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Competitive Employment Outcomes and Spinal Cord Injury: Relationship between Race/Ethnicity, Gender, Age, Education and Rehabilitation Services

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Consumers with spinal cord injury (SCI) served by state vocational rehabilitation services programs receive a variety of services to help them achieve competitive employment and higher earning outcomes. The purpose of this study was twofold: (a) to determine whether there was a relationship between specific vocational rehabilitation (VR) services and vocational outcomes (i.e., competitive employment and weekly earnings) at closure and (b) to establish whether there was a relationship between specific demographic variables and vocational outcomes (i.e., competitive employment and weekly earnings) at closure. The RSA-911 data for fiscal year 2006 were analyzed. The findings revealed that race/ethnicity and level of education were related to competitive employment with African Americans and individuals with lower education less likely to be competitively employed. Findings also indicated that race/ethnicity, gender, age, and education were significantly related to weekly earnings. Males, young consumers, consumers with most education, and Whites were more likely to earn higher salaries at closure. The analysis of specific VR service variables indicated that job placement and maintenance were positively related to competitive employment of consumers with SCI. Rehabilitation technology was negatively related to competitive employment. Vocational rehabilitation counseling and guidance, college/university training, and rehabilitation technology were positively related to weekly earnings at closure; whereas occupational/vocational training, on-the-job training, and job placement services were negatively related to weekly earnings. Implications of the findings for service, policy, and research are discussed.

Keywords: Spinal cord injury, competitive employment, earnings, vocational rehabilitation services

Individuals with spinal cord injury (SCI) are among the increasing number of persons with disabilities in the United States (DeVivo, Go, & Jackson, 2002; Lustig, 2005; Targett, Wehman, McKinley, & Young, 2005; Wilson, Richards, Klapow, DeVivo, & Greene, 2005; NSCISC, 2009). According to National Spinal Cord Injury Statistical Center (NSCISC) approximately 259,000 persons live with SCI in the United States, with an estimated 12,000 new cases occurring each year (NSCISC, 2009). Most injuries generally occur between the ages of 16 and 30. The main cause of SCI since 2005 has been motor vehicle accidents (42.1%), followed by falls (26.7%), violence (15.1%), and sports activities (7.6%). Individuals with SCI often experience other secondary conditions such as pressure sores, respiratory complications, urinary tract infections, spasticity, and scoliosis. Over the years, life expectancy of individuals with SCI has in-

creased due to advances in medicine and technology (NSCISC, 2009).

The purpose of this study was to investigate the relationship between consumer and select VR services variables and two criterion variables: competitive employment and weekly earnings. Competitive employment was defined as full or part time employment that occurs in an integrated setting without ongoing VR support services at or above federal minimum wages for at least 90 days. Weekly earnings at closure included what the individual earned in a typical week after achieving an employment outcome (US Department of Education, 2006). The hypothesis was that competitive job rates and weekly earnings among this target population would vary due to certain consumer characteristics (i.e., race/ethnicity, gender, age, education) and type of services provided. This will be consistent with studies which have revealed that consumer characteristics impact vocational rehabilitation outcomes among individuals with disabilities (e.g., Krause & Broderick, 2006; Matrone & Leahy, 2005; Saunders, & Staten, 2010). The literature on spinal cord injury relating to definition and features of such disabilities within the adult working population will be reviewed. Further, a review of the literature on the findings on the relationship between certain consumer characteristics (i.e., race/ethnicity, gender, age, education) and VR services and the two criterion variables of competitive employment and weekly earnings will define and clarify the relationship between these variables.

As a result of technological advances, vocational rehabilitation (VR) opportunities for individuals with SCI have expanded (Latimer & Ginis, 2005; Riva, 2000; Riva et al., 1997). Technological advances in rehabilitation robotics and virtual reality, for example, are helping people with SCI to reduce the impact of motor or sensory limitations (Riva, 2000). The Dragon Dictate, which acts like a personal assistant, is an example of computer software that individuals with SCI can use to accomplish work related tasks such as producing reports, articles, documents, and sending emails. An individual with SCI can tell Dragon Dictate to "respond to an email" or "open document" quickly and accurately at home with the microphone included with the software or the smart phone. Because of available assistive technology, individuals with SCI are finding it much easier to transition into the workforce and subsequently improve their living conditions.

Obtaining and retaining gainful employment has historically been considered one of the primary rehabilitation goals for persons with disabilities (Cavigelli, Fischer, & Dietz, 2002; Chapin & Kewman, 2001; Conroy & McKenna, 1999; Crewe, 2000; DeVivo, Rutt, Stover, & Fine, 1987; Hayward, & Schmidt-Davis, 2005; James, DeVivo, & Richards, 1993; Krause & Anson, 1996; McShane & Karp, 1993; Moore, Alston, Donnel, & Hollis, 2003; Roessler, 2001). According to Sales (2007), work not only plays an important role in peoples' lives but it is also a right that should be made available to anyone, regardless of disability status. In today's capitalist economy, work has become the center of our lives and, to a large extent, defines who we are and gives us a sense of belonging and security (Conroy & McKenna, 1999; Danek et al., 1996; Moore, Feist-Price, & Alston; 2002; Szymanski & Parker, 1996). Furthermore, employment, due to its economic and inherent rewards, has been reported to be correlated with higher levels of activities and better health (Hayward & Schmidt-Davis, 2005). Moreover, researchers have found that employed people with SCI report higher levels of life satisfaction (Roessler, 2001), psychological adjustment (Crewe, 2000; Roessler, 2001), self-sufficiency (Roessler), and physical health (Krause, 2003; Roessler, 2001) than individuals with SCI who are not employed. Thus, the successful rehabilitation of individuals with disabilities underscores the value society places on work (Sales, 2007).

The importance attached to work has led to studies that have helped to build a repertoire of knowledge regarding employment outcomes of individuals with SCI (Crewe, 2000; Meade, Lewis, Jackson, & Hess, 2004). Studies show that a variety of variables such as level of education (DeVivo, Rutt, Stover, & Fine, 1987; Krause & Anson, 1996), gender (James et al., 1993), age (Krause & Crewe, 1987; Conroy & McKenna, 1999; McShane & Karp, 1993) and race/ethnicity (James et al., 1993; Krause & Anson, 1996; Krause & Boderick, 2006) are related to employment outcomes among individuals with SCI. Such variables may contribute to positive or negative rehabilitation outcomes. These studies, however, have not examined whether a relationship exists between specific VR services individuals with SCI receive and vocational outcomes (i.e., competitive employment and earnings).

Definition and Features of Spinal Cord Injury

Spinal cord injury is a disturbance of the spinal cord that results in loss of sensation and mobility (University of Alabama, Birmingham [UAB], 1996; Palmer, Kriegsman, & Palmer; 2000). The spinal cord transmits messages between the brain and the different parts of the body. An injury to the spinal cord breaks the flow of information from the point of injury downward. SCI can be divided into complete injury and incomplete injury statuses. In a complete injury, SCI makes voluntary movement and physical sensation impossible (Spinal Cord Resource Center, 2007). On the other hand, a person with an incomplete injury retains some sensation below the level of the injury, and may be able to perform some functions (Spinal Cord Resource Center, 2007). Damage to the spinal cord can result in paraplegia or tetraplegia (quadriplegia).

Paraplegia is a condition where the lower half of a patient's body is paralyzed and cannot move. Tetraplegia causes the person to lose use of the lower parts of the body, legs, and all or part of their arms or upper body (Hedrick, Pape, Heinemann, Ruddell, & Reis, 2006; UAB, 1996).

Demographics and Employment and Earning Outcomes

Race/Ethnicity

Race or ethnicity is one of the common demographic variables to be assessed as a predictor of employment and earning outcomes among persons with SCI. Researchers have generally found that race/ethnicity is related to achieving employment for this target population (James et al., 1993; Krause & Anson, 1996; Krause, Saunders, & Staten, 2010; Krause & Boderick, 2006). For example, James, and colleagues found higher employment rates among Whites with SCI when compared with their African American counterparts. Another study (Krause & Terza, 2006) found that earnings were significantly higher for non–African American males. This is in spite of the fact that African Americans are overrepresented among persons with SCI (Go, DeVivo, & Richards, 1995). Moreover, studies (e.g., Arango-Lasprilla et al., 2009; Gary et al., 2010) have indicated that minorities, regardless of disability, are more likely to be unemployed compared to their White counterparts.

Gender

A variety of sources indicate that males are consistently the majority of persons with SCI (Neville, 2000; NSCISC, 2009). For example, males accounted for 81.8 % of new SCI that occurred before 1980. Currently, 80.9% of SCI cases reported to the national SCI database were males (NSCISC, 2009). While most studies involving SCI participants have not found any relationship between gender and an employment outcome, one of the studies reviewed (James et al., 1993) did find gender to be related to employment outcomes among African Americans. James and colleagues reported that African-American females were more than twice as likely to achieve employment when compared to their African-American male counterparts. Krause and Terza (2006) conducted a study to identify differences in earnings after SCI and found gender to be significantly related to employment in individuals with SCI.

Age

The majority of people with SCI are young adults (Hedrick et al 2006; Krause & Broderick, 2006) with an average age of 38.0 years (NSCISC, 2009). Persons over age 60 years with SCI have also increased in the recent past. Studies have found age at injury onset to be a key determinant of employability among individuals with SCI (Conroy & McKenna, 1999; Krause & Crewe, 1987; Krause & Terza, 2006; McShane & Karp, 1993) with younger age at onset of injury repeatedly associated with successful employment outcome. Krause and Terza (2006) found that Non-African males who were 34 years of age or younger were more likely to achieve higher earnings in individuals with SCI.

Education

Educational attainment among VR consumers with SCI is another characteristic that has generated some discussion and consequent research. Consistently, studies show education to be positively related to employment success (i.e., full or part-time employment that occurs in an integrated setting at or above federal minimum wages) among individuals with SCI (DeVivo et al., 1987; Krause & Anson, 1996; Krause & Boderick, 2006; Krause, Saunders, & Staten, 2010; Krause & Terza, 2006; James et al., 1993; McShane & Sharp, 1993), especially among Non-African American males with a high school education or higher level of education (Krause & Terza, 2006). Individuals with higher education levels are generally more likely to achieve a successful employment outcome and increased earnings than those with low or no formal education.

VR Services and Employment Outcomes

Empirical studies examining the impact of select VR services on employment and earning outcomes among individuals with SCI are seldom available. A review of PsychArticles database, for example, yielded no study that specifically examined the relationship between competitive employment in individuals with SCI and vocational rehabilitation services received. Most SCI employment outcome research, in fact, has historically focused on evaluating the association between consumer characteristics and employment outcomes (e.g., Chapin & Kewman, 2001; Conroy & McKenna, 1999; James, DeVivo, & Richards, 1993; Krause & Terza, 2006; Meade et al., 2004) rather than VR services and outcomes. This is despite the important role VR services play in determining employment outcomes among this target population (Crewe, 2000). Because of dwindling federal, state, and local budgets and increasing stringent accountability requirements, the need for evidence of the effectiveness of VR services has become imperative (Bruyere & Houtenville, 2006). The need to demonstrate the effectiveness of VR services, therefore, is compelling since successful competitive job placement (Carling, 1993) and increased earnings for this target population continues to be a challenge. In addition, the demand for VR services has increased due to a plethora of factors

such as advances in assistive technology and the enactment of certain disability public policy such as Ticket to Work and Work Incentives Improvement Act, and the Americans with Disabilities Act.

Purpose of this Research

The purpose of this study was to investigate the relationship between select consumer and select VR services variables and two criterion variables: competitive employment and weekly earnings. Consumer characteristics were selected because researchers and scholars often use participant characteristics to make generalizations about a given population (e.g., Estrada-Hernandez & Wadsworth, 2005; James et al., 1993; Kampfe, 1994; Krause & Broderick, 2006; Matrone & Leahy, 2005; Moore et al., 2001a, 2001b, 2001c; Wadsworth & Kampfe, 2004). Vocational rehabilitation services selected for analysis for the current study were chosen because they were most frequently provided to consumers with SCI. Competitive employment and weekly earnings for individuals with SCI was selected because these variables have been identified as key outcome indicators (U.S. Government Accountability Office, 2005; Hayward & Schmidt-Davis, 2005; U.S. Department of Education, 2006; Schonbrun, 2005).

The findings of this study are expected to assist rehabilitation counselors who provide services to persons with SCI to gain a greater understanding of the interplay of the aforementioned consumer characteristics, select VR services, and vocational outcomes (i.e., competitive employment and earnings). The findings could help improve rehabilitation planning for persons with SCI and consequently improve their potential for achieving competitive employment and expanded earnings. The study focused on the following questions:

1. What specific consumer characteristics (i.e., race/ethnicity, gender, age, and educational level) are related to competitive employment outcomes of consumers with SCI at closure?
2. What specific demographic variables (i.e., race/ethnicity, gender, age, and educational level) are related to weekly earnings outcomes of consumers with SCI at closure?
3. What is the relationship between select VR services (i.e., assessment, diagnosis and treatment, vocational rehabilitation counseling and guidance, college or university training, occupational/vocational training, on-the-job training, job placement assistance, transportation, maintenance, rehabilitation technology, and information and referral) and competitive employment outcomes of consumers with SCI at closure?
4. What is the relationship between select VR services (i.e., assessment, diagnosis and treatment, vocational rehabilitation counseling and guidance, college or university training, occupational/vocational training, on-the-job training, job placement assistance, transportation, maintenance, rehabilitation technology, and information and referral) and weekly earnings of consumers with SCI at closure?

Methodology

Participants

Consistent with the U.S. Department of Education-RSA's 911 – Case Service Report Policy Directive (2006), participants who are closed successfully (status 26) are divided into two groups: (1) competitively employed and (b) not competitively employed. Participants for this study were 2,070 consumers with SCI who received services and who were closed into the competitively employed or not competitively employed category. The sample was comprised of a majority of males (65.7%). The mean age of all the consumers with SCI who were employed at case closure was 40.49 years old with the youngest and oldest being 14.6 and 86.7 years old, respectively. Whites comprised the majority of the sample at 70.2%, followed by African American (12.9%), Latino (9.9%), American Indian or Alaska Native (1.3%), Asian (1.1%), and Native Hawaiian or Other Pacific Islander (0.1%). The mean weekly earnings for people who were competitively employed was $432.52, with a standard deviation of $330.70.

Data Collection

The 2006 RSA-911 database was provided by RSA in a CD–ROM format. The data represented individuals whose primary disability was SCI. RSA requires reporting agencies to collect data such as demographic variables, services provided, and competitive employment status and weekly earning at case closure. For the purpose of this study, the consumer characteristics of race/ethnicity, gender, age, and education at case closure were selected for analysis. Services selected for analysis were assessment, diagnosis and treatment, vocational rehabilitation counseling and guidance, college or university training, occupational/vocational training, on-the-job training, job placement assistance, transportation, maintenance, rehabilitation technology and information and referral. Consumers received several services depending on their individualized plan of employment (IPE).

Data Analysis

Analyses were conducted using SPSS 15.0 for Windows 2006. Descriptive statistics were used to describe the composition of SCI consumers in terms of race/ethnicity, gender, age, and educational level. The Chi-square test for independence was used because of

its appropriateness in analyzing the relationship between categorical variables (Bellin & Rumrill, 1999; Gravetter & Wallnau, 2002; Pallant, 2001). Spearman's rank order correlation was used to analyze the relationship between age and weekly earnings at closure. A one-way between groups analysis of variance (ANOVA) was conducted to compare the differences in mean weekly earnings among consumers with different levels of education and also to compare differences in mean weekly earnings among the various racial categories. The *t*-test was used to compare the mean weekly earnings for males and females and also to compare weekly earnings for consumers who received specific VR services and those who did not receive specific services. The *t*-test was also used to compare the differences in weekly earnings between the competitively employed group and the not competitively employed group.

Results

Research Question 1: Consumer Characteristics and Competitive Employment

A series of Chi-square tests were conducted to evaluate the relationship between consumer characteristics and competitive employment. Results indicated that of the four select consumer characteristics, only race/ethnicity ($X^2 = 14.429$, $p = .013$) and education ($X^2 = 21.223$, $p = .007$) were significantly associated with competitive employment. In regards to race/ethnicity, the percentage of competitively employed individuals in each racial/ethnic category (see Table 1) reflects that Latinos and Whites were more likely to be competitively employed than African Americans. The percentage of cases representing competitive employment based on educational level (see Table 2) show that consumers with master's degrees, bachelor's degrees, and associate degrees had higher levels of competitive employment than those with lower levels of education. On the other hand, Chi-square results indicated that gender ($X^2 = 1.551$, $p = .213$) and age ($X^2 =$

Table 1
Employment Rates by Race Category

Race Category	N	% Competitively employed
White	1515	95.9
African American	289	92.2
American Indian/Alaska Native	28	92.9
Asian	22	100.0
Native Hawaiian	4	75.0
Hispanic or Latino	212	96.7

Table 2
Rates of Competitive Employment by Educational Category

Level of education	N	% Competitively employed
No formal schooling	2	100
Elementary ed	28	93.3
Secondary ed	103	92.0
Special ed	13	86.7
High school/GED	436	93.0
Post-secondary ed	352	94.9
Associate degree	422	96.6
Bachelor's degree	437	97.5
Master's degree or plus	182	97.8
Total employed	1975	95.4

7.214, $p = .065$) were not statistically significantly associated with competitive employment.

Research Question 2: Consumer Characteristics and Weekly Earnings

The one-way ANOVA was conducted to examine weekly earnings differences between racial categories among VR service consumers with SCI. A statistically significant relationship at the $p<.05$ level in weekly earnings for the six racial categories ($F(5, 2064) = 7.0$, $p = .001$) was found. Table 3 shows mean weekly earnings for each racial category. Post-hoc comparisons using Tukey HSD test indicated that the mean score for Whites (M = \$436.91, SD = \$353.54) was significantly different from Black/African Americans (M = \$336.63, SD = \$251.36) and from Hispanic/Latinos (M = \$350.57, SD = \$217.78) with Whites earning more than both Black/African Americans and Hispanic/Latinos.

An independent-samples t-test was conducted to compare weekly earnings for males and females. The results showed that there was a significant difference in weekly earnings for males (M = \$440.21, SD= \$365.44) and for females (M= \$363.96, SD= \$258.45), $p < .05$ with males earning higher wages than females. The magnitude of the differences in the means was, however, small (eta squared = .014).

Using Spearman's rank order correlation, a significant negative correlation between age and weekly earnings at closure was found (r = -.044, N = 2070, p = .046) with older age associated with lower levels of weekly earnings. One-way between groups analysis of variance (ANOVA) was used to examine weekly earning outcomes related to education (as measured by level of education at case closure).

Results of the ANOVA showed that there was a statistically significant difference in weekly earnings for the nine groups ($F = 36.88, p = .001$). Post hoc comparisons (see Table 4) using Tukey HSD test indicated that mean weekly earnings were different for each level of education.

Research Question 3: Competitive Employment and VR Services

Chi-square tests were conducted to determine the nature of relationship between each VR service and competitive employment. A summary of results, presented in Table 5, revealed that three of the eleven VR services were statistically significantly related to com-

Table 3
Mean Weekly Earnings per Race Category

Race category	N	Mean weekly earnings	SD
White	1515	436.91	353.54
Black/African American	289	336.63	251.36
American Indian	28	356.93	342.62
Asian	22	539.50	559.03
Native Hawaiian	4	310.00	219.73
Hispanic/Latino	212	350.57	217.78

Table 4
Level of Education and Mean Weekly Earnings at Closure

Level of education	N	Mean Weekly earnings	SD
No formal schooling	2	285.00	77.78
Elementary ed	30	358.57	525.02
Secondary ed	112	265.82	220.40
Special ed	15	185.87	133.87
High school/GED	469	301.96	219.97
Post-secondary ed	371	372.37	278.06
Associate degree	437	403.54	316.34
Bachelor's degree	448	505.18	329.79
Master's degree or plus	186	700.60	493.65

Table 5
Percentage of Competitive Employment Outcomes

VR Services	N Provided Service	% Competitively employed (Service Provided)	N Service not Provided)	& Competitively employed (Service not Provided)	X^2	*p*
Assessment	1364	95.4	706	95.5	.008	1.000
Diagnosis and treatment	856	96.0	1214	95.0	1.271	.287
Vocational rehabilitation counseling & guidance	1291	95.8	779	94.7	1.295	.279
College/university training	571	96.5	1499	95.0	2.127	.159
Occupational/vocational training	369	96.2	1701	95.2	.649	.493
On-the-job training	63	100	2007	95.3	3.126	.115
Job placement assistance	634	97.8	1436	94.4	11.834	.001
Transportation	764	95.7	1306	95.3	.202	.744
Maintenance	489	97.5	1581	94.8	6.667	.009
Rehabilitation technology	696	93.7	1374	96.3	7.187	.010
Information and referral	314	96.5	1756	95.2	.997	.380

petitive employment. Job placement (X^2 = 11.83, p <.05 and maintenance (X^2 = 6.667, p = .009) were positively related to competitive employment; whereas rehabilitation technology (X^2 = 7.187, p = .010) was negatively related to competitive employment.

Research Question 4: Weekly Earnings and VR Services

An independent-samples *t*-test for each select VR service was conducted to compare mean weekly earnings between consumers who were provided a specific service and those who were not provided the service. The *t*-test results, presented in Table 6, indicated that there was a statistically significant difference in mean weekly earnings for those who were provided specific VR services. For example, the weekly earnings for those who received vocational rehabilitation counseling and guidance services (M = 428.85, SD = 350.02) were significantly higher compared to those who did not receive this service (M = 385.95, SD = 304.63), p < .05. Likewise, those who received college/university training (M = 455.84, SD = 350.01) earned more than those who did not receive the service (M=397.83.84, SD = 328.77), p < .05. The weekly earnings for individuals who received rehabilitation technology (M = 442.01, SD = 385.71) were also higher compared to those who did not receive this service (M = 399.56, SD = 304. 07), p < .05. On the other hand, those who were provided occupational/vocational training, on-the-job training, and job placement VR services earned significantly less compared to those who were not provided these specific services.

Discussion

The current study has generated several key findings regarding the importance and role of certain consumer characteristics and service variables in competitive employment placement and weekly earnings among persons with SCI. The finding regarding the significant relationship between race/ethnicity and competitive employment indicated that Latinos and Caucasians were more likely to achieve competitive employment when compared to African Americans. African Americans (DeVivo, Rutt, Stover, & Fine, 1987; James et al., 1993; Krause, Saunders, & Staten, 2010; Meade et al., 2004) and Latinos (Krause, Saunders, Staten, 2010) with SCI have consistently been found to have lower employment rates than Whites. There is a need for a coordinated effort to address the issues that mitigate employment outcome disparities that exist among African American VR consumers.

In the present study, education attained was positively related to high rates of competitive employment for consumers with more education more likely to be competitively employed. For example, 97.8% of consumers with a master's degree were in competitive employment compared to 92.0% of those with secondary education. Though the general pattern was that higher levels of education resulted in more consumers entering competitive employment, the results were somewhat mixed. For example, 93.2% of the consumers with elementary education were competitively employed compared to 92.0% with secondary education. This is despite the fact that secondary education

Table 6
Specific VR Service Variables and Weekly Earnings

VR Service variable	Mean earnings (service not provided)	SD	Mean earnings (service not provided)	SD	*t*	*p*
Assessment	408.51	332.77	424.11	337.14	1.01	.314
Diagnosis & treatment	430.04	344.01	402.41	326.88	-1.85	.064
Voc. Rehab counseling & guidance	428.85	350.02	388.95	304.63	-2.73	.006
College/university training	455.84	350.01	397.83	326.77	-3.54	.001
Occupational/Voc training	367.70	235.17	423.84	351.36	3.76	.000
On-the-job training	297.51	197.03	417.48	337.05	4.63	.000
Job placement	365.65	274.37	435.11	355.54	4.83	.000
Transportation	399.11	312.38	422.45	346.26	1.58	.115
Maintenance	419.02	384.80	412.23	317.13	-.39	.695
Rehab technology	442.01	385.71	399.56	304.07	-2.53	.011
Information & referral	425.02	306.45	411.83	339.04	-.64	.520

is considered higher than elementary education. Research focusing on individuals with disabilities has generally revealed that a higher level of education is related to successful vocational outcomes (Crewe, 2000; Hayward & Schmidt-Davis, 2005; James et al., 1993; Krause & Anson, 1996; Krause & Terza, 2006; Schonbrun, 2005; Schonbrun, Sales, & Kampfe, 2007).

Consumer Characteristics and Weekly Earnings

The finding that race was significantly related to weekly earnings with Whites earning more than Black/African Americans and Hispanic/Latinos, respectively, is generally consistent with a study by Krause and Terza (2006) that examined the relationship between race and earnings in individuals with SCI. Krause and colleague found higher earnings among Non-African Americans. Asians, although represented by a small sample in the current study, were the most likely to earn the highest wages compared to the other five racial categories.

Gender was significantly related to weekly earnings at closure; with males earning more ($440.206) than females ($363.961). Other researchers in the field of SCI have generally found that females earn less than men (Krause & Terza, 2006). This finding is also consistent with historical evidence that shows that women have been routinely disadvantaged and/or discriminated against in terms of employment and remuneration (Leung, 2006). The disparities in earnings between women and men with SCI can be due to a variety of reasons. First, women within the general population are generally underpaid (Leung, 2006) due to perverse gender discrimination in the hiring process. Second, scholars have postulated that women with disabilities encounter double discrimination because of being women and having a disability (Barnartt, 1987). Minority women such as African Americans are even more likely to face triple discrimination at the workplace due to their race, disability, and gender. Third, it is possible that women were employed in lower paying jobs, suggesting gender-based discrimination during job placement.

Consistent with previous studies (Krause & Crewe, 1987; Krause & Terza, 2006; Conroy & McKenna, 1999; McShane & Karp, 1993), younger age was positively related to earnings in the current study. Younger people may be attractive to employers compared to older people (McShane & Karp, 1993), hence better remuneration. It is also possible that older people may not have interest in participating in competitive employment, hence reduced earnings. The role of vocational rehabilitation counselors' attitudes toward older people should be investigated to determine whether they contribute to earning outcome among older VR consumers.

The current study revealed that increased education was associated with expanded wages. For example, consumers with master's degrees earned almost thrice ($700.60) more than consumers with no formal education ($285.00). These findings are consistent with the trends in the general population. Between the year 1998 and 2000, the average annual earnings in the general population were $18,900 for high school dropouts, $25,900 for high school graduates, $45,400 for college graduates, and $99, 300 for workers with

professional degrees (Day & Newburger, 2002). Furthermore, increased education is closely linked to earning capacity because it provides human investment that raises an individual's productivity. Opening educational opportunities to persons with SCI thus appears to be an important social policy if we are to realize equal opportunities in employment and earnings for all American citizens.

Select VR Services and Competitive Employment

Select VR services are often provided to consumers with disabilities to help them achieve an employment outcome and live independently. An analysis of select VR service variables indicated that three (i.e., job placement, maintenance, and rehabilitation technology) of the eleven services provided to consumers with SCI were significantly related to competitive employment.

Job placement (i.e., a referral to a specific job resulting in an interview) and maintenance (i.e., financial support provided for expenses such as food and shelter which are considered important in needs assessment) services were positively related to competitive employment. This suggests the possibility that receipt of job placement and maintenance services increases the likelihood of being competitively employed. This finding is consistent with Hayward and Schmidt-Davis (2005) who also found that job placement and maintenance were related to competitive employment of VR consumers.

Rehabilitation technology (i.e., the use of technologies, engineering methodologies, or scientific principles to address the needs of individuals with disabilities) was negatively related to competitive employment. Consumers who were provided rehabilitation technology services were less likely to be competitively employed than those who did not receive this service. Perhaps the reason for this is that consumers with SCI who needed these services had the most severe disabilities that limited their competitive employment opportunities. Several studies have consistently found severity of injury negatively related to employment (Conroy & McKenna, 1999; James et al., 1993; Krause & Boderick, 2006; McShane & Karp, 1993).

Select VR Service and Weekly Earnings

The findings indicate that individuals with SCI who received specific VR service variables (i.e., vocational rehabilitation counseling and guidance, college/university training, and rehabilitation technology) were more likely to receive higher earnings. For example, when vocational rehabilitation counseling and guidance was provided, the mean weekly earnings were $428.85 compared to $388.95 when not provided. Consumers who were provided vocational rehabilitation and guidance services (i.e., therapeutic counseling and guidance services considered important to achieve an employment outcome) were generally expected to achieve better earning outcomes than those who were not provided this service because counseling and guidance is considered empowering (Sales, 2007).

College/university training was also positively related to weekly earnings at closure. College/university training refers to full-time or part-time academic training above the high school level leading to a degree, a certificate or other recognized educational credential (US Department of education, 2006). Consumers who received this type of training were expected to enter into either white or blue collar jobs which translate into higher earnings. Therefore, it was not surprising that college/university training was related to higher wages. The economic benefits of higher education in terms of higher earnings are well documented. On average college graduates earn about 73% more than high school graduates (Baum, Ma, & Payea, 2010). Daly, Buchel, and Duncan (2000) observe that the labor market generally over remunerate workers with more schooling and castigates workers with too little schooling. Baum et al. (2010) further observe that higher levels of education and higher earnings are correlated for all racial/ethnic groups and that earnings for college graduates have tremendously increased as those for high school graduates dwindle.

Rehabilitation technology was positively related to higher earnings in the current study. Modern technological advances, especially rehabilitation technology, have opened higher earning opportunities for individuals with SCI. The availability of manual and power wheelchairs, for example, can help individuals with disabilities to participate in education and employment programs.

When occupational/vocational training, on-the-job training, and job placement services were provided, weekly wages were less than when the services were not provided, indicating a negative relationship existed between these service variables and wages. For example, when occupational/vocational training services were provided, the wages were $367.70 compared to $423.84 when this service was not provided, suggesting the possibility that the provision of this service led to the likelihood of earning lower wages. Occupational/vocational training refers to occupational, vocational, or job skill training that prepares students for gainful employment but does not lead to an academic degree or certification (U.S. Department of Education, 2006). The finding that the provision of this service was negatively related to income was somewhat surprising because it is generally expected that this service will lead to gainful employment and increased income for consumers.

One reason for the current finding regarding occupational/vocational training could be that the quality of training was not good enough to meet the expectations of high paying jobs. Another possible explanation is that consumers were employed in areas that did not require the occupational/vocational skills gained because of local labor market situation. For example, a person trained in carpentry may have been employed as a dishwasher in a restaurant. Mismatch between vocational training graduates and the labor market is not a new phenomenon, hence VR counselors should be cognizant of the local labor market climate so that they can help clients with information that can help them make vocational training choices that are relevant to labor market demands.

Job placement was negatively related to weekly earnings at closure consistent with previous studies involving individuals with disabilities. For example, Schonbrun (2005) found a similar relationship in individuals with traumatic brain injury (TBI). Moore (2001a) also found a positive and significant relationship between job placement and income of VR consumers who were deaf.

Practice and Policy Implications

The disparity that exists among races, as demonstrated by this and other studies, should be of particular concern to policy makers, rehabilitation educators, and practitioners. Our findings indicate that Whites were more likely to be in competitive employment than African Americans and Latino. Also, we found that Whites were more likely to earn more than Black/African Americans and Hispanic/Latino. Furthermore, Hispanic/Latinos were more likely to earn more than Black/African American. There is a need for a concerted effort among VR service provision stakeholders to address the issues that mitigate employment and earning outcome disparities that exist among minority groups, especially African American VR consumers. For this reason we concur with Moore et al (2009) who have called for RSA and the National Institute on Disability and Rehabilitation Research (NIDRR) to continue to implement Section 21 mandates, and consequently, expand the focus of diversity as we produce the next generation of rehabilitation counselors and disability and rehabilitation researchers. It should be noted that these U.S. Department of Education auxiliary entities have carried out such capacity building efforts since the passage of the Rehabilitation Act of 1992-Section 21, less than 20 years ago.

Concerted capacity building efforts aimed at broadening the contingency of historically Black college/university (HBCU) housed rehabilitation training and research programs will assist the State-Federal VR program in eradicating such outcome disparities. Moreover, providing opportunities to attract more minorities, especially African American rehabilitation counselors and rehabilitation researchers has the potential to eradicate the disparate competitive job placement rates and earning capacities among African Americans (Krause, Saunders, & Staten, 2010; Moore et al., 2009) and other minority groups.

State VR programs may find it prudent to consider expanding the provision of services that facilitate competitive employment and higher incomes for consumers with SCI. By doing so, VR programs would improve the standard of living of service recipients. Furthermore, involving consumers in competitive employment and expanding their earning would ensure that persons with SCI contribute to the economy of the country. This recommendation is consistent with Sales (2007) who has advocated for increased rehabilitation services to individuals with disabilities. Expansion of the provision of services that lead to competitive employment and higher earnings can be done through a combination of various approaches such as allocating more funds to specific VR programs and collaborating with other agencies that focus on quality provision of rehabilitation services.

Because state VR programs serve a culturally diverse clientele, it is important that VR professionals continue to develop their cultural literacy skills in order for them to provide culturally appropriate services. Cultural literacy is important to help rehabilitation professionals identify how sociocultural constructs such as race, and gender coalesce with the effects of disability to influence the earning potential of individuals with SCI. Moreover, culturally competent rehabilitation professionals are likely to have the propensity to develop an effective working alliance (i.e., a positive partnership between a consumer and counselor) with their clients hence increasing the possibility of successful case closures. Increasing multicultural awareness among vocational counselors may be a prerequisite for achieving successful rehabilitation outcomes (Krause, Saunders, & Staten, 2010; Sales, 2007). To better serve consumers with SCI, policy makers, educators, VR counselors, consumers, and other stakeholders should work collaboratively to streamline service delivery. Working collaboratively may lead to sound policies and practices that ensure reasonable resources are targeted at providing services that lead to competitive employment and expanded income.

Future Research

Future research is recommended in the following areas. First, further research should be undertaken to identify the factors that contribute to the disparities in competitive employment and weekly earnings of African American and Latino with SCI. We speculate that a several factors such negative attitudes toward minorities, multicultural incompetence, and under-

representation of minority persons among VR counselors might significantly contribute to competitive employment and earning outcome disparities witnessed within the VR system. Second, research using RSA's 911 data that compares vocational outcomes for more than one fiscal year would also be helpful in determining competitive employment and earning trends. A longitudinal study will also help establish whether socioeconomic and political transformations play any role in determining rehabilitation outcomes among individuals with SCI who receive state VR services. Third, since the analysis of the sample revealed that consumers who attained special education earned the lowest weekly wages ($185.87) at closure compared to the rest of the groups, we recommend for further research to provide an explanation for the disparity. Finally, research addressing quality of services received and severity of disability and how these factors relate to vocational outcomes would enrich the existing body of knowledge.

Study Limitations

Numerous advantages of using the Rehabilitation Services Administration (RSA) 911 data have been documented (e.g., Estrada-Hernandez & Wadsworth, 2005). The dataset, however, have several significant limitations. First, the Rehabilitation Services Administration (RSA) 911 data that were used for this study provided limited information regarding consumers' characteristics. For example, the data does not provide information on the severity of clients' disabilities which made it problematic to distinguish between competitive employment outcome of consumers who had paraplegia or tetraplegia. Lack of such information makes it difficult to generalize the findings across the two groups. Second, the data do not provide information concerning micro level socioeconomic conditions (e.g., labor market, social attitudes toward individuals with SCI, and minimum wages at state levels) that might have mitigated the outcomes. Third, the RSA-911 data of 2006 do not contain information on quality of services hence making it nearly impossible to make assumptions regarding whether or not the quality of services had an impact on employment outcomes. Fourth, findings represent one year's data collection period; therefore, findings do not reflect a trend within the VR program system in terms of demographics, services, and outcomes. Fifth, the potential for error in using archival databases is exacerbated because the researchers do not have knowledge of any human error that might have occurred during data collection and/or storage. Furthermore, the focus of this study was on consumers with SCI receiving services through VR programs. Therefore, the information may only be applicable to consumers receiving services through state VR programs. Sixth, this study is a correlation study, which makes it difficult to establish any causal relationship between independent and dependent variables in the study. The inability of correlation analysis to control for all factors (e.g., quality of VR services) that could impact the behavior of dependent variables (i.e., competitive employment and weekly earnings) is a significant limitation.

Conclusion

This study used 2006 RSA-911 data to investigate the relationship between select consumer and select VR services variables and two criterion variables: competitive employment and weekly earnings. The findings revealed that African Americans were significantly less likely to achieve competitive employment than Whites and Latinos. Findings also indicated that persons with SCI who received job placement and maintenance services were more likely to obtain competitive jobs than those who were not provided with such services. Overall, SCI is increasing in the United States and it affects people across race/ethnicity, gender, age and education. The increase of people with SCI translates into greater demand for VR services to address the needs of this target population. In addition, there is a need to enhance the understanding of the types of services that lead to competitive job placements for persons with SCI.

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