general life satisfaction and life domain satisfaction (Fuhrer, 1996). The affective aspect contains positive emotions (e.g., joy, pleasure) and negative emotions (e.g., anxiety, sadness; Fuhrer, 1996).

Studies have indicated that life stressors, such as a severe disease or the onset of a disability, often result in physical and psychological distress that may have a negative impact on a person's SWB (Feaster et al., 2000; Williamson & Shaffer, 2000). The onset of spinal cord injury (SCI) is a major stressful event that affects approximately 230,000 Americans (National Spinal Cord Injury Statistical Center, 2001). Depending on the level of the injury, people with SCI may experience permanent paralysis and altered bowel, bladder, and sexual functioning. They may also have to deal with both physical distress (e.g., pressure ulcers, urinary tract infections, chronic neuropathic pain) and psychological distress (e.g., physical and attitudinal barriers in society) for the rest of their life (Weaver et al., 2001). Because of the nature of the disability, SCI is an ongoing stressor that requires continuing physical and psychosocial adjustments.

Previous studies have indicated that after the onset of SCI, some individuals exhibit depressive symptoms that warrant a diagnosis of clinical depression (Elliott & Frank, 1996; Kishi, Robinson, & Forrester, 1994; Livneh & Antonak, 1997; Skinner, Armstrong, & Rich, 2003). Others, however, are able to adjust to the disability in a relatively short period of time and maintain a healthy psychological well-being (Crewe & Krause, 1991; Elliott & Frank, 1996; Frank, Elliott, Corcoran, & Wonderlich, 1987). Current theories and research on adjustment to disability contend

that the difference in SWB among people with SCI may be related to demographic and psychosocial factors (Livneh & Antonak, 1997).

With regard to influences of the demographic variables, the literature has indicated that age at the time of the injury (Krause, 1998b), educational level (Crewe & Krause, 1991), income (Schulz & Decker, 1985), and statuses of employment (Krause, 1990) and marriage (Chase et al., 2000) were correlated to the cognitive aspect of SWB. People who acquired SCI at a younger age, had a higher level of education and income, were married, and had a job tended to have higher levels of SWB than those who acquired the disability at an older age, had less education and income, were divorced or separated, and did not have a job (Boschen, 1996; Chase et al., 2000; Crewe & Krause, 1991; Krause & Dawis, 1992). Although people with quadriplegia have greater physical limitations than those who have paraplegia, no evidence has been found that people with higher levels of injury have lower levels of SWB than do individuals with lower levels of injury (Trieschmann, 1988). However, many previous investigations (e.g., Boschen, 1996; Chase et al., 2000; Krause, 1998a) have focused on the cognitive aspect of SWB.

Few studies have addressed gender and race factors, and the findings of these few studies are inconsistent. Fuhrer, Rintala, Jart, Clearman, and Young (1993) found that women were more likely to have negative feelings and were more at risk for serious depression than men following SCI. Krause and Anson (1997) indicated that minority women with SCI appeared to experience greater emotional distress than minority men, Caucasian men, and Caucasian women with SCI. However, minority men with SCI tended to experience less emotional distress than the other three groups (Krause & Anson, 1997).

On the other hand, Woodrich and Patterson (1983) reported that women with SCI were more likely to accept their disabilities than men. Krause (1998b) found that men and women did not differ in terms of levels of life satisfaction and that minority participants were at a greater disadvantage than Caucasian participants on several specific aspects of life satisfaction, including employment and finances. It appears that gender and race are important, but not well-understood, factors in the SWB of people with SCI. There is a need to further explore relationships between gender, race, and SWB.

Previous studies have also shown that perceived health problems gave rise to psychological distress, which in turn affected SWB (Rintala, Young, Hart, Clearman, & Fuhrer, 1992; Schulz & Decker, 1985). Individuals who perceived themselves as having good health tended to have high levels of SWB (Rintala et al., 1992; Schulz & Decker, 1985).

In terms of the impact of psychosocial factors on SWB, perceived social support and self-efficacy beliefs were found to be closely related to SWB. *Perceived social support* refers to a person's judgment about the availability or actual provision of resources through interactions with other people or service agencies in the community (Rintala et al., 1992). Several studies have provided strong evidence in support of the relationship between social support and SWB. For example, Schulz and Decker (1985) investigated the long-term adjustment to cognitive and affective aspects of SCI. They used the *Life Satisfaction Index–A* (Neugarten, Havighurst, & Tobin, 1961) to measure the cognitive aspect of SWB and the *Index of Psychological Well-Being* (IPWB; Berkman, 1971) to measure the affective aspect of SWB. They found that persons who perceived themselves as having high levels of social support had high levels of well-being and were more satisfied with their life. Similarly, Rintala et al. (1992) conducted a study with 140 individuals with SCI. They found that social support was significantly correlated to life satisfaction. In a study of relationships between social support and depression, Elliott, Herrick, Witty, and Godshall (1992) reported that people who had good social support tended to have low depression scores.

Self-efficacy was initially theorized by Bandura (1977). *Self-efficacy* refers to a person's judgment about his or her ability to perform certain activities (Bandura, 1977, 1986, 1997). The theory of self-efficacy was applied to the field of rehabilitation and was defined as an individual's beliefs about his or her abilities to cope with life's exigencies (Bandura, 1997). In line with this view, several studies have investigated relationships between self-efficacy beliefs and adjustment to SCI. Shnek et al. (1997) investigated the relationships between self-efficacy, learned helplessness, cognitive distortions, and depression in a combined sample of people with SCI and multiple sclerosis (MS). They found that self-efficacy and helplessness significantly predicted depression in both the SCI and MS groups. Similarly, Hampton (2000) explored the relationship between self-efficacy beliefs and quality of life in Chinese people with SCI. She reported that self-efficacy was significantly correlated with psychological well-being while holding constant the effects of health status and demographic variables.

However, little cross-sectional research has been done to explore the joint contributions of social support and self-efficacy to SWB. Also, previous studies tended to focus on the cognitive aspect of SWB. Little is known about the affective aspect of SWB among people with SCI. A few studies that investigated the affective aspect of SWB have used the IPWB to measure the affective aspect of SWB in people with SCI. As mentioned earlier, Schulz and Decker (1985) used the IPWB to explore the relationship between social support and the affective aspect of SWB. Similarly, Crewe (1997) investigated the relationship between the type of life story (the approach to life) and SWB in persons with SCI. The IPWB was used to measure the affective aspect of SWB, and the *Life Satis-*

faction Inventory–Z (Bigot, 1974) was used to measure the cognitive aspect of SWB. Crewe found that people with the comic form of life story had high levels of SWB, as measured by the IPWB. The limited information about the affective aspect of SWB in people with disabilities indicates a need for further investigations.

The purpose of this study was to (a) examine relationships between demographic variables and the affective aspect of SWB and (b) explore the joint contributions of self-efficacy beliefs and perceived social support to the affective aspect of SWB among individuals with SCI.

METHOD

Participants

One hundred twenty-seven individuals with SCI participated in the study. The criteria for the participant recruitment were as follows: (a) The person had SCI but no cognitive impairment; (b) the injury had occurred at least 2 years before the start of the study; and (c) the participant was at least 18 years of age at the time of the study. These criteria were consistent with previous studies (Hampton, 2000; Krause & Dawis, 1992).

Of the 127 participants, 88 (69%) were men and 39 (31%) were women; 114 (89%) were Caucasian, 9 (7%) were African American, 2 (2%) were Hispanic, 1 (1%) was Asian American, and 1 (1%) was Native American. The average age was 43 years (*SD* = 13.19). The mean age at the time of the injury was 29 years (*SD* = 13.59). Forty-five percent of the participants (*N* = 57) were married or cohabitating, and the remaining were single (35%, *N* = 44), divorced (17%, *N* = 21), or separated (3%, *N* = 5). Educational levels ranged from 8 to 24 years, with a mean of 16 years (*SD* = 3). Forty-six percent of the participants were unemployed, 18% held part-time positions, and 36% worked full-time. The mean annual income level of the participants was $30,300 (*SD* = $18,809, *MDN* = $35,001).

Causes of injury included automobile accidents (34%), falls (29%), diving accidents (22%), job-related injuries (2%), and diseases (13%). The majority of the participants (58%) had complete spinal cord injuries. The injury levels of the participants were cervical (57%, *N* = 72), thoracic (34%, *N* = 43), and lumbar (9%, *N* = 12).

Instruments

The *General Self-Efficacy Scale* (GSES), which consists of 17 iems, was designed to measure an individual's fundamental beliefs about his or her ability to cope with life's exigencies (Sherer et al., 1982). Respondents are asked to rate their agreement with each item on a 10-point Likert scale ranging from 1 (*strongly disagree*) to 10 (*strongly agree*). Total scores range from 17 to 170. High scores correspond with high self-efficacy expectations. The Cronbach alpha reliability coefficient of the GSES was .86 (Sherer et al., 1982). Construct validity was supported by moderate correlations between the GSES and the *Internal-External Control Scale*, the *Ego Strength Scale*, the *Interpersonal Competence Scale*, and the *Self-Esteem Scale* (Sherer et al., 1982). The Cronbach reliability coefficient of the GSES in the current study was .72.

Perceived health was assessed by the *Self-Rated Health Status Scale* (SRHS; Lawton, Moss, Fucomer, & Kleban, 1982), which contains four items. Participants were requested to rate their health in four areas: overall health (scores ranging from 1 to 4), comparing one's present health to one's past health (scores ranging from 1 to 3), severity of health problems (scores ranging from 1 to 3), and comparing one's health to the health of others (scores ranging from 1 to 3). Total scores range from 4 to 13. High scores reflect better perceived health. According to Lawton et al. (1982), the Cronbach alpha reliability coefficient of the SRHS was .76. The concurrent validity of the scale was supported by a moderate correlation between the scale and clinicians' rating of health status. The Cronbach reliability of the SRHS in the present study was .72.

Social support was measured by the *Perceived Social Support Scale* (Hampton, 2001) consisting of four items. Participants were asked to rate support they received from family members, friends, the community, and government agencies on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Total scores range from 4 to 28. High scores represent high levels of social support. The Cronbach alpha reliability coefficient of the scale was .78, and the criterion-related validity coefficient (correlation with Pollack & Harris's [1983] *Social Support Scale*) was .55. In the current study, the Cronbach reliability coefficient of this scale was .70.

The IPWB, which contains eight items, was used to measure subjective well-being. Respondents are asked to indicate on a 3-point scale how frequently they have certain feelings. Separate scores of negative feelings and positive feelings are combined to form the total score (see Berkman, 1971, for calculation formula). The IPWB yields a score ranging from 1 to 7, where lower scores indicate a higher level of psychological well-being. The criterion-related validity of the IPWB is supported by high correlations between the IPWB and clinical mental health/life stress ratings by psychiatrists (Schulz & Decker, 1985). The IPWB has been used with minor revisions to assess people who have SCI (Crewe, 1997; Schulz & Decker, 1985). In the current study, this revised version was used (Schulz & Decker, 1985).

A demographic questionnaire was also used. This included the participant's current age, age at the time of the

injury, gender, race, educational level, marital and employment status, income, and the cause and level of the injury.

Procedure

Information regarding this study was published in the newsletters of the National Spinal Cord Injury Association (NSCIA). Thirty chapters of the NSCIA were contacted by phone. Fifteen chapters agreed to participate in the study. Three hundred eighty questionnaires in self-addressed and stamped envelopes were mailed to coordinators of the chapters. The coordinators then distributed the questionnaires to members who met the recruitment criteria for participants. One hundred thirty-three questionnaires were returned. Of these, 6 questionnaires were not completed and 127 were usable. The return rate was 33%.

Results

Means and standard deviations of the four instruments were calculated. The mean for the SRHS was 9.04 (*SD* = 1.92), the mean for the GSES was 136.09 (*SD* = 21.54), and the means for the *Perceived Social Support Scale* and the IPWB were 18.92 (*SD* = 4.63) and 3.81 (*SD* = 1.67), respectively.

Correlation analyses were conducted to identify relationships among participants' current age, age at injury, gender, race, educational level, income level, marital status, employment status, injury level, perceived health, self-efficacy, perceived social support, and IPWB scores. Categorical variables were recoded using a dummy coding method.

Of the demographic variables, only age at injury and income were significantly related to psychological well-being (see Table 1). Because high scores on the IPWB indicate low SWB, the negative correlation between the variables of income and IPWB scores indicates that participants who reported having high income tend to have high levels of SWB, and the positive correlation between age at injury and IPWB scores indicates that people injured at an older age tend to have low levels of SWB. Table 1 also shows that perceived health, general self-efficacy, and perceived social support were negatively related to psychological well-being. Participants who perceived themselves as having good health, being able to cope with life's exigencies, and having high levels of social support to reported having high levels of SWB.

Multiple linear regression analysis was conducted to further examine these relationships. The IPWB scores were regressed on age at injury, income, perceived health status, general self-efficacy, and perceived social support. All other demographic variables were excluded from this regression analysis due to the lack of a relationship with

TABLE 1. Zero-Order Correlations Among Demographic Variables, Perceived Health, Self-Efficacy, Perceived Social Support, and Psychological Well-Being

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	—	.58**	−.06	.02	−.07	.03	.32**	−.19*	−.23**	−.16	.01	−.03	.05
2. Age at injury		—	−.15	.13	−.14	−.07	.29**	−.28**	−.31**	−.10	−.01	.01	.18*
3. Gender			—	.02	−.13	−.01	.05	.06	.18*	.07	−.05	−.03	.07
4. Ethnicity				—	.14	.06	.02	−.06	.05	−.03	−.14	.17	.14
5. Education level					—	.47**	−.02	.25**	.17	.17	.08	.07	−.09
6. Income level						—	.50**	.35**	.01	.20*	.17	.17	−.20*
7. Marital status							—	.07	−.17	−.04	.12	.13	−.09
8. Employment status								—	−.04	.18*	−.05	−.08	−.01
9. Injury level									—	.02	.11	−.01	−.04
10. Perceived health										—	.45**	.34**	−.42**
11. General self-efficacy											—	.30**	−.43**
12. Perceived social support												—	−.44**
13. Psychological well-being													—

Note. Low scores on the *Index of Psychological Well-Being* (Berkman, 1971) reflect higher well-being. *N* = 127.
*$p < .05$. **$p < .01$.

the IPWB, as indicated in the correlation analysis. A hierarchical multiple regression method was used. Age at injury and income were entered first, followed by perceived health. Self-efficacy and perceived social support were entered at Step 3.

As shown in Table 2, perceived social support, self-efficacy, perceived health, and age at injury were the major contributors to the prediction of SWB. Income did not explain significant incremental variance in SWB, beyond that explained by other independent variables. The combination of self-efficacy beliefs, perceived social support, perceived health, and age at injury accounted for 36% of the variance in SWB, $F(5, 105) = 11.94$, $p < .0001$.

Discussion

This study focused on the relationships of demographic variables, perceived health, perceived social support, and self-efficacy beliefs to the affective aspect of SWB in people with SCI. The most noteworthy finding in this study was the joint contributions of self-efficacy and perceived social support, which accounted for additional and unique variance in SWB, apart from perceived health and age at injury. This finding supports the hypothesized role of self-efficacy and perceived social support in SWB among people with SCI and is in line with previous studies of Shnek et al. (1997) and Schulz and Decker (1985), who found a relationship between self-efficacy or social support and SWB among persons with SCI.

Consistent with previous findings (e.g., Schulz & Decker, 1985), the present study found that perceived health significantly contributed to SWB after the influences of self-efficacy and perceived social support were controlled. Although income was shown to be correlated to SWB, it did not contribute to the prediction of SWB once the influence of other variables was controlled. This implies that self-efficacy beliefs, perceived social support, and perceived health are more important factors than income in predicting the affective aspect of SWB.

In line with Krause's (1998b) study, the present study did not find a significant relationship between gender and SWB. Additionally, the level of injury of the participants in this study was not related to quality of life. This is consistent with previous studies, which have found that injury levels were not correlated with quality of life (Trieschmann, 1988).

Limitations and Implications

There were several limitations to this study. First, participants of this study represented only 15 chapters of the NSCIA. Generalization of the results is therefore limited. Second, because of the correlational nature of the study, it is impossible to derive causal conclusions about the effects of self-efficacy, perceived social support, and perceived health on quality of life. Third, although the findings of this study provide confirmatory support for the role that self-efficacy and perceived social support play in the SWB of people with SCI, the study did not include other psychosocial factors, such as achievement-oriented personality (Krause, 1997), locus of control (Boschen, 1996; Livneh & Antonak, 1997), self-esteem (Marini, Roger, Slate, & Vines, 1995), and coping strategies (Hanson, Buckelew, Hewett, & O'Neal, 1993; Livneh, 2000).

Nevertheless, the results of this study indicate that people with SCI have different levels of SWB, and the difference may be related to levels of clients' general self-efficacy beliefs, perceived social support, perceived health, and age at injury. This implies that self-efficacy, perceived social support, and health status may be valuable aspects of rehabilitation programs that focus on adjustment and intervention for individuals with SCI. Future research should further explore the different roles of self-efficacy, social support, and health in SWB by employing a quasi-experimental method that examines effects of self-efficacy and perceived social support on SWB. Future endeavors may also consider the joint contributions of diverse predictors such as achievement-oriented personality, self-esteem, type of coping strategies, and locus of control to SWB.

In terms of implications for practice, the results of the current study indicate that self-efficacy beliefs are related to SWB. To help people with SCI live a productive life, rehabilitation counselors should help them identify areas in which the client lacks confidence and then de-

TABLE 2. Summary of Hierarchical Regression Analysis for Age at Injury, Income, Perceived Health, Self-Efficacy, and Perceived Social Support Predicting Psychological Well-Being

Variable	β	R^2	F
Step 1			
Age at injury	−.21*		
Income level	−.18*	.08	4.68*
Step 2			
Age at injury	−.16*		
Income level	−.12		
Perceived health	−.42***	.25	11.93***
Step 3			
Age at injury	−.19*		
Income level	−.06		
Perceived health	−.24**		
Self-efficacy	−.23**		
Perceived social support	−.25**	.36	11.94***

Note. $N = 110$.
*$p < .05$. **$p < .01$. ***$p < .001$.

velop interventions to increase confidence in the rehabilitation process. This enhancement can be achieved through helping clients retrieve past successful coping experiences that have been overlooked or unidentified, building successful coping strategies, providing positive reinforcement and accurate feedback, using role models, and providing appropriate counseling to reduce negative feelings. Because persuasive information (e.g., encouragement) may be modified by perceived characteristics of the persuader (e.g., similarity to the observer), rehabilitation counselors may help clients establish peer support groups and seek effective peer counseling (see Note).

Furthermore, the present study indicated that well-being was also related to the client's social environment—the presence of a supportive family and community enhanced SWB. Because SCI affects the client's family members as well (Trieschmann, 1988), rehabilitation counselors should help them cope with the stress by providing assistance in locating information about support groups, social and recreational events, and other resources for people with SCI and their families. Counselors may also refer the client and his or her family members to family counseling, if necessary. Another major component of a client's environment is service agencies in the client's community. Rehabilitation counselors need to help bridge the gap that may exist between the client and service agencies and establish a follow-up system that provides the client with needed referral, counseling, networking, and support services. Rehabilitation counselors may also provide social skills, advocacy, and assertive skills training for clients, to help them obtain and maintain a supportive social network.

The findings of this study also imply that improving health status would improve SWB among individuals with SCI. Rehabilitation counselors and other rehabilitation professionals should continue to address health issues and help clients adopt health-promoting behaviors that reduce risks of health-related problems.

Conclusions

The purpose of this study was to explore the relationships between demographic variables, perceived health, self-efficacy, and perceived social support, and the affective aspect of SWB in people with SCI. Findings of the study indicated that perceived social support, self-efficacy, perceived health, and age at injury were the major contributors to the prediction of the affective aspect of SWB. Gender, ethnicity, and educational level were not significantly correlated with SWB. Rehabilitation counselors could implement training programs related to enhancement of self-efficacy, social support, and health status, which would in turn foster the SWB of rehabilitation clients.

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NOTE

Readers who are interested in the applications of self-efficacy theory to rehabilitation counseling may refer to Strauser (1995) for more information.

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