

Self-efficacy as a mediator for the relationship between secure attachment style and employment status in individuals with spinal cord injuries

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Abstract.

PURPOSE: To evaluate the mediation effect of self-efficacy on the relationship between secure attachment and employment status of people with spinal cord injuries (SCI).

DESIGN: Quantitative descriptive research design using logistic regression, multiple regression, and correlational techniques.

METHODS: One hundred and ninety individuals with SCI were recruited from the Canadian Paraplegic Association. Only individuals ages between 25–54 years (prime working age) were selected for this study.

RESULTS: Secure attachment and self-efficacy were significantly related to employment status. Self-efficacy was found to be a significant mediator of the relationship between secure attachment and employment status.

CONCLUSION: Results provide support for the importance of building a strong working alliance and helping individuals with SCI in the professional practice of rehabilitation counseling.

Keywords: Attachment, self-efficacy, employment, spinal cord injury (SCI)

1. Introduction

Spinal cord injury (SCI) is a chronic and persistent physical disability. In the United States, there were an estimated 276,000 individuals with SCI in 2014, and approximately 12,500 new cases are diagnosed each year (National Spinal Cord Injury Statistical Center [NSCISC], 2015). Given that individuals with SCI have functional disabilities directly caused by

the injury, SCI presents significant challenges to gainful employment (Krause, Terza, Erten, Focht, & Dismuke, 2012). Accordingly, joblessness in the SCI population is drastically higher than the general population, with unemployment rates at more than 60% worldwide (Cao, Krause, Saunders, & Bingham, 2014; Krause & Anson, 1996; Marini, Lee, Chan, Chapin, & Romero, 2008; World Health Organization, 2013). Chronic unemployment is associated with serious health consequences and financial problems for individuals with SCI (Cao et al., 2014), in contrast to the numerous advantages of employment such as improved self-determination, better

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psychosocial adjustment, and higher levels of quality of life (Jones & Crews, 2013; Krause et al., 2012; Ottomanelli & Lind, 2009).

Finding and maintaining employment, along with comprehensive healthcare benefits, is increasingly recognized as an effective public health intervention (Chiu et al., in press). Yet, employment rates for people with disabilities including people with SCI remain unacceptably low (Cao et al., 2014; Krause & Anson, 1996; Krause et al., 2012; Marini et al., 2008). It can be concluded that traditional employment interventions focusing only on job training and job placement for individuals with SCI have limitations, and that exploring alternative strategies and complementary interventions should be a priority. In the field of organizational behavior and industrial/organizational (I/O) psychology, researchers have started to investigate positive psychology variables, such as positive human resource strengths and positive psychological capacities (Luthans, 2002a,b), to examine work-related behaviors, attitudes, and outcomes in the workplace. To date, research studies applying positive psychology concepts to improve employment outcomes of individuals with disabilities are scarce (Chan, Chan, Ditchman, Phillips, & Chou, 2013; Elliott, Witty, Herrick, & Hoffman, 1991; Wilson et al., 2013). The use of positive psychology, which is consistent with Wright's (1983) constructive view of living well with a disability and strength-based approaches, could improve the employment outcomes reported by individuals with SCI. It is well documented that self-efficacy is an important construct for understanding a range of behaviors including work-related behaviors (Bandura, 1986) and is a predictive factor of future employment outcomes of individuals with disabilities (Chou, Ditchman, Pruett, Chan, & Hunter, 2009; O'Sullivan, Strauser, & Wong, 2012). However, research on self-efficacy and its effect on psychosocial predictors of employment, such as adult attachment patterns, for individuals with disabilities is limited.

1.1. Attachment

According to Bowlby (1951, 1969), the quality of adult relationships and positive psychological development depend on early experiences between infants and caregivers. Adult attachment is described as the need to restructure and continue childhood interpersonal relationships unconsciously (Bowlby, 1969, 1973), and the dynamics in early caregiver relationships contribute to the internal working social-

relational models (Fraley, Vicary, Brumbaugh, & Roisman, 2011). Based on a caregiver's responsiveness to an infant's seeking and maintaining proximity, infants may develop either secure, meaning the primary caregiver is responsive and sensitive to the physical, emotional, and psychological needs of infant; or insecure attachments, meaning that the primary caregiver is inconsistent, uninvolved, and rejecting the physical, emotional, and psychological needs of infant (Ainsworth, Blehar, Waters, & Wall, 1978; Huebner, Thomas, & Berven, 1999; Wilson et al., 2013). A significant body of research has demonstrated that insecure attachment styles in adults are associated with depression and anxiety (Davila, Ramsay, Stroud, & Steinberg, 2005), reduced physical and psychological well-being (Joplin, Nelson, & Quick, 1999), lower self-esteem (Lee & Hankin, 2009), and dysfunctional attitudes (Roberts, Gotlib, & Kassel, 1996). Approximately half of adults are securely attached, and, unfortunately, the rate of secure attachment is even lower for individuals with disabilities (Hazan & Shaver, 1987; Howe, 2006; Mikulincer & Orbach, 1995).

Although attachment has been associated with health, disability, rehabilitation goals, and employment outcomes (e.g., Blake, Brooks, Greenbaum, & Chan, in press; Davies, Macfarlane, McBeth, Morriss, & Dickens, 2009; Gick & Sirois, 2010; Huebner et al., 1999; Ponizovsky, Arbitman, Baumgarten-Katz, & Grinshpoon, 2014; Rossi et al., 2005; Wilson et al., 2013), the mechanisms that describe the relationships between attachment and rehabilitation outcomes in individuals with disabilities are still relatively unknown; and researchers have found mixed findings (Lopez, Mauricio, Gormley, Simko, & Berger, 2001). In Yokotani's (2011) study, the findings suggested that regardless of perceived support and symptom severity, people with autism spectrum disorders who had higher functioning exhibited better work adjustment when they had experienced avoidant attachment (insecure attachment) style. Conversely, Sela-Kaufman, Rassovsky, Agranov, Levi, and Vakil (2013) suggested that avoidant attachment style lessened the relationship between injury severity and occupational functioning in people with traumatic brain injury, and that those with low-avoidant attachment (secure attachment) had high occupational functioning. Another research study conducted by Wilson et al. (2013) demonstrated that for people with SCI, patterns of secure attachment influenced subjective happiness. A recent study conducted by Blake et al. (in press) found

that employment was significantly associated with secure attachment and hope. Specifically, hope mediated the relationship between attachment style and employment status. In light of the mixed results, there is a need for rehabilitation professionals to further investigate factors related to attachment and employment when working with people with disabilities.

1.2. Self-efficacy

According to Bandura (1977), self-efficacy is the belief that an individual is capable of accomplishing a task. With the absence of self-efficacy, Bandura (1986) posited that the likelihood that an individual will achieve a particular outcome is improbable. From Bandura's perspective (1986), self-efficacy affects functioning, and is the basis for motivation, well-being, and accomplishment. As Chan, Cardoso, and Chronister (2009) suggested, when establishing self-efficacy, individuals may engage more in goal-directed behaviors leading to desired outcomes. There is a growing body of research examining the link between self-efficacy and attachment styles (Amiri, Banijamali, Ahadi, & Ahadi, 2013; Wei, Russell, & Zakalik, 2005). Amiri et al. (2013) indicated that individuals with secure attachment had higher self-efficacy, which led to better coping abilities, better decision-making and critical-thinking skills, and improved mental well-being. In the Wei et al. (2005) longitudinal study, they found that people who experienced high attachment anxiety had a lack of social self-efficacy, and considered self-efficacy as a mediator between attachment anxiety, loneliness, and later development of depression. Similarly, Brenk-Franz et al. (2015) demonstrated that people with high anxious attachment tended to obtain low self-efficacy, showed lower coping skills, and viewed the social support more negatively. Another study conducted by Shal, Abdekhodae, Kafi Masoleh, and Salehi (2011) showed that secure attachment and general self-efficacy are associated with reduced homesickness. They suggested that providing self-efficacy training can be beneficial for new college students in reducing negative mood, and that having secure attachment is associated with higher quality of life.

Research in positive organizational behavior has suggested that self-efficacy, along with hope, resilience, and optimism, should be included as positive psychology constructs (Luthans, Youssef, & Avolio, 2007). As Stajkovic and Luthans (1988) noted, self-efficacy and performance have a positive

relationship in the work setting. In regards to job and goal performance, Lunenberg (2011) suggested that organizations should encourage employees with high self-efficacy to set high performance goals, because those individuals will take on even further achievement. In addition, Bradley and Roberts (2004) found that individuals who reported higher self-efficacy scores had higher job satisfaction. In the rehabilitation literature, Chou, Chan, Chan, and Phillips (2013) showed that using constructs related to positive psychology theory can foster people with disabilities' well-being status, happiness level, and quality of life. Wright, Zautra, and Going (2008) found that functioning level had a positive relationship to self-efficacy and outcome expectancy in people with disabilities. In addition, Hampton (2000) indicated that higher self-efficacy among people with disabilities is positively associated with life satisfaction.

1.3. Attachment, self-efficacy, and employment

Attachment style is tied to employment and its related factors (Blake et al., in press; Richards & Schat, 2011; Hazan & Shaver, 1990). A significant body of research indicates that either adult attachment style or positive psychology constructs are associated with employment outcomes. Blake et al. (in press) has found a causal relationship that high levels of secure attachment style contributed to higher levels of hope, which led to a higher likelihood of employment. In contrast, they reported that higher levels of anxious and avoidant attachment styles contributed to lower levels of hope, which led to a lower likelihood of employment (Blake et al., in press). According to Richards and Schat (2011), attachment styles are often related to individuals' work behavior, and their emotion regulations at work such as support seeking. For instance, Bluestein and Prezioso (1995) underscored that obtaining healthy and stable attachment styles makes an impact on a young individual's career maturity. The relationship between adult attachment and employment outcomes has been reported as well by Hazan and Shaver (1990). They reported that adults with secure attachment had relatively higher levels of work satisfaction and work productivity when compared to adults with anxious/ambivalent and avoidant attachment.

Although research has demonstrated significant relationships between attachment and work behaviors, and between attachment and self-efficacy, there are few studies exploring the relationships among

attachment, self-efficacy, and employment. Given that there is a lack of research examining the relationships among secure attachment, self-efficacy, and employment participation in individuals with disabilities including SCI, the aim of this study is: (a) to examine the relationships among secure attachment, self-efficacy, and employment status, and (b) to examine the mediation effect of self-efficacy on the relationship between secure attachment and employment status. Our findings can provide empirical evidence for rehabilitation professionals to utilize positive psychology constructs when working with individuals with SCI.

2. Method

2.1. Participants

One hundred and ninety individuals with spinal cord injuries living in the community were recruited for this study from the membership of the Canadian Paraplegic Association (CPA), a federation consisting of individual CPA associations located in each of Canada's provinces. The CPA provincial associations of Alberta, Manitoba, Nova Scotia, Ontario, and Saskatchewan agreed to participate in the study. In order to ensure the confidentiality and anonymity of its members, the respective associations mailed the research packets to members who met the eligibility requirements. To be eligible to participate in the study, the individual must (a) have a spinal cord injury, (b) be between the ages of 25 and 54 years (i.e., prime working age), and (c) be able to read and understand English. Ages of the participants ranged from 25 to 54 years, with a mean of 41.48 years ($SD = 8.01$). Most of the participants were men ($n = 129$, 68%), married ($n = 100$, 53%), and White ($n = 164$, 86%). Ninety-four percent of the sample had at least a high school education and 57% were employed. The mean time since injury onset was 17.36 years ($SD = 11.98$). The proportion of participants who reported having quadriplegia/tetraplegia was 45%.

2.2. Measures

2.2.1. Moorong Self-Efficacy Scale (MSES)

The MSES is a spinal cord injury-specified measure of self-efficacy developed by Middleton, Tate, and Geraghty (2003). The instrument is composed of 16 items and two subscales: (a) daily activities, with nine items (e.g., "I can maintain my personal

hygiene with or without help" and "I can participate as an active member of the household"); and (b) social functioning, with seven items (e.g., "I can enjoy spending time with my friends"). Each item is rated on a 7-point Likert-type scale ranging from 1 (*very uncertain*) to 7 (*very certain*). Subscale scores are calculated by summing the raw scores of the items. The MSES was found to be related to depression and anxiety, functional limitations, and participation (Middleton et al., 2003) and the reported internal consistency reliability coefficient (Cronbach's alpha) for the full scale MSES was 0.74 (Middleton et al., 2003). In this study, the full scale MSES was used to assess SCI self-efficacy and the Cronbach's alpha was computed to be 0.89.

2.2.2. Adult Attachment Scale (AAS)

The AAS was developed by Collins and Read (1990) to assess adult attachment styles. The instrument is composed of 18 items and has three subscales: (a) Depend, with six items, which measures trust in others and if others can be depended upon to be available when needed (e.g., "I know that others will be there when I need them"), (b) Anxiety, with six items, which measures anxiety experienced in a relationship and the fear of being abandoned (e.g., "My desire to become one with others sometimes scares some people away"), and (c) Close, with six items, which measures the person's comfort with closeness and intimacy (e.g., "I am somewhat uncomfortable being close to others"). Each item is rated on a 5-point Likert-type rating scale ranging from 1 (*not at all characteristic*) to 5 (*very characteristic*). Some items are reverse scored. High scores on the scales reflect greater confidence in the dependability of others (Depend), higher anxiety (Anxiety), and more comfort with closeness (Close). The reported test-retest reliability coefficients for the Depend, Anxiety, and Close scales were 0.71, 0.52, and 0.68, respectively (Collins & Read, 1990). In the present study, the Depend and Close subscales were combined to form the secure attachment style scale. The Cronbach's alpha for the secure attachment scale was computed to be 0.78.

2.2.3. Employment status

For the dependent variable of employment status, people who reported being employed either full-time or part-time were classified as employed and people who were retired and people who were unemployed at the time of the study were classified as unemployed.

2.3. Data analysis

All statistical analyses were performed with the Statistical Package for the Social Sciences (SPSS 22.0). Descriptive statistics were computed to provide information about the demographic characteristics of the sample and for the predictor, mediator, and outcome variables. A correlation analysis and a mediation analysis using multiple regression and logistic regression were performed in order to investigate self-efficacy (M) as a potential mediator of the relationships between secure attachment (X) and employment status (Y). We used the bootstrap testing approach recommended by Hayes (2013) to test our mediation hypotheses. Hayes and his colleagues (Hayes, 2013; Preacher & Hayes, 2008; Rucker, Preacher, Tormala, & Petty, 2011) indicated that because of limitations of the Baron and Kenny (1986) assumptions for mediation analysis, tests of mediation should now be based on an estimate of the indirect effect and interpretation of the results should be focused on the size and sign of the indirect effect. In addition, we evaluated the significance of the individual paths ($X \rightarrow M$) and ($M \rightarrow Y$) to provide supplementary information for the models. The SPSS INDIRECT macro written by Preacher and Hayes (2008) was used to estimate the total, direct, and indirect effects of secure attachment on employment status through self-efficacy. It should be noted that because the outcome variable (employment status) is a dichotomous variable, the SPSS INDIRECT macro calculated estimates for direct and total effects, and the path from the proposed mediator to the outcome variable, using logistic regression (Hayes, 2009).

3. Results

3.1. Descriptive statistics

For the current study, participants who reported part-time or full-time employment were included in the employed category. Although the employment rate among sample participants was relatively low (48.8%) compared with the general population (74.2%), it was higher than current estimates for people with SCI (Houtenville, Brucker, & Lauer, 2014). Regarding attachment, participants with SCI in the present study had moderately secure attachment ($M = 3.42$, $SD = 0.70$). The average self-efficacy rating of 5.61 ($SD = 0.97$) indicates that participants

had moderately high levels of ADL/IADL and social self-efficacy.

3.2. Correlation analysis

Secure attachment was found to be positively associated with SCI self-efficacy ($r = 0.52$, $p < 0.001$) and employment status ($r = 0.15$, $p < 0.05$). Self-efficacy was positively associated with employment status ($r = 0.30$, $p < 0.001$).

3.3. Mediation analysis

A simple mediation analysis was computed to evaluate SCI self-efficacy as a mediator of the relationship between secure attachment style and employment status. The SPSS INDIRECT macro written by Preacher and Hayes (2008) was used to estimate the total, direct, and indirect effects of secure attachment on employment status through self-efficacy (SE). As an example, the following are the equations for the secure attachment analysis:

$$\text{Log odds (employment)} = \text{constant} + c(\text{secure attachment}) + \text{error} \quad (1)$$

$$\text{Self-efficacy} = \text{constant} + a(\text{secure attachment}) + \text{error} \quad (2)$$

$$\text{Log odds (employment)} = \text{constant} + c'(\text{secure attachment}) + b(\text{SE}) + \text{error} \quad (3)$$

$$\text{Total effect (c)} = \text{Direct effect (c')} + \text{Indirect effect (a \times b)}$$

$$\text{Indirect effect (a \times b)} = \text{Total effect (c)} - \text{Direct effect (c')}$$

Because employment status is a dichotomous variable, coefficients in Equations 1 and 3 were estimated in INDIRECT using logistic regression, whereas ordinary least-squares (OLS) regression was used for the coefficients in Equation 2. A graphical representation of this simple mediation model and information for the unstandardized path coefficients (a , b , c , and c') are presented in Fig. 1.

As can be observed in Fig. 1, the odds of being employed were higher among individuals with relatively higher levels of secure attachment (path $c = 0.08$, odds ratio = 1.08, $p < 0.05$). Secure attachment was positively associated with self-efficacy

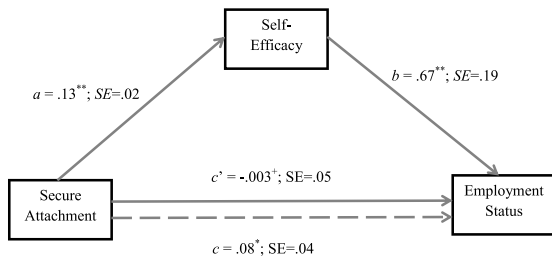


Fig. 1. Path coefficients for simple mediation analysis on employment status ($N = 190$). Note: Dotted line denotes the effect of secure attachment style on employment status when self-efficacy is not included as a mediator. b , c and c' are unstandardized logistic regression coefficients, a is an unstandardized ordinary least square (OLS) regression coefficient. * $p < 0.05$, ** $p < 0.01$, + $p = 0.94$.

(path $a = 0.13$). Finally, self-efficacy was positively associated with the odds of being employed (path $b = 0.67$, odds ratio = 1.94, $p < 0.001$). The direct effect of secure attachment on employment (path $c' = -0.003$) was not statistically significant. Most relevant to the mediation hypothesis was the estimate of the indirect effect of secure attachment on employment status, computed as the product of the OLS regression coefficient estimating self-efficacy from secure attachment (path a in Fig. 1) and the logistic regression coefficient estimating employment status from self-efficacy controlling for secure attachment (path b in Fig. 1). If the bias-corrected bootstrap-confidence interval (CI) for the product of these paths (ab) does not include zero, it will provide evidence of a significant indirect effect of secure attachment on employment through self-efficacy (Preacher & Hayes, 2008; Hayes, 2009). Using the INDIRECT procedure with 5,000 bootstrap samples revealed a significant indirect effect of secure attachment on employment status through SCI self-efficacy (point estimate = -0.032 , 95% CI: -0.076 to -0.004).

4. Discussion

With the relatively low employment rates among individuals with SCI (Houtenville et al., 2014; Marini et al., 2008), it is imperative for rehabilitation researchers and practitioners to investigate the bases for alternative or complementary interventions in vocational rehabilitation for this population. Results from the current study provide support for positive psychology as an effective framework for improving employment outcomes of people with SCI. Correlational analysis indicates significant

bivariate relationships between secure attachment, self-efficacy, and employment status. With regard to the primary aim of the study, both secure attachment and self-efficacy predicted employment status, and self-efficacy mediated the relationship between secure attachment and employment for people with SCI.

In the present study, there were significant, positive correlations between secure attachment and self-efficacy, which is consistent with previous findings. For comparison, in a study involving 274 individuals with SCI, Wilson et al. (2013) found significant relationships among activities of daily living (ADL) self-efficacy and indicators of secure attachment. Although there are mixed results on the relationships between attachment style and employment outcomes among people with disabilities, the present study indicated that there was a significant, positive relationship between secure attachment and employment status for people with SCI. The findings of significant correlations between self-efficacy and employment status were consistent with the extensive body of research on self-efficacy as a predictor of vocational outcomes for people with and without disabilities. For instance, in a study that included 60 supported employment participants with psychiatric disabilities, Regenold, Sherman, and Fenzel (1999) found that individuals with higher levels of self-efficacy were more likely to achieve employment goals than those with lower levels of self-efficacy. In a recent European study focused on adolescents, Hirschi (2012) found significant positive relationships between self-efficacy and career behavior and job satisfaction outcomes. In addition, a previous meta-analytic review of 28 studies focused on relationships among personality variables and employment outcomes ($N = 7,980$) and found a significant positive relationship between job search self-efficacy and employment status (Kanfer, Wanberg, & Kantrowitz, 2001).

For the main hypothesis, the current study tested a simple mediation model of secure attachment on employment through self-efficacy among individuals with SCI. As expected, the tested model indicated a direct effect for secure attachment on self-efficacy and a direct effect for self-efficacy on employment status. Although there was a significant total effect for secure attachment on employment, Hayes (2013) advised against the interpretation of the total effect size when using dichotomous variables for outcomes, as the indirect and total effects are scaled differently. After controlling for self-efficacy, there was not a statistically significant effect of secure

attachment on employment. Most importantly, there was a significant indirect effect observed for secure attachment on employment through self-efficacy. Hayes (2013) also suggested not interpreting effect sizes for indirect effects when using dichotomous variables for outcomes; however, the bias-corrected bootstrap-confidence intervals (CI) for the indirect effect can be used for interpretation. The results indicated that the CI does not include zero, which provides evidence of a significant indirect effect of secure attachment on employment through self-efficacy. These findings were largely consistent with previous studies focused on the intermediary role of self-efficacy in relationships between secure attachment and other rehabilitation-related outcomes (Amiri et al., 2013; Wei et al., 2005).

Based on the findings, there are several implications for rehabilitation practice. Although attachment profiles are generally predetermined in infancy and early childhood, results from the current study indicate that interventions targeting the malleable aspects of attachment and self-efficacy beliefs relevant to SCI can be implemented to improve employment outcomes (Wilson et al., 2013). As indicated by Wilson et al., although attachment styles are primarily established through early childhood experiences, research suggests that attachment-related behaviors are malleable in adulthood. For example, rehabilitation professionals can help their clients develop a more secure adult attachment style by building a strong working alliance with their clients (Bordin, 1979; Chan, Shaw, McMahon, Koch, & Strauser, 1997). By modeling healthy attachments, rehabilitation professionals could help their clients develop a sense of others as being trustworthy, loving and caring, thereby leading to a stronger sense of self-worth.

Assessment of perceived self-efficacy can also be integrated into clinical rehabilitation counseling practice, with results used to inform individualized interventions geared toward meeting the specific needs of people with SCI. Effective clinical assessment hinges on the use of appropriate self-efficacy instruments as work tasks and activities require discrete sub-skill sets and levels of self-efficacy. Rehabilitation counselors should implement self-efficacy assessments and practices that are focused on the targeted functional domain or the primary type of disability (Bandura, 2006). Successful interventions include instructional counseling focused on teaching job search skills and interventions targeting specific forms of self-efficacy such as job search behavior

self-efficacy and workplace socialization skills (Liu, Huang, & Wang, 2014).

4.1. Limitations

There are several limitations in this study that may have influenced results and should be considered in the interpretation of findings. We used a convenience sample of volunteer participants who responded to a self-report survey. Self-report measures are susceptible to response bias and social desirability bias. Cross sectional data were recorded at a single time point for each study participant, and results interpretation was specified according to theory. Randomized controlled trials (RCT) and longitudinal research investigating the effects of interventions targeting self-efficacy would enhance our findings. Because most participants were CPA members, these organization members likely differ from the general population of people with SCI. Sample participants were relatively highly educated. Most participants were Caucasian, and non-white individuals were underrepresented. The current study did not evaluate post-employment factors such as workplace culture. Evaluation of relationships among post-employment factors and the constructs investigated in the current study (i.e., attachment and self-efficacy) could provide important information about processes inherent in work adjustment for people with SCI. Likewise, research operationalizing additional disability and contextual factors that impact employment would provide useful information. Research evaluating the validity of attachment instruments for people with SCI would also enhance the interpretation of findings.

5. Conclusion

In the field of rehabilitation counseling, there is a growing interest in adopting a positive psychology approach. While previous research has investigated relationships between attachment, self-efficacy, and work-related behaviors, this is one of the initial studies to explore the relationships among attachment, self-efficacy, and employment in people with SCI. Our findings provide empirical evidence for vocational rehabilitation professionals to utilize interventions targeting positive psychology constructs when working with individuals with SCI. Future research should evaluate positive psychology concepts in other disability populations to further contribute to the evidence base of positive

rehabilitation psychology. An approach in vocational rehabilitation using positive psychology may complement and enhance other evidence-based practices, leading to improved employment outcomes for people with SCI and other disabilities.

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Conflict of interest

None to declare.

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