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Traumatic brain injury vocational rehabilitation counselor competencies: Implications for training and practice

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Abstract.
BACKGROUND: The Administration for Community Living (ACL) TBI State Partnership Program grants support states by providing funding to build capacity and infrastructure to support and maintain a system of services and supports to maximize the independence, well-being, and health of persons with traumatic brain injury (TBI). A Transition and Employment (T&E) workgroup identified competencies needed by Vocational Rehabilitation Counselors (VRC) to support people with TBI to obtain and maintain employment.
OBJECTIVE: To: (1) identify self-perceived VRC TBI competence and (2) inform individual state VR training activities and competency goals.
METHODS: A self-assessment online survey was employed.
RESULTS: A total of 269 VR professionals across four states completed the VRC Self-Assessment between December 2020 and February 2021. The T&E workgroup identified TBI competencies across four domains (1) brain injury medical and rehabilitation, (2) employment, (3) state and local systems, resources, and service coordination, and (4) national systems, research and best practice. The results by TBI competency and the overall score for all participants show that state and local systems, resources, and service coordination is the highest area of competency, placing them close to the proficient level of knowledge.

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CONCLUSIONS: Future VR education and training opportunities may be informed by the results of this study.

Keywords: Brain injury, employment, vocational rehabilitation, capacity building, training

1. Introduction

Approximately 1.4 million people sustain a traumatic brain injury (TBI) each year in the United States (Langlois et al., 2006; Taylor et al., 2017), and of these, approximately 70,000 to 90,000 will have a long-term disability associated with their TBI. It has been conservatively estimated that 3.2 million Americans (1.1% of the US population) are living with disability attributable to TBI (Zaloshnja et al., 2008).

Return to work (RTW) following TBI can be challenging for both the person with TBI and service providers (DiSanto et al., 2019; Libeson et al., 2021). Research has shown that approximately 40% of people with TBI ultimately return to work. A systematic review of 35 studies (Van Velzen et al., 2009) found that 40.8% of people who were working prior to TBI and were 18–65 years of age were successful with RTW. A more recent study (Cuthbert et al., 2015) used population estimates from the Traumatic Brain Injury Model Systems National Database (TBIMS-NDB) and found that 39.6% were employed at two years post-injury. Work was defined as paid legal or illegal work, with or without accommodations. Of the 39.6% that were able to RTW, 65% of them were employed full-time.

These studies may not reflect challenges faced by state vocational rehabilitation (VR) agencies. In several studies, it has been shown that individuals with TBI are not typically seen by VR until almost ten years post-injury (Johnstone et al., 2003). Those seeking VR assistance may have been employed in the interim but lost their employment or were not able to re-enter the workplace since their injury. They are also quite likely to have developed a number of TBI-related co-morbidities, which increases their level of disability. More specifically, substance abuse and psychiatric comorbidities exacerbate the level of disability following TBI in particular (McHugo et al., 2017). Medical co-morbidities associated with TBI, including seizures, pain, sleep disturbance and fatigue, diabetes, hypertension, myocardial infarction, cerebrovascular disease, peripheral vascular disease, chronic pulmonary disease, and renal disease, also increase disability (Masel & DeWitt, 2010). Finally, environmental variables, such as lack of access to rehabilitation and brain injury services and supports, lack of family support, and social isolation, also affect the level of disability (Ibarra et al., 2020).

Injury severity is a well-studied predictor of return to work after TBI. Those who sustain less severe injuries are typically likely to return to work more often and quickly compared to those with more severe injuries (Cuthbert, Pretz, et al., 2015; Hart et al., 2019; Sveen et al., 2022; Watkin et al., 2020; Wehman et al., 2005). Preinjury occupational factors affect return to work outcomes after TBI (Cuthbert, Pretz, et al., 2015; DiSanto et al., 2019; Walker et al., 2006). For example, studies found that all types of pre TBI employment improved the probability of postinjury employment (Cuthbert, Harrison-Felix, et al., 2015; Cuthbert, Pretz, et al., 2015). Vocational interventions are tailored to support return to work following TBI (Fadyl & McPherson, 2009; Kendall et al., 2006; Radford et al., 2018; Tyerman, 2012; Wehman et al., 1990).

The overall biopsychosocial context of TBI results in dynamic changes in the level of disability, affecting not only obtaining, but also maintaining employment (Dillahunt-Aspillaga et al., 2018; Lexell et al., 2016; Libeson et al., 2021; Ponsford, 2013; Saltychev et al., 2013). Specifically, it has been shown that change in the level of disability is more common than stability (Corrigan & Hammond, 2013). While 30% of people with TBI will have less disability from one follow-up epoch to another, 30% will become more disabled, and only about 40% will remain stable. In a study of 78 people with TBI who sought VR services, only 16.7% were classified as having successful outcomes (competitively employed at case closure), while 60.3% were classified as closed with services interrupted, indicating sustained engagement in VR was challenging (Johnstone et al., 2003). To our knowledge, no research is available on the issue of service interruption. It is probable that client characteristics, such as TBI-specific cognitive, neurobehavioral, medical, and environmental factors influenced service continuity, and VR characteristics, such as a lack of available knowledgeable job coaches and other community supports and insufficient training for VR professionals, may influence service continuity and retention.

1.1. Administration for community living

The Administration for Community Living (ACL) Traumatic Brain Injury State Partnership grants (2018-ACL-AOD-TBSG-0281) help states strengthen and grow their capacity to support and maintain a system of services and supports that will maximize the independence, well-being, and health of persons with TBI, as well as to learn from and call upon the expertise of states that have built and maintained a strong and sophisticated state TBI infrastructure. Through these grants, ACL has established an ACL Workforce Development Initiative to support training for service workers and other individuals who work in the system of support for people with TBI. The Transition and Employment (T&E) workgroup within the Mentor grantees set out to identify a set of core competencies, intended to serve as a general guide for the professional development of the knowledge, skills, and abilities needed by Vocational Rehabilitation Counselors (VRC) serving individuals who are working to enter or re-enter the workforce following a TBI.

2. Objectives

The present study was conducted to survey VR counselor and staff self-perceived needed competencies in serving people with TBI with the objective of developing evidence-based recommendations for VR staff curriculum development and training in TBI.

2.1. Purpose

The purpose of the VR TBI self-assessment is (1) to gauge VRC's self-perceptions of their level of expertise within each competency as it relates to serving individuals with TBI, (2) to understand differences in self-perceived competence between the four domains within which the competencies are organized, and (3) to search for correlations between self-perceived competence and education, role, experience, and potentially, state, in which the VRC is employed.

Non-VRCs were included in the study for several reasons. First, associate staff (administrative assistants, receptionists, etc.) are often the first face or voice that people with disabilities, including brain injury (BI), encounter when applying for VR services. It is important for those staff to understand potential communication or cognitive problems resulting from BI that may present barriers so they can accommodate them. For example, an individual with BI may need one or more reminders for scheduled appointments.

Many state VR programs use a team approach, in which several staff with specialized roles and responsibilities other than VRCs may serve an individual with BI at the same time. Best practice is that each member of the team understands how BI impacts the individual functionally and provides appropriate accommodations to support the individual's success.

Administrators, Supervisors, and Program Directors in state VR programs often are called upon to consult on client cases that may involve BI. They are typically the primary trainers for new VRCs, and may have to manage VRC caseloads from time to time when staff vacancies arise. It is important for staff in these positions to have a working knowledge of BI so they are equipped to guide new VRCs and to step into the VRC role in serving people with BI as needed.

3. Methods

The ACL Transition and Employment (T&E) workgroup Mentor states included VR representatives from four U.S. states (identified as States 1–4 in this study). This group developed a forty-item self-assessment online survey using SurveyMonkey™. Each state had up to a five-week window to complete the survey but the timing of survey administration varied from state to state. Surveys were administered as follows: State 1, December 2020; State 2, December 2020 – January 2021; State 3, January–February 2021, State 4, February 2021. After disbursal of the initial survey invitation, two survey completion reminders were sent via email. All four states (1–4) chose to survey a convenience sample of available and willing state VR program staff in their respective states. Two of the four states chose to limit their samples to a subgroup of VR program staff who were designated as VRCs.

3.1. Participants

A total of 269 VR professionals across the four states completed the Vocational Rehabilitation Counselor competencies (VRCC) survey between December 2020 and February 2021. Overall, more than half of participants (58.0%) identified themselves as rehabilitation counselors and many of them (66.5%) indicated having a Master's degree

(see Table 2). The major of highest level of education most frequently reported were mental health counseling or psychology (25.7%) and rehabilitation counseling (21.6%). At the time of the survey, several participants described their professional role as intake counselor (37.9%), educator/mentor/ supervisor of new VRCs (30.5%), or performer of vocational assessment (26.8%). Almost half of participants (48.3%) reported 6 or more years of experience in their current role followed by 3–5 years of experience (26.4%).

3.2. Measure

The Vocational Rehabilitation Counselor competencies (VRCC) survey is a self-assessment that is based on a final set of 40 core competencies for VRCs serving individuals with TBI (see Appendix 2). The ACL T&E workgroup utilized the following process to derive the TBI competencies that were included in the survey:

1. Workgroup members and vocational rehabilitation counselors (VRCs) from State 2 and State 3 drafted a list of professional core competencies for VRCs based on their own knowledge and experience.
2 A review of 26 relevant articles (See Appendix 1) was conducted by the T&E workgroup to determine whether any additional competencies were identified in the literature.
3 A first-tier subject matter expert review was conducted by 43 VR professionals who are direct service staff.
4 The Human Services Research Institute and the ACL TBI Technical Assistance Center were consulted. Competencies were reviewed and discussed to reduce double-barreling and revised for clarity.
5 A second-tier subject matter expert review was conducted by six individuals with extensive clinical or academic expertise in the field of brain injury and VR, including neuropsychologists, researchers in TBI, a rehabilitation counselor/psychologist, and a former administrator of brain injury services.
6 A final list of 40 core competencies within four domains was drafted, incorporating feedback from the subject matter experts.

An item was developed for each of the 40 competencies. The 40 closed-ended items were organized within four domains, including (a) brain injury medical and rehabilitation (15 competencies), (b) employment (13 competencies), (c) state and local systems, resources, and service coordination (10 competencies), and (d) national systems, research, and best practice (2 competencies). One additional open-ended item was included in the survey to collect information about the learning style of participants and how they apply what they learn.

Participants were asked to assess their level of expertise on each competency using the rubric presented in Table 1, based on a model for the measurement of competency on a scale of 0 to 5, where 0 represents no understanding of the competency and 5 represents an expertise level of knowledge (Russo, 2016).

Additionally, the survey contains questions to gather information about the demographic characteristics of participants, including their professional role in VR, the state in which they work, their years of experience with TBI, and their level of education.

3.3. Analyses

Descriptive statistics, frequencies, Chi-square tests of independence, and Fisher-Freeman-Halton Exact Tests were used to describe the sample and examine statistically significant differences between states on education, professional role, experience, and perceived competency. *T*-tests and one-way between-groups analysis of variance (ANOVA) tests were also conducted to explore differences between groups.

3.4. Ethical considerations

Procedures involving experiments on human subjects are done in accord with the ethical standards of the Committee on Human Experimentation of the institution in which the experiments were done or in accord with the Helsinki Declaration of 1964 and its later amendments or comparable ethical standards. This study, as a minimal risk training-grant-funded survey, is exempt from Institutional Review Board approval.

4. Results

A total of 269 participants who were part of the ACL Transition and Employment Workgroup completed the VRC Self-Assessment for Serving Individuals with a TBI between December 2020 and February 2021. Participants were located in four dif-

Table 1
Measurement of competency

Value	Competency level
0	**None** – no understanding of the competency
1	**Limited** – limited understanding of the competency, limited opportunity to apply the competency, competency has been minimally demonstrated
2	**Basic** – basic understanding, sufficient enough to handle routine tasks, requires some guidance and supervision when applying this competency, can discuss terminology and concepts related to this competency
3	**Proficient** – detailed knowledge, understanding, and application of the competency; requires minimal guidance or supervision, consistency demonstrates success in the competency, able to assist others in the application of the competency
4	**Advanced** – highly developed knowledge, understanding, and application of the competency; is able to coach or teach others on the competency; can help develop materials and resources in the competency
5	**Expert** – specialist/authority level knowledge, understanding, and application of the competency; recognized by others an expert in the competency and is sought by others throughout the organization; able to explain issues in relation to broader organizational issues; creates new applications or processes; has a strategic focus.

Table 2
Demographic characteristics of participants

Characteristic	State								Total	
	1		2		3		4			
	n	%	*n*	%	*n*	%	*n*	%	N	%
Experience										
< 1 year	2	3.7	11	14.7	13	11.5	2	7.4	28	10.4
1–2 years	16	29.6	2	2.7	16	14.2	4	14.8	38	14.1
3–5 years	17	31.5	21	28.0	26	23.0	7	25.9	71	26.4
6 + years	19	35.2	40	53.3	57	50.4	14	51.9	130	48.3
Education										
High school or GED	0	0	1	1.3	2	1.8	0	0	3	1.1
Some college no degree	0	0	2	2.7	6	5.3	0	0	8	5.2
Associate degree	0	0	4	5.3	10	8.8	0	0	14	3.0
Bachelor's degree	26	48.1	29	38.7	7	6.2	1	3.7	63	23.4
Master's degree	27	50.0	38	50.7	88	77.9	26	96.3	179	66.5
PhD	1	1.9	1	1.3	0	0	0	0	2	0.7
Major of Highest Level of Education										
Social Work	7	13.0	8	10.7	5	4.4	8	29.6	28	10.4
School Counseling	1	1.9	3	4.0	2	1.8	3	11.1	9	3.3
Mental Health Counseling or Psychology	9	16.7	19	25.3	31	27.4	10	37.0	69	25.7
Rehab Counseling	4	7.4	8	10.7	42	37.2	4	14.8	58	21.6
Education	9	16.7	12	16.0	1	0.9	1	3.7	23	8.6
Business/ Management/ Administration	3	5.6	2	2.7	5	4.4	1	3.7	11	4.1
Human Relations/ Human Services	3	5.6	3	4.0	2	1.8	0	0	8	3.0
Other	15	27.8	10	13.3	4	3.5	0	0	29	10.8
Professional Role										
Rehabilitation counselor	48	88.9	25	33.3	61	54.0	22	81.5	156	58.0
Supervisor	2	3.7	13	17.3	21	18.6	5	18.5	41	15.2
Employment specialist	2	3.7	26	34.7	1	0.9	0	0	29	10.8
Technician/Assistant	0	0	1	1.3	8	7.1	0	0	9	3.3
Administrative/Clerical	0	0	7	9.3	8	7.1	0	0	15	5.6
Business relations	0	0	2	2.7	10	8.8	0	0	12	4.5
Other	0	0	0	0	1	0.9	0	0	1	0.4
Professional Role Description										
Intake counselor	11	20.4	30	40.0	41	36.3	20	74.1	102	37.9
Perform vocational assessment	18	33.3	15	20.0	16	14.2	23	85.2	72	26.8
Specialize in brain injury	19	35.2	3	4.0	3	2.6	3	11.1	28	10.4
Serve as educator, mentor, or supervisor to new vocational rehabilitation counselors	16	29.6	17	22.7	36	31.9	13	48.1	82	30.5
None of the above	9	16.7	28	37.3	41	36.3	1	3.7	79	29.4

ferent states, including State 1 ($n = 54$, response rate 23%), State 2 ($n = 75$, response rate 55%), State 3 ($n = 113$, response rate 12%), and State 4 ($n = 27$, response rate 90%). Almost half of participants reported six or more years of experience, and more than half have a master's degree (see Table 2). The majors most frequently reported among those at the highest level of education include mental health counseling, psychology, and rehabilitation counseling. The professional role of more than half of participants was rehabilitation counselor, followed by supervisor. Many participants described their professional role as intake counselor; educator, mentor, or supervisor to new vocational rehabilitation counselors; or vocational assessors. The study sample had a normal distribution for each competency and the overall score.

The results by competency and the overall score for all participants show that state and local systems, resources, and service coordination is the competency with the highest mean across the survey (see Table 3) approaching proficiency. However, all the mean scores fall between the basic and proficient categories.

To examine statistical differences between states on education, role, and experience, chi-square tests of independence were performed to examine the differences between state and years of experience and between state and highest level of education. As can be seen in Table 4, the relationship between state and those who have 1–2 years of experience was significant. Those in states 1 and 3 were more likely to have 1–2 years of experience than those in States 2 and 4. There was not a statistically significant association between state and each of the other years of experience categories. Regarding education, the proportion of participants in each of the categories differs by state. Specifically, those in State 3 were more likely to have an Associate degree or less than those in the other states. Those in State 1 and 2 were more likely to have a bachelor's degree and those in State 3 were more likely to have a graduate degree.

Table 3
Descriptive statistics for the competencies and overall score for all participants

Competency	*M*	*SD*
Brain Injury Medical and Rehabilitation	2.22	0.87
Employment	2.40	0.94
State and Local Systems, Resources and Service Coordination	2.83	0.96
National Systems, Research and Best Practices	2.37	0.98
Overall Score	2.44	0.85

Fisher-Freeman-Halton Exact Tests were conducted to examine the differences between state and the current professional role of participants. The proportion of participants in each of the professional role categories statistically differs by state (see Table 5). Specifically, those in State 1 and State 3 were more likely to have a rehabilitation counselor role. There was a higher proportion of supervisors in State 2 and State 3, employment specialists in State 2, and technician/assistants in State 3. Similarly, State 2 and 3 were the only states with participants reporting administrative/clerical and business relations roles.

One-way ANOVA tests were conducted to examine the impact of years of experience on the four competencies and the overall score as they relate to serving individuals with brain injury. Accordingly, a Bonferroni adjustment of the alpha level of 0.010 (0.05/5) was used to identify significant results. Participants were divided into four groups according to their years of experience in their current professional role (<1 year, 1–2 years, 3–5 years, 6 + years). There was a significant effect of years of experience on each of the competencies and the overall score (see Table 6). *Post-hoc* comparisons using the Tukey HSD test indicate that the brain injury medical and rehabilitation (BIMR) competency mean score of those with less than 1 year of experience was significantly different from those with 3–5 years of experience (see Table 6). The mean scores revealed that those with 3–5 years of experience performed better. The eta squared statistic indicates a medium effect size. Differences were also found for the employment (EM) and state and local systems, resources, and service coordination (SLSR) competencies between those with less than 1 year of experience, those with 3–5 years of experience, and those with 6 + years of experience.

Another statistical difference was found for SLSR between those with 1–2 years of experience and those with 6 + years. Those with more years of experience reported higher levels of competency. The eta squared statistic for EM and SLRS indicates a medium effect size. The national systems, research, and best practices (NSRBP) mean score of those with less than 1 year of experience was also significantly different than the mean score of those with 3–5 years of experience and 6 + years of experience. The eta squared statistic indicated a medium effect size. Lastly, for the overall score, statistical differences were found between those with less than 1 year of experience and those with 3–5 years and 6 + years of experience and

Table 4
Frequencies and chi-square results for states in experience and education

Characteristic	State								χ^2
	1		2		3		4		
	n	%	*n*	%	*n*	%	N	%	
Experience									
< 1 year	2	7.1	11	39.3	13	46.4	2	7.1	4.58
1–2 years	16	42.1	2	5.3	16	42.1	4	10.5	18.55**
3–5 years	17	23.9	21	29.6	26	36.6	7	9.9	1.44
6 + years	19	14.6	40	30.8	57	43.8	14	10.8	5.12
Education									
≤ Associate degree	0	0	7	28.0	18	72.0	0	0.0	14.20*
Bachelor's degree	26	41.3	29	46.0	7	11.1	1	1.6	52.68*
Graduate degree	28	15.5	39	21.5	88	48.6	26	14.4	29.89**

* $p < 0.05$. ** $p < 0.001$.

Table 5
Frequencies and fisher-freeman-halton exact test results for states in professional role

Characteristic	State								Fisher
	1		2		3		4		
	n	%	*n*	%	*n*	%	*n*	%	
Rehabilitation counselor	48	30.8	25	16.0	61	39.1	22	14.1	53.67**
Supervisor	2	4.9	13	31.7	21	51.2	5	12.2	8.12*
Employment specialist	2	6.9	26	89.7	1	3.4	0	0	52.96**
Technician/ Assistant	0	0	1	11.1	8	88.9	0	0	6.45*
Administrative/ Clerical	0	0	7	46.7	8	53.3	0	0	7.06*
Business relations	0	0	2	16.7	10	83.3	0	0	7.79*

Note. Fisher-Freeman-Halton Exact Test was used instead of chi-square because more than 20% of the cells have a frequency < 5. * $p < 0.05$. ** $p < 0.001$.

Table 6
Means, Standard Deviations, and One-Way ANOVA Statistics in Competencies by Experience

Competency	Experience								ANOVA		
	<1 year (*n* = 28)		1–2 years (*n* = 28)		3–5 years (*n* = 71)		6 + years (*n* = 130)				
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F* ratio	*df*	η^2
Brain Injury Medical and Rehabilitation	1.80	0.90	1.85	0.70	2.38	0.88	2.33	0.86	6.04*	3, 263	.06
Employment	1.80	1.03	2.06	0.78	2.61	0.91	2.53	0.91	7.65*	3, 263	.08
State and Local Systems, Resources and Service Coordination	2.15	1.10	2.46	0.99	3.02	0.81	3.00	0.91	9.60*	3, 263	.10
National Systems, Research and Best Practices	1.79	1.06	2.12	0.89	2.56	0.94	2.46	0.97	5.60*	3, 260	.06
Overall Score	1.89	0.92	2.10	0.71	2.63	0.80	2.57	0.82	8.76*	3, 263	.09

Note. ANOVA = analysis of variance. * $p < 0.001$.

between those with 1–2 years of experience and 3–5 years of experience. Those with more years of experience reported higher competencies. The eta squared indicates a medium effect size for the overall score.

The impact of the professional role on the four competencies and the overall score as they relate to serving individuals with brain injury was also explored. Professional roles were divided into two groups based on the type of interaction with individuals with TBI. Group 1 includes rehabilitation counselor, supervisor, and employment specialist roles and Group 2 includes technician/assistant, administrator/clerical, and business relation roles. Independent sample *t*-tests were conducted for each competency. To account for the multiple *t*-tests, a Bonferroni adjustment of the alpha level of 0.010 (0.05/5) was used to identify significant results. Results (see Table 7) indicate differences between

Table 7
Results Comparing Professional Role Groups on Competencies

Competency	Group 1		Group 2		*t*	*df*	*p*	Cohen's d
	M	*SD*	*M*	*SD*				
Brain Injury Medical and Rehabilitation	2.34	0.83	1.52	0.80	5.606	261	<0.001	0.827
Employment	2.52	0.89	1.70	0.98	5.074	261	<0.001	0.905
State and Local Systems, Resources and Service Coordination	2.96	0.89	2.05	1.09	5.590	261	<0.001	0.917
National Systems, Research and Best Practices	2.43	0.94	1.93	1.16	2.865	258	0.005	0.976
Overall Score	2.56	0.80	1.73	0.86	5.762	261	<0.001	0.806

Note. Group 1 ($n = 226$) includes rehabilitation counselor, supervisor, and employment specialist roles; Group 2 ($n = 37$) includes technician/assistant, administrator/clerical, and business relation roles.

groups for all the competencies, with Group 1 performing better than Group 2. Specifically, Group 1 performance was between the basic and proficient categories for all the competencies whereas Group 2 was mostly between the limited and basic categories except for the state and local systems, resources, and service coordination competency, which was within the basic category. The effect size for all the competencies was large, meaning that Group 1 has a higher level of expertise than Group 2.

5. Discussion

The goal of this study was to survey VR counselor and staff self-perceived TBI competencies with the objective of developing evidence-based recommendations for VR staff curriculum development and training in TBI. The requirement that VR counselors hold an advanced degree in rehabilitation counseling was removed in 2014. According to the Workforce Innovation and Opportunity Act (2014), degrees in "business administration, human resources ... and economics" (Section 412) are sufficient to gain employment as a counselor, despite the fact that knowledge specific to rehabilitation and disability management has been identified as essential (Leahy et al., 2003).

Our study found that VRC Competency Self-Assessment scores fell primarily between basic and proficient. The aggregated response to competencies related to TBI screening tools was rated as limited, suggesting a need for additional TBI screening training. The aggregated response to Brain Injury Medical and Rehabilitation Concepts was most frequently rated as basic, suggesting an opportunity for additional training, particularly for a diagnostic group that is known to be complex and has unique VR needs. Our study also found that VRC's with 3–5 years of experience rated themselves with a higher level of competency overall. This suggests that VR leadership may want to consider tiered training opportunities, based on VRC role and years of experience. In general, administrative and clerical staff rated their perceived level of competency as limited. VR leadership may want to consider targeted TBI training depending on role/level/type of interaction with individuals with TBI. Respondents generally rated themselves with a higher level of perceived competency in the areas of state and local systems, resources, and service coordination and national systems, research, and best practices. This may indicate that training opportunities are mostly adequate in these domains, though they may not be specific to serving people with TBI.

A recent study by Mackay et al. (2020), found no difference in overall closure rates between counselors with a master's degree in rehabilitation counseling (MRC) and counselors with a master's degree in related disciplines (RM). However, there were significant differences between the two in placing clients in high-quality jobs and jobs with higher living-wages, and slightly less than significant differences in placing clients in full-time jobs. The implication for VR practice is that counselors with MRC degrees are more likely to place clients in high-quality jobs (Mackay et al., 2020). The practice of hiring counselors with MRC degrees is therefore more in-line with the Rehabilitation Services Administration (RSA)'s mission to help individuals with disabilities achieve financial independence and integration into the community. It is important to point out that the effect sizes for the analyses examining MRC-RM differences were not large and they do not eliminate the need to hire counselors with RM degrees. Findings suggest that MRC-RM differences decrease as counselor experience increases. If agencies do hire inexperienced RM, it is recommended that on-the-job training may help counselors place clients in high-quality jobs (Mackay et al., 2020). Consistent with

our study, administrative and clerical staff reported limited TBI competencies, indicating the need for tailored and ongoing TBI trainings as well as targeted orientations prior to assuming a position within VR. The literature also suggests that VR services should be individualized to support the unique limitations experienced by individuals with TBI and encompass holistic needs as well as the employment demands of the job and work environment (Libeson et al., 2021).

5.1. Implications for rehabilitation counselor practice and training

According to the Commission on Rehabilitation Counselor Certification (CRCC), "rehabilitation counselors are the only professional counselors educated and trained at the graduate level specifically to serve individuals with disabilities. Through a comprehensive and unique counseling process, rehabilitation counselors help individuals who have disabilities set and achieve their personal, career, and independent living goals. They are the bridge between individual and self-sufficiency, helping them to live fully integrated lives" (2021).

Leahy and colleagues (2013) examined the major CRC job functions and knowledge domains required for the professional practice of rehabilitation counseling. They found that rehabilitation counseling practice and the service delivery environments and practice settings were rapidly changing (Leahy et al., 2013). Three major rehabilitation counselor job functions (job placement, vocational assessment, and career counseling; counseling, psychosocial interventions, and case management; and demand-side employment, workers' compensation, and forensic services) and four knowledge domains (job placement, consultation, and assessment; case management and community resources; individual, group, and family counseling and evidence-based practice; and medical, functional, and psychosocial aspects of disability) were identified. Results of a more recent study provide new empirical evidence of the knowledge base underlying the professional practice of rehabilitation counseling for CRCs across all clinical practice settings (Leahy et al., 2019).

Degeneffe & Grenawalt (2018) addressed the need for specialized training in working with persons with cognitive disabilities by describing the employment and lifestyle challenges they face. Cognitive disabilities present an emerging and ever-growing need for rehabilitation counselors. Persons with cognitive disabilities, which include autism spectrum disorder (ASD), intellectual disability (ID), acquired brain injury (ABI), and specific learning disabilities (SLD), face numerous challenges in attempting to secure and maintain employment, live independently, establish satisfying relationships, and experience an overall quality of life. In 2009, a Council on Rehabilitation Education (CORE) accredited master's program in Rehabilitation Counseling Education established a Cognitive Disabilities Certificate (CDC) to meet the emerging needs in rehabilitation counseling practice presented by clients with cognitive disabilities. However, as the number of persons with cognitive disabilities in the U.S. continues to rise, the demands for specialized training for rehabilitation counselors will be all the more needed (Degeneffe & Grenawalt, 2018).

The Certified Vocational Evaluator (CVE) credential has recently been revitalized by the CRCC, offering the opportunity for CRCs to once again become certified as vocational evaluators. Those rehabilitation professionals with a CVE have additional credentialing in the service delivery of vocational evaluations (Dillahunt-Aspillaga et al., 2015). Another credential currently available is the International Certified Vocational Evaluator credential (ICVE) with the Canadian College of Vocational Rehabilitation Professionals (CVRP) which is also supported by the Vocational Evaluation and Career Assessment Professional Association (VECAP).

Rehabilitation counselors are uniquely prepared for and experienced in service delivery to persons with disabilities (Moreno-Tucker et al., 2017). Career counseling skills are a core competency of rehabilitation counselors and they are well poised to skillfully convey assessment results to individuals, schools, and families in order to best inform decisions regarding rehabilitation planning. The clinical skills developed by rehabilitation counselors benefit not only adults with disabilities in their pursuit of obtaining employment, but young adults who are developing postsecondary transition goals (Moreno-Tucker et al., 2017).

5.2. Implications for training

Based on the recent literature and the results of our VRC self-assessment survey, VRC training in the domain of brain injury medical and rehabilitation concepts could include TBI screening (i.e., HELPS or the OSU TBI screening tool), implications of TBI as a chronic condition, pharmacology, best VR practices, and co-occurring disorders

(Corrigan & Hammond, 2013; Dillahunt-Aspillaga et al., 2015). VRC training in the employment domain could include accommodation, transitioning into employment, employment-related advocacy, legal remedies, factors contributing to poor employment outcomes, vocational assessment, workplace supports, and assistive technology recommendations (Catalano et al., 2006; Roessler et al., 2017; Rumrill Jr et al., 2019; Strauser et al., 2020). In the domain of state and local systems, resources, and service coordination VCR training could include state-specific initiatives and mandates (e.g., governor proclamations, priorities, goals). And finally, VRC training in the domain of national systems, research and best practice could include understanding evidence-based VR models for serving those with TBI.

The Workforce Innovation and Opportunity ACT (WIOA), enacted in 2014, made changes to the Rehabilitation Act of 1973, specifically setting minimal educational requirements, a bachelor's degree, for hiring VR counselors in states under the order of selection (McClanahan & Sligar, 2015; Sherman et al., 2017; Sherman et al., 2019). Counselor's with a Master's degree were found to have more successful client employment outcomes when they were serving consumers with severe disabilities (Fleming et al., 2013; McClanahan & Sligar, 2015). Findings in our study support the need for appropriate, master level, rehabilitation counselor formal education and training considering that many rehabilitation professionals posit WIOA has moved personnel into clinical roles where they may be working as non-proficient case managers who are not CRCs or CRC eligible (Chan et al., 2017; McCarthy & Leierer, 2001; McClanahan & Sligar, 2015; Sherman et al., 2019)

5.3. Limitations

Several characteristics of our study limit generalizability. VRCs in only four states were surveyed, which does not represent VRCs across the United States or take into account service delivery variability (e.g., hiring requirements, eligibility, services delivered) across VR agencies. Participants were not randomly selected. The survey did not include questions about certifications that VRCs held or ask about specialized training or knowledge in the area of brain injury. In our study there was reduced standardization of survey distribution methods. Some states limited the survey distribution to VRCs only (including intake coordinators). Some states' respondents included support staff, employment specialists, and supervisors. Leadership messaging about the survey was also not standardized (e.g., who should take the survey, whether or not work time could be used to complete the survey, etc.). Future studies are warranted to build upon this initial work examining VR TBI competencies.

6. Conclusions

Vocational rehabilitation providers' perceived level of TBI expertise and competence varies among individuals and across states, indicating a need for standardized professional education and training specific to TBI. Study findings may inform VR training, practice, and service delivery.

Supplementary material

The appendices are available in the electronic version of this article: https://dx.doi.org/10.3233/JVR221198.

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Conflict of interest

The authors declare that they have no conflict of interest.

Ethical approval

The study, as a minimal risk training-grant-funded survey, is exempt from Institutional Review Board approval.

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Informed consent

The study did not require informed consent.

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