

Alcohol-Related Cause of Spinal Cord Injury and the Impact on Service Recommendations

Matthew E. Sprong

Edward Hines Jr. VA Hospital

Emily A. Brinck

University of Wisconsin Madison

Heaven Hollender

Indiana University Purdue University Indianapolis

Frank D. Buono

Yale School of Medicine

Andrea Perkins Nerlich

Hofstra University

Healthcare professionals from whom clients might seek services should provide the best quality care regardless of biases, predispositions, worldview, and personal values. The purpose of this study was to explore how the perceived cause of spinal cord injury (SCI) affected service delivery recommendations from bachelor-level rehabilitation services trainees. Specifically, causal attribution of disability was the dependent variable in two case vignettes, one where the person was personally responsible for the cause of the SCI (i.e., driving under the influence, leading to a motor vehicle accident) and one with an external cause (i.e., motor vehicle accident caused by another driver). The impact on acute care, life-long care, and specific specialist recommendations was assessed. There was a significant difference in the scores for external cause ($M = 1.85$, $SD = .89$) and internal cause ($M = 1.4$, $SD = .60$) of SCI and recommendation for life-long care, $t(245) = 4.62$, $p = .000$. Acute care and specialist recommendations revealed no differences. Implications for training to address attitudes are discussed..

Keywords: *Causal Attribution, Attitudes toward Disability, Rehabilitation Services, Spinal Cord Injury*

Patients impart their highest trust in the health care professionals from whom they might seek services, to provide the best quality care regardless of biases, predispositions, worldview, and personal values. These medical, allied health, and counseling practitioners are bound by their respective codes of professional ethics to provide equitable treatment that does no harm and promotes well-being. However, human nature can make one vulnerable to personal perceptions steeped in stigma and prej-

udice, which influences professional actions. Both historical and current research has confirmed negative attitudes towards people with disabilities in general (Huskin et al., 2018; Werner, 2015), though negative biases are more intense for people viewed as being personally responsible for the cause of their own disability (Corrigan et al., 2003; Nerlich, 2018). In light of this, when personal perceptions meet professional conduct, how does this influence the provision of rehabilitation services?

Matthew E. Sprong, PhD, CRC, LCPC, CADC, CLCP, Edward Hines Jr. VA Hospital, 5000 S. 5th Ave., Hines, IL 60141 / Lock Haven University, 401 N. Fairview St., Lock Haven, PA 17745.

Email: matthew.sprong@va.gov

Attitudes and Stigma

At a basic level, attitudes are one's perception of a person or thing being favorable or unfavorable; these perceptions lend themselves to bias, prejudice, and stigma (Robb & Stone, 2016). Drawing its roots from social psychologist Erving Goffman (1963), stigma is a socially constructed mark of disgrace associated with

a particular quality of a person or a specific circumstance, leading to inferiority (Balhara et al., 2016). Stigma may influence the cognition, affect, and behavior of an individual (Huskin et al., 2018), and lead to negative consequences, such as reduced access to housing, education, and employment; poor mental health and decreased treatment seeking; and lower social status (Corrigan et al., 2014; Thornicroft et al., 2016). However, degree of stigmatization is often determined by the perceived responsibility of the individual and the impact of the attribute on the individual's level of social value, among other attributes (Hudson, 2011).

Bias toward stigmatized or marginalized groups is often characterized as explicit, consciously reported negative attitudes; however, individuals may also hold implicit, unconscious prejudices toward the same groups (Robb & Stone, 2016). Explicit attitudes are consciously accessed and controlled evaluations, especially when given the time and motivation to consider their influence (Wilson & Scior, 2015), as in the case of social desirability (Chen et al., 2011) or professionally appropriate behavior (Carrara et al., 2019). Conversely, when time or motivation is low, implicit attitudes may be activated automatically and unintentionally, resulting in impulsive cognitive processing and less deliberate behaviors (Wilson & Scior, 2015). These two frameworks occur as parallel, rather than independent processes. Given the often-marginalized status of people with disabilities, negative attitudes and stigma can be a common experience.

Attitudes toward Disability

Historically, persons with disabilities have been viewed as detrimental to society (Parker & Patterson, 2012), and negative attitudes, beliefs, and perceptions have contributed to them being relegated in education, healthcare, and employment settings (Friedman & VanPuymbrouck, 2019; Smart, 2016). Coined by Beatrice Wright (1988), this negative perception is termed the *fundamental negative bias*. Under this condition, disability—from the outsider's perspective—focuses on presumed negative qualities linked to it, overshadowing the positive (Dunn, 2016). The prevailing model of disability in professional research is the International Classification of Functioning, Disability, and Health (ICF), which recognizes the biopsychosocial dynamics of disability (World Health Organization, 2001). Despite this sweeping viewpoint, disability is still commonly considered a disorder or dysfunction located *within* an individual (Smart, 2016). Therefore, the behavior and outcomes for a person with a disability are then likely attributed to internal factors within one's control, rather than potential contextual influences—a concept referred to as *fundamental attribution error* (Dunn, 2016). From this perspective, a person's unemployment status is viewed as resulting from laziness rather than lack of accessibility or negative employer attitudes.

Causal Attributions and Disability

Malle (2011) suggested people attempt to assign causal attributions to behaviors and events. Heider (1958) originally coined the concept of "causal locus", referring to the notion that a person's behavior will be judged as being initiated internally or externally. Theorists (e.g., DeJong, 1980; Weiner, 1986, 2012) have proposed that people viewed as personally responsible for the cause of their disability will experience stigma to a higher degree than those not perceived as personally responsible. Individuals viewed

as unable to control their behaviors, such as those with mental health disorders, also experience a higher level of stigma (Weiner, 2012). When presented with disability, people tend to seek the cause; those perceived to have control in the situation are judged as responsible for the event, which affect emotional reactions (i.e., anger, pity) and behaviors (i.e., helping actions, social distance) on the part of the observer (Soffer, 2019). Similarly, those with symptoms and behaviors inferred to be more stable (i.e., not likely to improve) are treated with greater levels of stigma (Blundell et al., 2016).

The Correspondent Inference Theory is one explanation of the process of making negative attributions. In this theory, Jones and Davis (1965) proposed that consequences placed on the individual are based on internal and external causes, and the evaluator reviews the context of behavior based on (a) degree of choice, (b) expectedness of behavior, and (c) the effect of this behavior. It can be expected that if an individual is participating in a behavior viewed as deviant by society, less favoritism is displayed (Sprong et al., 2015). The emotional and behavioral implications of causal attribution are pertinent to the rehabilitation literature, as the attitudes of students-in-training and practitioners can influence the quality of professional decision-making and service delivery.

Attitudes of Students and Professionals toward Disability

Cohorts of postsecondary students and rehabilitation service professionals have traditionally been used to understand the impact of attitudes toward disabilities on emotional reactions and behaviors. One vein of literature investigates the reciprocal relationship of contact with people with disabilities on stigma attitudes (Huskin et al., 2018; Seo & Chen, 2009; Tu et al., 2019), as contact is theorized to influence prejudice (Blundell et al., 2016). Another line of research inquiry addresses the impact of causal attribution of disability on outcomes, such as stigma thoughts and behaviors. In a historical study conducted by Bordieri, Drehmer, and Cominell (1989), the effects of client attributions for the cause of their own disability were evaluated against perceived adjustment, coping, and rehabilitation prognosis using rehabilitation graduate students. Participants were randomly assigned to review one of three fabricated vocational evaluation reports (i.e., paraplegia due to an auto accident, a leg amputation due to cancer, and a heart attack due to hypertension), where attribution for the condition on the part of the client was ascribed to either self-blame (i.e., internal attribution) or chance-blame (i.e., external attribution). Key findings indicated more negative attention and bias developed when the person in the vignette was perceived to have greater responsibility for the cause of his disability. More recently, Araten-Bergman and Werner (2017) found mixed results for emotions and behaviors of social workers toward individuals with a dual diagnosis of intellectual and psychiatric disability. Biological and internal causes of disability were positively associated with segregation and coercion behaviors; these negative behaviors, in addition to segregation, were also positively correlated with the stereotype of dangerousness and the emotions of anger and fear. Those who reported feeling less anger and more pity towards clients tended to report higher levels of helping behavior.

Given the noted power of attitudes toward disability on behavior, especially relevant to causal attribution, it is imperative

to consider these thoughts and their outcomes on service delivery decisions for students in the field of rehabilitation. Williams et al. (2000) studied the influence of causal attribution on rehabilitation approach in a sample of undergraduate students. Four causes of disability were correlated to choice of rehabilitation approach (i.e., acceptance, retraining, medical intervention, removal of barriers), with open-ended questions addressing funding decisions and rationale employed in decision making. Cause was significantly related to choice of approach and rationale, though personal responsibility did not correlate to denying public funds. However, this study purposely did not sample students in counseling and psychology majors. More recently, Sprong and colleagues (2015) investigated the impact of causal attribution on service delivery recommendations in a sample of graduate-level rehabilitation students. They found services were less likely to be recommended for people viewed as personally responsible for the cause of their disability (i.e., alcohol-related) as compared to those who were not. Consequently, research has not yet observed the impact of causal attribution on services recommended by bachelor-level rehabilitation students.

Recent changes to undergraduate rehabilitation education have made it essential to begin to explore service delivery decision-making among this population. Accreditation of undergraduate rehabilitation services programs is being sought under the Commission on Accreditation of Allied Health Education Programs (CAAHEP), with calls for greater programmatic credibility and pedagogical approaches (Oswald et al., 2018). The 2014 Workforce Innovation and Opportunity Act (WIOA) reversed the minimum educational level for “qualified” state vocational rehabilitation (VR) counselors to a bachelor’s degree (McClanahan & Sligar, 2015), opening the door for greater employment opportunities with people with disabilities. To investigate decision-making ability, the purpose of this study was to explore how the perceived cause of SCI affected service delivery recommendations of undergraduate rehabilitation students.

According to the National Spinal Cord Injury Statistical Center (2018), the current incidence of spinal cord injury (SCI) in the U.S. is estimated between 247,000 to 358,000. Substance and alcohol use is a risk factor and comorbid condition for new cases of SCI (Eldridge et al., 2019; Davis et al., 2018). SCI was chosen as the target disability for this study for this reason. The following research questions guided the current study:

RQ1: What role does cause of SCI have on bachelor-level rehabilitation service trainees’ recommendations for acute care involving hospitalization immediately following an accident?

RQ2: What impact does cause of SCI have on bachelor-level rehabilitation service trainees’ recommendations for life-long care to prevent complications related to the SCI?

RQ3: What impact does cause of SCI have on bachelor-level rehabilitation service trainees’ recommendations of specific healthcare providers?

Methods

Participants

To be eligible for the study, participants had to be currently enrolled in an undergraduate major located in the College of

Health and Human Sciences (CHHS) at a Midwestern University (note: students not registered for classes were not contacted). Participants ($n = 247$) had a mean age of 23.06, were predominately female (84.7%) and White Non-Hispanic (49%), with the majority in their junior year (41.3%). All participants were enrolled in an undergraduate rehabilitation and disabilities studies major. Table 1 contains demographic information for the sample.

Materials/Procedures

Prior to collecting data from students, approval to conduct research was obtained from the Institutional Review Board of the primary author (HS18-0115). Data collection procedures included an email sent to all undergraduate students enrolled in an academic major in CHHS for the spring semester 2018. A CHHS program assistant emailed the recruitment message to all undergraduate students within the College. Students were informed they would be evaluated on services they would recommend for an individual with a SCI based on their educational and/or professional-related experience. Furthermore, the recruitment message indicated participants were allowed to discontinue at any time during the survey and no identifying information would be collected. Students could choose to participate by entering the survey through a Qualtrics link.

The survey contained a welcome paragraph explaining: their rights when participating in the study, the purpose of the study, their role in the study, the right to discontinue at any time, and confidentiality assurance. Informed consent was implied by clicking to begin the survey. Participants were randomly assigned to one of two conditions (i.e., external cause of SCI, internal cause of SCI). After reviewing the scenario, students were instructed to answer the questions with the scales provided. When complete, participants were directed to a new survey link to allow them to enter their email for a drawing (chance to win a \$200 gift card).

Two hypothetical scenarios were developed for the study. Each described R. Smith, a 32-year-old individual with a high school diploma and a SCI. The only difference within each scenario was the cause of disability. In Scenario 1, the cause of disability was attributed to another person, whereas the cause of disability in Scenario 2 was attributed to the hypothetical individual

Table 1

Demographic Information of Study Participants

	n	%
Gender		
Male	33	13.3%
Female	209	84.7%
Race		
American Indian-Alaskan Native	0	0.00%
Asian	20	8.10%
Black (non-Hispanic)	30	12.1%
Hispanic	45	18.2%
Native Hawaiian/Pacific Islander	0	0.00%
White (non-Hispanic)	121	49.0%
Academic Standing		
Freshmen	20	8.10%
Sophomore	26	10.5%
Juniors	102	41.3%
Seniors	74	30.0%

(see Appendix A). Following the scenario, participants were asked three questions. The first question asked participants, based educational and/or professional experience, whether they believed R. Smith would require acute care involving hospitalization with a trauma center immediately following his accident. Participants could choose a *yes* or *no* response. The second question requested participants to rank how likely they were in recommending life-long care to prevent complications related to the newly acquired SCI. Participants were presented with six options, ranging from *extremely unlikely* to *extremely likely*. Finally, participants were presented with eight different specialists from which a person with a SCI may need services (i.e., primary care physician, occupational therapist) and were asked to rate their level of agreement on a 6-point Likert scale (1 = *strongly disagree* to 6 = *strongly agree*) as to whether they would recommend services from such a specialist.

Results

Prior to conducting statistical analyses, assumptions were checked for the Chi-square test, which include: a large enough sample size, adequate cell counts, the observations are independent of each other, and a simple random sample was used. All of the assumptions were met with the exception of the simple random sample. Students enrolled in an undergraduate major in CHHS were targeted and randomly assigned to a condition. In addition to assumption testing for the Chi-square test, assumption testing was conducted for a t-test for independent groups. These assumptions include: the populations from which the sample has been drawn are normal (normal distribution), the standard deviation of the populations should be equal, and the samples are randomly drawn independent of each other. All assumptions were met.

Cause of SCI and Recommendations for Acute Care

A two-way contingency table analysis was conducted for both cause of SCI (i.e., *yes* or *no*) and whether a rehabilitation services trainee would recommend acute care involving hospitalization immediately following a motor vehicle accident. Results displayed no statistically significant differences between the cause of SCI and recommendation for acute care, Pearson $\chi^2(1, N=239) = .023$, $p = .880$.

Cause of SCI and Recommendations for Life-Long Care

A t-test for independent groups was conducted to determine if cause of SCI influenced a rehabilitation service trainee's recommendation for life-long care. There was a significant difference in the scores for external cause ($M = 1.85$, $SD = .890$) and internal cause ($M = 1.40$, $SD = .603$) of SCI and recommendation for life-long care, $t(245) = 4.622$, $p = .000$. Specifically, the results indicated rehabilitation service trainees were less likely to recommend life-long for a person with an internal cause of SCI (i.e., driving while intoxicated causing the accident).

Cause of SCI and Recommendations for Specific Healthcare Providers

A series of t-tests for independent groups was conducted to determine if the cause of SCI affected recommendations for specific specialists a person with a SCI might need. A Bonferroni correction was utilized to protect from the likelihood of making a type I error due to conducting multiple t-tests. The p-value of .05 was divided by 8, the number of t-tests conducted. The new p-value was .00625. As shown in Table 2, there were no significant differences between services recommended for the hypothetical individual in each of the scenarios.

Discussion

The purpose of the current study was to investigate how perceptions toward the cause of SCI influenced service delivery recommendations among bachelor-level rehabilitation service trainees. While persons with uncontrollable disabilities (e.g., SCI) are less likely to be subjected to negative bias, those who are perceived to be complicit in the cause of their condition (e.g., substance use disorder; SUD) are often stigmatized. Negative perceptions rooted in causal attribution can lead to discrimination of people with disabilities in major life activities, such as employment, housing, and education, as well as the provision of appropriate services. Bordieri and Drehmer (1988) found a moderate positive relationship ($r = .38$) between external attribution for an applicant's disability and employment selection evaluation. Attitudes of health professionals can also affect the outcomes of individuals with disabilities. In a meta-analysis of attitudes of health professionals toward people with SUD, findings indicated negative attitudes by providers resulted in decreased likelihood of treatment completion, lower levels of patient empowerment, and impeded collaboration with the patient (van Boeckel et al., 2013).

Attention must be given to disability perceptions of human service professionals- and counselors-in-training to safeguard unbiased future service provision. In this study, students showed no difference in endorsing acute, likely *live-saving*, services following an accident with respect to the two attribution vignettes.

	Cause of SCI				T-test	
	External		Internal		t	Sig.
	M	SD	M	SD		
Primary Care Physician <i>Routine Check-ups</i>	5.20	1.31	5.32	1.18	-.782	.435
General Surgeon <i>Monitor Pilonidal Cysts and other Wound Care to Prevent Infection</i>	4.82	1.38	4.78	1.34	.217	.829
Plastic Surgeon <i>Monitor Skin Complications</i>	4.16	1.53	3.89	1.39	1.46	.146
Podiatrist <i>Foot care including nail cleaning/cutting to prevent deep vein thrombosis</i>	4.68	1.39	4.27	1.61	2.15	.032
Urologist and Urinalysis <i>Detect Urinary Tract Infection and Routine Neurogenic Bladder Evaluation</i>	4.65	1.42	4.67	1.53	-.109	.913
Dietitian / Nutritionist <i>Assist in weight management</i>	4.70	1.30	4.48	1.42	1.28	.202
Physical Therapist <i>Maintain strength and mobility in joints</i>	5.48	1.12	5.59	.912	-.737	.462
Occupational Therapist <i>Increase independent functioning, such as brushing teeth, showering, shaving, bathroom</i>	5.41	1.16	5.43	1.09	-.137	.891

Note. Degrees of freedom = 245

However, despite showing no difference in the types of services/specialists perceived to be valuable to care, bias in service selection based on causation was not mitigated when longer-term, life-enhancing services were considered. This could be related to principles of *distributive justice* (Wasserman, 1998), feeling those not responsible for causing their disability should benefit from access to equitable quality and quantity of service options. Sprong and colleagues (2015) found a similar level of bias for service provision in a group of students in graduate rehabilitation programs.

In comparing undergraduate and graduate students on professional decision-making bias from causal attribution, it does not appear level of education was a relevant factor. This does not seem consistent with the body of literature citing this as a moderating factor against negative perceptions and behavior. In early research, Yunker and Block (1986) found a positive correlation between education and positive attitudes toward persons with disabilities in a meta-analytic study. Kopera and colleagues (2015) found mental health professionals reported significantly higher approach emotions towards people with mental health disorders and lesser tendency toward discrimination and restrictive attitudes compared to non-professionals. Maier et al. (2015) reported positive attitudes toward depression and post-traumatic stress disorder were correlated to level of professional training, as well as experience. Others have found disability-specific training was not predictive of more positive perceptions and less stigma (Seo & Chen, 2009; Tu et al., 2019), though these studies did not target rehabilitation majors. The results of this study demonstrate bias in service recommendations based on causal attribution, but do not present a definitive case for bias differences among undergraduate and graduate rehabilitation students compared to similar studies.

Implications for Rehabilitation Practice and Research

Given the variable impact of education on attitudes, there are potential approaches to improve the preparation of rehabilitation services trainees to ameliorate the effects of disability-related bias. The variation found among studies can perhaps be related to two factors: curricular approaches and the source of bias. In considering disability-specific education, the focus should be on the quality of the training to influence perceptions, as general presence or level of training did not appear to have a universal impact. This is worthwhile to consider in advocating for graduate-level training for those providing decision-making and approval for services. First, graduate programs require more situational and fieldwork components to the curriculum. Contact theory posits positive contact with stigmatized groups generally improves attitudes and perceptions toward that group (Barr & Bracchitta, 2015). Regular frequency of contact is not the primary indicator of improved attitudes, but rather the quality of the contact and increasing levels of intimacy (Blundell et al., 2016; Huskin et al., 2018). The length and requirements for supervision of graduate-level practica and internships allow for depth and quality of relationship building with a broad group of people with disabilities. Fieldwork experiences at the undergraduate level are typically not as long and students are often relegated to observational and assistance duties.

Additionally, education in graduate programs engages learners at a deeper level of cognitive skill (Stanny, 2016) and students tend to be focused exclusively on their major of study, rather than

incorporating liberal arts components. Moving along Bloom's taxonomy (1975), one might primarily address *remembering*, *understanding*, and *applying* at the undergraduate level, while tackling *analyzing*, *evaluating*, and *creating* more often in the graduate context. An emphasis on process over content may have more favorable and lasting impact on attitude formation. While contact has a bigger impact than education in reducing stigma for adults (Corrigan et al., 2012), using a combination of content, case application, and clinical practice to address consumer-centered care combines these factors in a meaningful way. Approaches such as the Recovery Education in the Academy (REAP; Razzano et al., 2010) and problem-based learning (Yew & Goh, 2016) are models for this.

Learning at a deeper level will likely also have a greater impact on explicit attitudes toward disability, addressing the second factor—source of bias. Negative explicit attitudes are related to increased social distance from people with disabilities (Wilson & Scior, 2015), but contact with the population can reduce prejudice and promote positive language and perceptions of disability (Bilka et al., 2017; McCallister et al., 2014). Studies reveal those with and without disability-specific training can hold negative implicit attitudes (Kopera et al., 2015), though individuals with training exhibit more approach behaviors. Implicit attitudes may be less susceptible to change since they may derive from long-term, deep-seated values. Intensive clinical training can influence the *controllability* of responses to those attitudes on the part of rehabilitation professions. However, perspective taking, such as the mine/thine problem originally introduced by Wright (1983), could reduce perceptions as an outside observer to the disability experience, decreasing the likelihood of negative reactions (e.g., pity, sympathy, insincerity) toward people with disabilities (Dunn et al., 2012). Further investigation on the impact of implicit and explicit attitudes of students and professionals is necessary to transform curricular programming and clinical experiences to address them.

Study Limitations

The current study had three main limitations. First, a case vignette was used as the stimulus for responses, which can be a one-dimensional representation. Case vignette research may not represent actual biases towards an individual (Flyvberg, 2006). When rehabilitation professionals work with consumers who present situations similar to the case vignette (i.e., alcohol-related cause of disability), service recommendations in actual practice may be different from those reported here. Second, this study only assessed variables related to explicit attitudes, which are susceptible to social desirability. Therefore, the accuracy of these attitudes, especially how they differ from implicit attitudes, cannot be determined. Third, the population from which the study was sampled was a single institution in the Midwest. Although there is varied representation based on race and educational standing, these results may not be generalizable to other populations.

Conclusions

Attribution for cause of disability can influence the decision-making and service selection if practitioners are not aware of these biases. These findings were not different from those with studies involving graduate students, which indicate level of prepa-

ration might not be the factor in addressing bias. Concerted effort is necessary to address bias at both levels to safeguard the treatment and service provision to people with disabilities, though graduate training programs could be a stronger venue for this given the depth and focus of the instruction.

References

- Araten-Bergman, T., & Werner, S. (2017). Social workers' attributions towards individuals with dual diagnosis of intellectual disability and mental illness. *Journal of Intellectual Disability Research, 61*(2), 155-167.
- Balhara, Y. P. S., Parmar, A., Sarkar, S., & Verma, R. (2016). Stigma in dual diagnosis: A narrative review. *Indian Journal of Social Psychiatry, 32*(2), 128-133.
- Barr, J. J., & Bracchitta, K. (2015). Attitudes toward individuals with disabilities: The effects of contact with different disability types. *Current Psychology, 34*(2), 223-238.
- Bialka, C. S., Brown, K. S., Morro, D., & Hannah, G. (2017). On their LEVEL: How participation in a university student group shapes members' perceptions of disability. *Journal of Diversity in Higher Education, 10*(2), 117-135.
- Bloom, B. S. (1975). *Taxonomy of educational objectives: Book I—Cognitive domain*. Longman.
- Blundell, R., Das, R., Potts, H., & Scior, K. (2016). The association between contact and intellectual disability literacy, causal attributions and stigma. *Journal of Intellectual Disability Research, 60*(3), 218-227.
- Bordieri, J. E., & Drehmer, D. (1988). Causal attribution and hiring recommendations for disabled job applicants. *Rehabilitation Psychology, 33*(4), 239-247.
- Bordieri, J. E., Drehmer, D. E., & Cominell, M. E. (1989). Attribution of responsibility and hiring recommendations for job applicants with low back pain. *Rehabilitation Counseling Bulletin, 32*(3), 140-149.
- Carrara, B. S., Ventura, C. A. A., Bobbili, S. J., Jacobina, O. M. P., Khenti, A., & Mendes, I. A. C. (2019). Stigma in health professionals towards people with mental illness: An integrative review. *Archives of Psychiatric Nursing, 33*(4), 311-318.
- Chen, S., Ma, L., & Zhang, J-X. (2011). Chinese undergraduates' explicit and implicit attitudes toward persons with disabilities. *Rehabilitation Counseling Bulletin, 55*(1), 38-45.
- Committee on Accreditation of Allied Health Education Programs. (n.d.) *Committee on rehabilitation accreditation*. <https://www.caahep.org/About-CAAHEP/Committees-on-Accreditation/Rehabilitation-Disability-Studies.aspx>
- Corrigan, P. W., Druss, B. G., & Perlick, D. A. (2014). The impact of mental illness stigma on seeking and participating in health care. *Psychological Science in the Public Interest, 15*(2), 37-70.
- Corrigan, P. W., Markowitz, F. E., Watson, A., Rowan, D., & Kubiak, M. A. (2003). An attribution model of public discrimination towards persons with mental illness. *Journal of Health and Social Behavior, 44*(2), 162-179.
- Corrigan, P. W., Morris, S. B., Michaels, P. J., Rafacz, J. D., & Rüsich, N. (2012). Challenging the public stigma of mental illness: A meta-analysis of outcome studies. *Psychiatric Services, 63*(10), 963-973.
- Davis, J. F., Cao, Y., & Krause, J. S. (2018). Changes in alcohol use after the onset of spinal cord injury. *The Journal of Spinal Cord Medicine, 41*(2), 230-237.
- Dejong, W. (1980). The stigma of obesity: The consequences of naive assumptions concerning the causes of physical deviance. *Journal of Health and Social Behavior, 21*(1), 75-87.
- Dunn, D. S. (2016). Teaching about psychosocial aspects of disability: Emphasizing person-environment relations. *Teaching of Psychology, 43*(3), 255-262.
- Dunn, D. S., Fisher, D. J., & Beard, B. M. (2012). Revisiting the mine/thine problem: A sensitizing exercise for clinic, classroom, and attributional research. *Rehabilitation Psychology, 57*(2), 113-123.
- Eldridge, L. A., Piatt, J. A., Agle, J., & Gerke, S. (2019). Relationship between substance use and the onset of spinal cord injuries: A medical chart review. *Top Spinal Cord Injury Rehabilitation, 25*(4), 316-321.
- Flyvberg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry, 12*(2), 219-245.
- Friedman, C., & VanPuymbrouck, L. (2019). The relationship between disability prejudice and Medicaid home and community-based services spending. *Disability and Health Journal, 12*(3), 359-365.
- Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. Prentice-Hall.
- Heider, F. (1958). *The psychology of interpersonal relations*. Wiley & Sons.
- Hudson, J. (2011). The disclosure process of an invisible stigmatized identity. Theses and Dissertations. Paper 93. <http://via.library.depaul.edu/etd/93>
- Huskin, P. R., Reiser-Robbins, C., & Kwon, S. (2018). Attitudes of undergraduate students toward persons with disabilities: Exploring effects of contact experience on social distance across ten disability types. *Rehabilitation Counseling Bulletin, 62*(1), 53-63.
- Jones, E. E., & Davis, K. E. (1965). From acts to dispositions: The attribution process in social psychology. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 2, pp. 219-266). Academic Press.
- Kopera, M., Suszek, H., Bonar, E., Myszka, M., Gmaj, B., Ilgen, M., & Wojnar, M. (2015). Evaluating explicit and implicit stigma of mental illness in mental health professionals and medical students. *Community Mental Health Journal, 51*(5), 628-634.
- Maier, T., Moergeli, H., Kohler, M., Carraro, G. E., & Schnyder, U. (2015). Mental health professionals' attitudes toward patients with PTSD and depression. *European Journal of Psychotraumatology, 6*.
- Malle, B. F. (2011). Attribution theories: How people make sense of behavior. In D. Chadee (Ed.), *Theories in social psychology* (pp. 72-95). Wiley-Blackwell.
- McCallister, L., Wilson, K., & Baker, J. (2014). An examination of graduate students' perceptions toward students with disabilities. *The Journal of Faculty Development, 28*(2), 19-26.

- McClanahan, M. L., & Sligar, S. R. (2015). Adapting to WIOA 2014 minimum education requirements for vocational rehabilitation counselors. *Journal of Rehabilitation, 81*(3), 3-8.
- National Spinal Cord Injury Statistical Center. (2018). *Spinal cord injury facts and figures at a glance*. <https://www.nscisc.uab.edu/Public/Facts%20and%20Figures%20-%202018.pdf>
- Nerlich, A. P. (2018). Understanding disability from a psychosocial and psychological perspective. In A. P. Nerlich & K. M. Glynn (Eds.), *Psychology of disability* (2nd ed., pp. 1-35). Aspen Professional Services.
- Oswald, G., Huck, G., & Duncan, J. C. (2018). The state of undergraduate rehabilitation education: Current program coordinator perspectives. *Rehabilitation Research, Policy, and Education, 32*(4), 253-261.
- Parker, R. M., & Patterson, J. B. (2012). *Rehabilitation counseling: Basics and beyond* (5th ed.). PRO-ED.
- Razzano, L. A., Jonikas, J. A., Goelitz, M. A., Hamilton, M. M., Marvin, R., Jones-Martinez, N., Ortiz, D., Garrido, M., & Cook, J. A. (2010). The Recovery Education in the Academy Program: Transforming academic curricula with the principles of recovery and self-determination. *Psychiatric Rehabilitation Journal, 34*(2), 130-136.
- Robb, J., & Stone, J. (2016). Implicit bias toward people with mental illness: A systematic literature review. *Journal of Rehabilitation, 82*(4), 3-13.
- Seo, W., & Chen, R. K. (2009). Attitudes of college students toward people with disabilities. *Journal of Applied Rehabilitation Counseling, 40*(4), 3-8.
- Smart, J. (2016). *Disability, society, and the individual* (3rd ed.). Pro-ed.
- Soffer, M. (2019). Culture, causal attributions to visual impairments, and stigma: A mediation model. *Disability and Health Journal, 12*(3), 437-442.
- Sprong, M. E., Dallas, B., Upton, T. D., & Bordieri, J. (2015). The influence of race, causal attribution, and in-group favoritism on recommendations for rehabilitation services. *Rehabilitation Counseling Bulletin, 58*(4), 227-239.
- Stanny, C. J. (2016). Reevaluating Bloom's taxonomy: What measurable verbs can and cannot say about student learning. *Education Science, 6*(37).
- Thornicroft, G., Mehta, N., Clement, S., Evans-Lacko, S., Doherty, M., Rose, D., Koschorke, M., Shidhaye, R., O'Reilly, C., & Henderson, C. (2016). Evidence for effective interventions to reduce mental-health-related stigma and discrimination. *Lancet, 387*(10023), 1123-1132.
- Tu, W-M., Watts, J., Yang, C., Li, Q., Umucu, E., & Marini, I. (2019). The effect of empathy on stigma toward students with substance use disorders in college settings. *Journal of Applied Rehabilitation Counseling, 50*(4), 311-330.
- van Boeckel, L. C., Brouwers, E. P. M., van Weeghel, J., & Garretsen, H. F. L. (2013). Stigma among health professionals towards patients with substance use disorders and its consequences for healthcare delivery. *Drug and Alcohol Dependence, 131*(1-2), 23-35.
- Wasserman, D. (1998). Distributive justice. In A. Silvers, D. Wasserman, & M. B. Wahowald, *Disability, difference, discrimination: Perspectives on justice in bioethics and public policy* (pp. 147-207). Rowman & Littlefield.
- Weiner, B. (1986). *An attributional theory of motivation and emotion*. Springer.
- Weiner, B. (2012). An attribution theory of motivation. In P. A. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 135-55). SAGE Publications Ltd
- Werner, S. (2015) Stigma in the area of intellectual disabilities: Examining a conceptual model of public stigma. *American Journal on Intellectual and Developmental Disabilities, 120*(5), 460-475.
- Williams, D. T., Hershenson, D. B., Fabian, E. S. (2000). Causal attributions of disabilities and the choice of rehabilitation approach. *Rehabilitation Counseling Bulletin, 43*(2), 106-112.
- Wilson, M. C., & Scior, K. (2015). Implicit attitudes toward people with intellectual disabilities: Their relationship with explicit attitudes, social distance, emotions and contact. *PLoS ONE, 10*(9).
- World Health Organization. (2001). International classification of functioning, disability, and health. Author.
- Wright, B. (1983). *Physical disability: A psychosocial approach* (2nd ed.). Harper & Row.
- Yew, E. H. J., & Goh, K. (2016). Problem-based learning: An overview of its process and impact on learning. *Health Professions Education, 2*(2), 75-79.
- Yuker, H. E., & Block, J. R. (1986). Research with the Attitude Toward Disabled Persons scales (ATDP) 1960-1985. Hofstra University.

Appendix A

Study Case Scenarios

Scenario #1: R. Smith is 32 years of age, has a high school education, and was involved in a motor vehicle accident resulting in a complete SCI at the T-5 level (permanent loss of ability to send sensory and motor nerve impulses below the level of injury). This has resulted in the inability to walk and a manual wheelchair is required to help with mobility. R. Smith's injury was acquired after a driver who was intoxicated drove through a red light resulting in a head-on collision with R. Smith's vehicle. R. Smith has two children, a 10-year-old and a 13-year-old.

Scenario #2: R. Smith is 32 years of age, has a high school education, and was involved in a motor vehicle accident resulting in a complete SCI at the T-5 level (permanent loss of ability to send sensory and motor nerve impulses below the level of injury). This has resulted in the inability to walk and a manual wheelchair is required to help with mobility. R. Smith's injury was acquired while driving intoxicated through a red light, which resulted in a head-on collision with another vehicle. R. Smith has two children, a 10-year-old and a 13-year-old.