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Editorial

Chrisann Schiro-Geist

ABVE Members-

All I can say about this issue is WOW! Scott B. has brought us another of his spectacular earnings pieces, based on REAL DATA from our OWN members! Pay attention to his article, and think about how this impacts you.

Ron has done a sterling job, as always, on issues related to functional capacity evaluations. This is a real "bread and butter" piece, when it comes to testimony.

Chris Skerritt has informed us on one of the hottest, most timely topics of the day – artificial intelligence and its impact on ETHICS. We need to know about this as vocational professionals!!!

The University of Memphis Research Group has brought us up to a better understanding of family dynamics. We also have a book review from one of The University of Memphis Research Group's assistants to guide us in our selection of reading.

Thanks to all our contributors! We are looking forward to giving you more direction in the next issue on how to make your contributions to the field relevant to JFVA and other scholarly journals. This is a time to reconcile divisions concerning our purpose as an organization, to grow as an organization, and ultimately to improve our work. This year, within ABVE, let's make strides to work together.

Sincerely,

Chris Schiro-Geist

Longitudinal Critique of the American Community Survey as a Valid Instrument for Estimating Future Earning Capacity

Scott Beveridge

George Washington University

Abstract. The primary purpose of this longitudinal mixed-methods study was to examine the utilization of the American Community Survey (ACS) and determine if it was a reliable and valid methodology to estimate the earnings capacity of individuals who are completing a vocational evaluation. The sample for this follow-up study consisted of 202 participants who were all rehabilitation practitioners working with persons with disabilities. The survey instrument for this study was created in 2016 by the researcher in collaboration with a Delphi Panel, consisting of ten forensic vocational experts with a mean of 31.13 years of clinical experience. Participants were asked to describe the economic effect of experiencing a disability as defined by the ACS on their earnings capacity. Prior peer-reviewed research has determined that earnings capacity and worklife expectancy models are empirically invalid, as they are built on the assumption that census and ACS disability measures reflect permanent conditions despite the fact that individuals can transition into and out of a disability. The results of the current study found that participants who reported experiencing a disability according to the ACS definition had higher average earnings when compared to those who never experienced a disability, $163,618 vs. $140,320, respectively. A prior research effort with the same instrument also found that participants who reported a disability according to the ACS definition did not experience a loss of earnings capacity (Beveridge & DiNardo, 2017). Thus, this longitudinal research shows that utilizing ACS survey data, designed for macroeconomic policy decisions for vocational evaluation in the (N=1) context and operating under the assumption, "once disabled always disabled," will produce spurious conclusions. Only when the specific conditions of an individual are evaluated at the micro level (e.g., educational attainment, familial history, intelligence and personality testing data, medical and psychological evidence) can the degree of disability and other confounding variables be properly accounted for in a vocational evaluation.

Keywords: vocational evaluation, American Community Survey, earnings capacity

Longitudinal Critique of the American Community Survey as a Valid Instrument for Estimating Future Earning Capacity

This longitudinal research effort examines utilization of the American Community Survey (ACS) as an instrument to estimate future earning capacity. It has been found from prior longitudinal research on the ACS, the Current Population Survey (CPS), and the Survey on Income Program Participation (SIPP) that census-measured disability is largely transitory (Krueger & Skoog, 2015). Several economic researchers have posited that any worklife expectancy model that assumes census-disability

measures to be permanent conditions is empirically invalid (Jones, 2006; Krueger & Skoog, 2015). These findings confirm the longstanding objections to the use of census data as a valid instrument to estimate future earning capacity.

Literature Review

The United States Government conducts a number of surveys in order to produce data that illustrates the impact of disability on the lives of individuals. These surveys examine employment, worklife, and income among various populations (Jones, 2005; U.S. Census Bureau, 2018). Among these surveys, some of the most widely referenced are the Current Populations Survey (CPS), the Survey of Income and Program Participation (SIPP), the Veterans' Administration disability rating schedule, the National Health Interview Survey on Disability (NHIS-D), and the decennial census. Each of these surveys has been widely reviewed and sometimes criticized by professionals within many fields (e.g., rehabilitation counseling, economics, life care planning) who seek to apply the findings in clinical practice or in research. The CPS, for example, has been shown to be highly subjective, with individuals who have very similar disabilities sometimes being categorized differently through the survey (Rones, 1982; Ward et al., 2017).

SIPP, although less subjective in its categorization of individuals, has been demonstrated to have low reliability and validity (Jones, 2005, 2006; Rones, 1982; Spizman, 2013). Many of these surveys are also problematic in the area of disability services as they categorize individuals as either employable or disabled, suggesting that it is never possible for those with disabilities to be employable. This assumption ignores the purpose of rehabilitation counseling and vocational rehabilitation, which is to assist persons with disabilities to return to gainful employment via a rehabilitation plan or individualized plan for employment (IPE). For this reason, government surveys designed for macroeconomic policy purposes cannot reliably demonstrate the relationship between unemployment and future earnings capacity for a specific individual in a (N=1) context.

Development of the American Community Survey

As a response to this criticism and the need for more reliable surveys related to disability, the ACS was developed as an extension of the decennial census (Jones, 2006). The United States Census Bureau first conducted the ACS in 2000 as a method of collecting data about earnings and employment for individuals with various types of disability (Gamboa et al., 2006). After the ACS was introduced, it would take another decade for the data gathered to be compiled and made readily available to researchers and rehabilitation counselors in clinical practice (Donnelly, 2013). Over the last several years, the ACS questions regarding disability have been revised, specifically in 2005 and 2008. The questions regarding disability in the ACS are highly subjective and can be completed by someone other than the individual in question. Further, the responses to these questions are based upon individuals' opinions and not on medical evidence, thus the reliability and validity of the survey is questionable.

Between 2000 and 2006, the questionnaires utilized in the decennial Census and the ACS included six disability topics covered by three questions (each with two subparts for persons over five years of age). The first question asked (a) whether the participant had any conditions such as blindness, deafness, or severe vision or hearing impairment, and (b) whether they had a condition that substantially limited basic physical activity. The second question asked whether the individual had a condition that caused difficulty in (a) learning, remembering, or concentrating, or (b) dressing, bathing, or getting around inside the home. A third question was directed at persons 16 or older and asked whether the participant had any condition causing difficulty (a) going outside their home alone to shop or visiting a doctor's office, or (b) working at a job or business (U.S. Census, 2017). Researchers reacted with significant dissatisfaction to these three disability questions, which led to the creation of the office of management and budget (OMB) interagency committee for the ACS, which then led to the initiation of an ACS subcommittee on disability measurement. From January to March of 2006, tests were con-

ducted on new and modified survey disability questions and content. In 2008, this resulted in a report called the 2006 ACS content test, which resulted in changes to the ACS questions related to disability. These questions became known as the census six disability questions (ACS-6), which included hearing, vision, cognitive, ambulatory, self-care, and independent living. The ACS-6 have binary, yes/no outcomes, so there is only one way for a respondent to answer these questions (Krueger & Skoog, 2015).

Table 1

Percentage of Persons with and Number of Reported Disabilities by Census Survey

American Community Survey	Number of Disabilities						
	1	2	3	4	5	6	ALL
Any disability	50.2%	22.4%	14.0%	8.5%	3.4%	1.5%	100.0%
Hearing	47.0	18.5	12.0	9.6	7.8	5.1	100.0
Vision	29.1	20.7	16.0	13.7	12.0	8.5	100.0
Cognitive	24.9	25.1	17.7	19.0	8.8	4.5	100.0
Ambulatory	32.7	23.9	20.7	14.2	5.9	2.7	100.0
Self-Care	2.9	11.0	33.1	30.9	14.5	7.5	100.0
Independent Living	8.6	29.1	20.5	20.5	8.7	4.0	100.0

The Census Six questions were added to the public ACS data in 2009. Table 1 depicts the ACS data from 2009-2013, which shows that 50.2% of respondents indicated that they had a disability. The majority of these respondents indicated that they had a hearing disability (47%), followed by ambulatory (32.7%), vision (29.1%), cognitive (24.9%), independent living (8.6%) and self-care (2.9%). The table also indicates the prevalence of the number of coexisting disabilities (ranging from 1 to 6). The primary binary question that the ACS utilizes, 19a, attempts to capture an individual's disability status, asking: *"Because of a physical, mental or emotional condition, does this person have serious difficulty concentrating, remembering or making decisions? Yes / No."* The ACS data comes to bear on U.S. policy decisions and is frequently cited as justification for the practice of rehabilitation counseling. Despite its weaknesses, the ACS does attempt to demonstrate the fact that disability affects both earnings and worklife expectancy. Findings from the ACS and other surveys (CPS, SIPP, NHIS, etc.) have contributed to the passage of the Americans with Disabilities Act (ADA) and the creation of the U.S. Department of Labor's Office of Disability Employment Policy (Gamboa et al., 2006).

Format of the American Community Survey

The ACS is a lengthy survey comprising 48 questions, many of which contain multiple sub-questions (U.S. Bureau of the Census, 2018). Of these 48 questions, there are six that specifically pertain to perceived disability status (e.g., ACS-6). As mentioned previously, the ACS-6 includes the following categories of limitations: sensory, physical, mental, self-care, difficulty going outside, and employment. According to the ACS, any individual over the age of five "having difficulty learning, remembering, or concentrating" lasting six months or more, may be categorized as having a mental disability (Jones, 2006; Gamboa et al., 2006). These definitions of "mental disability" correspond with those used by the ADA and other rehabilitation services.

ACS data is reported by gender and education level and is divided by those with and without disability. According to ACS, level of employment is defined by worklife expectancy and takes into account current employment status (Gamboa et al., 2006, 2009). Worklife expectancy is derived by summing probabilities of life, participation, and employment (e.g., P(A or B) = P(A) + P(B) - P(A and B); LPE) from the starting age through age 89. This method was first introduced by Brookshire and Cobb (1983), and it was later adjusted by Brookshire et al. to include individuals with disabilities (1987). It is now a measurement used by some researchers and forensic rehabilitation counselors to determine expected outcomes for consumers with disabilities (Houtenville et al., 2009). The data presented by the ACS can be useful in highlighting the earning loss of individuals with disabilities and has been used in many areas by other vocational experts (Gamboa et al., 2009; Krueger & Skoog, 2015).

Criticism of the American Community Survey

Data provided by the ACS is occasionally regarded as the only tool of its kind in terms of assessing disability and expected earning potential by some plaintiff's vocational experts. Yet this fact alone does not justify its use for this purpose. The federal government did not create the ACS to be utilized in the individual (N=1) context, rather it was designed to be used for macroeconomic policy decisions (McNeil, 2000; Jones, 2006; Krueger & Skoog, 2015; U. S. Census, 2017). There simply is not sufficient evidence to demonstrate that the data from the ACS provides accurate estimates of future earnings capacity or employability for an individual. Various reports from the National Council on Disability (NCD) have shown that the findings of the 2000 and 2010 census are also highly questionable in terms of methodology and validity (NCD Executive Summary, 2015).

The broad definitions used within the ACS become problematic when applied to specific individuals with specific injuries and rehabilitative needs (Boos et al., 2009). The definition for mental disability, for example, "difficulty learning, remembering, or concentrating," may also describe individuals with traumatic brain injury (TBI), who often require nuanced understanding of rehabilitative needs to ensure effective treatment (Gamboa et al., 2006). Similarly, the definition of "difficulty going outside" holds room for misinterpretation. If an individual works primarily from home (e.g., web designer, customer service representative), current ACS criteria would assume that the individual works primarily from home because they are disabled and unable to work outside of the home. Further, individuals who have sustained a non-permanent injury (e.g., automobile accident) would also likely be incorrectly categorized by the definitions provided by the ACS. Individuals who are experiencing a temporary disability, completing a program of rehabilitation, or will eventually return to gainful employment would all be defined by the ACS as disabled and, therefore, erroneously assumed to be unable to ever work.

Transitioning Into and Out of Disability

Individuals can transition into and out of a disability for several reasons. They can complete their medical and/or psychological treatment, reach maximum medical improvement and return to work, or complete a program of vocational rehabilitation either in the public (e.g., state VR, Department of Veterans' Affairs) or private sectors (e.g., workers' compensation, long term disability) of rehabilitation counseling. The ACS-6 and the ACS, unfortunately, do not take these important disability-mitigation programs into account. Several researchers have conducted empirical studies on this issue and have come to the same conclusion. For example, disability specialist John McNeil suggested that the disability questions long thought to be the "gold standard" were not reliable. He did so by presenting a paper, "Employment, Earnings, and Disability," at the Western Economic Association (2000), in which he concluded that there were problems in utilizing the disability questions to measure changes in the employment status of individuals with disabilities. These problems had to do with "an apparent lack of reliability for many measures of disability status" (16).

Other longitudinal research, including the 2006 Cornell report on disability, pinpointed the same problem of reliability in the ACS-6 questions. The Disability Status Report Update examined the effectiveness of these six disability questions and their impact on employment over the course of several

years. This study found that work limitations, impacting respondent's employment status, come and go. The ACS does not take these fluctuations into account, as it does not complete any longitudinal research on the participants who complete the survey (Wittenburg & Nelson, 2006).

Krueger & Skoog (2015) found that individuals transition into and out of disability status for several reasons. Their research determined that the CPS, SIPP, and ACS had no empirical support for how these U. S. government surveys utilize the ACS-6 disability questions or the assumption that disability or non-disability is a permanent condition. These three surveys, which all utilize the same six disability questions, all failed to take into account numerous cases wherein disability is not a permanent condition and individuals transition into and out of disability for several reasons (e.g., vocational rehabilitation, medical improvement, reasonable accommodations, assistive technology). Each survey has the same reliability problem.

These flaws in the definitions of disability, and the assumption that in all cases disability is a permanent condition, may become even more problematic if clinicians use the broad language of the ACS to create treatment goals for clients, consumers, and evaluees, rather than focusing on actual individual medical and/or psychological needs. The impact of mislabeling individuals is compounded by irrelevant, non-individualized treatment plans, resulting in unethical and nonproductive treatment. This failure in care is the result of utilizing a macroeconomic survey that was not designed for the individual (N=1) context to form assumptions about disability status, individual treatment goals, vocational rehabilitation outcomes, and future earning capacity (Spizman, 2013; Beveridge & DiNardo, 2017).

Other peer-reviewed studies of the ACS have demonstrated limitations in other areas, showing that estimates provided by the ACS are extremely uncertain for small population groups. In a study that compared ACS results to those of surveillance, epidemiology, and end results, there was a statistically significant difference in worklife expectancy predictions and actual outcomes (Mantey et al., 2016). Because the ACS deals in large sample data rather than at an individual (N=1) level, there are very significant margins of error (Donnelly, 2013). Another limitation of the ACS in practical use arises when rehabilitation counselors seek to approximate earnings capacity. In order to assess the earnings capacity of a given individual, actual earnings may be used. A proxy can also be used, but this is less reliable. For more mature workers, actual earnings (e.g., tax returns, W2's, 1099's) may be the most appropriate measure, as they have history and experience working within their chosen field. This history provides an accurate estimate of future earning potential. However, younger workers' historical earnings are not as useful, and in pediatric cases there would be no earnings history available.

Prior earnings of younger individuals do not usually represent an accurate lifetime earning capacity, as they may not have reached their full earning potential (e.g., a college-bound sixteen-year-old with little work experience who sustains a traumatic brain injury). Thus, a proxy, which takes into account a predicted level of educational attainment or level of general learning ability is argued and could be more appropriate in such cases (Gamboa et al., 2006, 2009). However, the ACS alone is unable to take these individual differences that research clearly indicates play a significant role (e.g., parental educational attainment, medical history, individual physical and/or psychological limitations) into account and, therefore, may generate estimates based upon ACS data alone are likely to be highly unreliable and invalid (Spizman, 2013).

Beveridge & DiNardo (2017) completed an initial mixed-methods study that examined the utilization of the ACS to determine if it is reliable and valid as a methodology to estimate the earnings capacity of individuals who are completing a vocational evaluation. The sample for this study consisted of 412 participants who were all current rehabilitation practitioners working with persons with disabilities. The survey instrument for this prior study was the same instrument for this current research effort and was created by the researchers in collaboration with a Delphi Panel consisting of ten forensic vocational experts with a mean of 31.13 years of clinical experience. Previous peer-reviewed research has determined that any earnings capacity or worklife expectancy model which assumes that census and ACS disability measures are permanent conditions are empirically invalid, as individuals can transition into and out of a disability (Skoog, 2015). The results of the prior study (Beveridge &

DiNardo, 2017) found the participants who reported experiencing a disability according to the ACS definition had higher average earnings when compared to those who never experienced a disability, $125,664 vs. $122,830 respectively. Thus, this prior research showed that utilizing ACS survey data that was designed for macroeconomic policy decisions for a vocational evaluation in the (N=1) context operates under the assumption of "once disabled always disabled" and produces spurious conclusions.

For these reasons, conclusions about an individual's future earnings capacity losses due to disability cannot be solely based upon the census data or the ACS (Jones, 2006; Krueger & Skoog, 2015). Clinicians who wish to apply data from the ACS for vocational evaluation purposes for individuals with disabilities must do so with extreme caution in combination with the latest available individual (N=1) personal, medical, and vocational evidence, utilizing professional clinical judgment in addition to survey data to estimate worklife expectancy and earnings capacity (Gamboa et al., 2006, 2009; Krueger & Skoog, 2015; Beveridge & DiNardo, 2017).

Reasons for Current Study

The current longitudinal mixed-methods study is being conducted to address the utilization of the ACS and determine if it is a reliable and valid methodology to estimate the earnings capacity of individuals who are completing a vocational evaluation for litigation purposes. Currently, there is a paucity of research regarding the use of the ACS for vocational evaluation purposes and estimating the future earning capacity in personal injury and related litigation. Although research on private rehabilitation and vocational counseling has grown considerably over the last several years (Zanskas & Leahy, 2007; Zanskas & Strohmer, 2011; Beveridge et al., 2015; McDaniel et al., 2016), only one empirical peer-reviewed study has examined the use of the ACS for vocational evaluation purposes (Beveridge & DiNardo, 2017).

Research Design and Research Questions

The longitudinal mixed-methods research design for this study includes descriptive, qualitative, and ex post facto approaches. Qualitative and quantitative data were collected simultaneously, then, compared and related, and finally interpreted. Precedence for using this methodology to assess the validity of utilizing the ACS for vocational evaluation for rehabilitation counselors and vocational experts was established by Chwalisz et al. (2008). The qualitative approach was utilized to explore the participants' earning capacity, as if they had answered "yes" to question 19a on the ACS that inquires about disability. At the end of the survey an open-ended question was utilized to explore a qualitative inquiry as to the participants' experiences of any financial impact of significant life events, such as a disability as defined by the ACS-6. For example, the open-ended question asked, "Have you experienced any significant life events or situations, such as disability (as defined by the ACS-6 as hearing, vision, cognitive, ambulatory, self-care, and independent-living) that have impacted your ability to work? If so, please discuss." The descriptive and ex post facto portion of the study includes comparisons of earnings capacity across a number of variables such as age, gender, race/ethnicity, disability status, temporary disability status, highest level of education, practice setting, primary geographic region, region according to U.S. census data, employment classification, pay rate, years practicing, and license and certification status. The research questions as addressed in this study, and reported here, follow.

Research Questions

Quantitative Approach

    1)   Is the ACS-6 a reliable and valid method to measure future earnings capacity for individuals completing a vocational evaluation? Specifically**,** if an individual answers "yes" to question

19a on the ACS, is there empirical evidence that they would have a diminished earnings capacity?

2) Are there any demographic variables that are related to answering "yes" to question 19a on the ACS? Specifically, are age, gender, race/ethnicity, disability status, temporary disability status, highest level of education, practice setting, primary geographic region, region according to US census, employment classification, pay rate, years practicing, and license and certification status predictors of future significant life events, such as a disability as defined by the ACS?

Qualitative Approach

1) What effect would a significant life event or situation, such as disability (as defined by the ACS-6 as hearing, vision, cognitive, ambulatory, self-care, and independent-living) have on the participant's future earnings capacity?

Method

A descriptive, convergent parallel mixed-methods research design was implemented for the current study. This approach utilized quantitative and qualitative approaches to develop the model that would drive the research questions. In this design, the researchers aimed to collect both the quantitative and qualitative data from participants simultaneously in one survey. Both sets of data (quantitative and qualitative) were analyzed separately for possible themes and research findings.

The Delphi method utilizes consultation from a panel of experts in order to actively participate in the process of developing the instruments to be disseminated among participants and research questions for investigation (Vazquez-Ramos et al., 2007; Trevelyan & Robinson, 2016). The Delphi method was originally formulated to address an issue at the Rand Corporation in the 1950s (Hsu & Sandford, 2007). When the method was developed, the goal was to form a group consensus with the intention to predict both the present findings and future trends. By discussing future trends, researchers could seek findings that would develop innovation by hypothesizing the outcomes of specific changes in practice. The intention of using the Delphi method is to address a particularly complicated issue (e.g., estimating the future earnings capacity of an individual), using the group opinion of experts in a particular field. The reasoning behind operating within a group consensus is to prevent biased perspectives from the researchers and influencing views from the participants within the development of the study. During the process, the opinions held by the panel of experts are treated to several rounds of review and feedback, which would refine opinions until consensus was reached (Hsu & Sandford, 2007; Vazquez-Ramos et al., 2007). Forming these several consensus opinions would allow for further exploration of alternative resolutions for the specific issue addressed (Hsu & Sandford, 2007; Trevelyan & Robinson, 2016).

The construction of the current survey instrument was based on items from the 2008 Certified Rehabilitation Counselor (CRC) and 2014 American Counseling Association (ACA) studies. Additionally, one open-response prompt was included to allow for a qualitative inquiry as to rehabilitation counselor experiences of any financial impact of significant life events, such as a disability as defined by the ACS-6 (2014). The preliminary instrument was provided to a Delphi panel of ten forensic vocational experts with a mean of 31.13 years of clinical experience who provided three rounds of feedback on the creation and revision of the survey instrument. The final survey instrument contained 26 items. The instrument was then utilized in 2016 data collection from the International Association of Rehabilitation Professionals (IARP) and in 2017 with the American Board of Vocational Experts (ABVE). This process followed the accepted peer-reviewed methodology common for Delphi consultation (Hsu & Sandford, 2007; Vazquez-Ramos et al., 2007).

The sample for this study consisted of 202 participants who were all current rehabilitation practitioners working with persons with disabilities. A total of 266 participants began the survey with 202 completing it and 64 partially completing the survey, resulting in a 76% completion rate. Participants

were recruited via the secure email invitation program provided by SurveyGizmo, one of the country's leading professional, web-based survey providers. In order to protect confidentiality of participants, the SurveyGizmo application was revised to refrain from storing or collecting Internet protocol (IP) addresses, e-mail addresses, or any identifying information. Further, data was kept confidential in a password-protected and encrypted file to protect the information. A professional organization, the International Association of Rehabilitation Professionals (IARP), sent out the secure survey link in 2021-2022 to their listserv in order to promote participation in the survey. The average time it took participants to complete the survey was 17 minutes. Prior to sending the invitations and recruiting the participants, the researchers obtained Internal Review Board (IRB) approval from George Washington University's Office of Human Research. Participation in the study consisted of reviewing the informed consent web page, clicking on a link and then providing quantitative and qualitative answers to the online questionnaire.

Responses were downloaded from SurveyGizmo into Microsoft Excel and then imported into SPSS version 21 in order to analyze descriptive statistics for the quantitative data and into Atlas.ti version 7 to code qualitative responses. The demographic variables included age, gender, race/ethnicity, disability status, temporary disability status, highest level of education, practice setting, primary geographic region, region according to US census, employment classification, pay rate, years practicing, and license and certification status. Qualitative analysis followed an open coding procedure with descriptive analysis for the open-ended question to determine which themes were reported most frequently (Saldana, 2009; Gaudet & Robert, 2018). No higher order qualitative analyses were conducted with Atlas.ti. For more detailed listing of qualitative codes found, please refer to the tables listed in the appendix.

Results

Quantitative

The first research question asked, "Is the ACS a reliable and valid method to measure future earning capacity for individuals completing a vocational evaluation? Specifically, "If an individual answers "yes" to question 19a on the ACS is there empirical evidence that they would have a diminished earnings capacity?" The empirical results from this research effort did not find support that an ACS-6 disability question, specifically the ACS question 19a, was a reliable or valid method alone to measure the diminution of future earnings capacity of an individual in the (N=1) context. As we will discuss in detail, individuals who would have responded "yes" to question 19a in the ACS did not experience a diminished future earnings capacity and actually had higher earnings than those who never experienced a disability as defined by the U.S. Census. Below are the descriptive results and specific composition of the population (N=202) who actively participated in this research effort.

The descriptive analysis of survey results provided a portrait of the demographic makeup and average salary for current rehabilitation practitioners working in the private sector of vocational rehabilitation. The average income reported was $145,911.70 and a median salary was $110,000 (e.g., the middle value in the list of reported salaries). There were several high reports from survey participants (two above $500,000), although there was not sufficient justification to remove them as outliers. As a result, due to several participants who were earning very high levels of compensation in their practice, there was a strong positive skew of the income data.

The average age in the research sample was 60 years old with a standard deviation of 11.1 years. The lowest reported age was 27 and the highest was 78. Compared to a prior survey completed in 2016 by George Washington University and IARP, the distribution of members' ages was roughly the same, with both studies having about 80% of participating members over the age of 50. This resulted in a positive skew of the reported age of participants towards the older age brackets.

With the self-reported gender breakdown, the participants in our sample of participants were more likely to identify as female (62%) than male (38%) and had the same gender ratio as the prior ACS

study in 2016. There was not sufficient representation between groups to determine if there were any statistically significant gender impacts on salary. However, the mean salary for women was $127,533.60 and the mean salary for men was $176,877.60. While there was not a statistical comparison of gender by education, reviewing the frequencies in educational levels made it appear that men were more frequently pursuing Juris Doctor (JD) degrees compared to females.

The sample for this study was overwhelmingly from a Caucasian or White background (87.4%). Only 4.4% reported identifying as Latino or Hispanic and only 2.4% reported identifying as African-American or Black. No other group (e.g., Pacific Islanders, Arab, Middle Eastern, Native American, Asian Indian) represented more than 1% of the sample including multiracial individuals and those who chose not to disclose (0.9%). This 2021 sample was slightly more diverse than the 2016 IARP survey.

Most of the participants in the study did not report having a disability in the quantitative demographic section (81.7%). One write-in comment to a later open-ended question specified temporary disability status, which suggests that some may have perceived this question as pertaining only to permanent disability. It is likely that disability reports are underestimated and the decision of choosing not to disclose (2.4%) supports the idea that there continues to be some stigma or professional risk associated with such disclosure. However in the open-ended question, about 32% of participants indicated they experienced a disability as defined by the ACS. The ACS question 19a defines disability as "the interaction among physical, emotional, and mental health and the physical and social environment wherein these interactions result in limitations of activities and restrictions to full participation" (U.S. Census Bureau, 2018, p. 57). Furthermore, the ACS highlights the specific subparts of disability including hearing difficulty, cognitive difficulty, ambulatory difficulty, self-care difficulty, and independent living difficulty (p. 57). When temporary disability was specified, the number of self-reported individuals reporting disability status increased to approximately one-third of the respondents (32%). Write-in answers included individuals who referenced missing work due to a disability such as being out for sixteen weeks due to surgery for an acute medical condition, from an automobile accident, or long COVID-19, where they missed significant time from work, so they were added into the "Yes" proportion. Four participants mentioned having a temporary disability as defined by the ACS but continuing to work without any interruption in earning capacity.

The majority of participants (78.5%) reported having a master's degree as the highest level of education, with 13.4% reported having a doctorate, 4.3% reported a bachelor's degree, 2.9% reported other, and 1.0% reported a law degree. Some individuals reported more than one highest level of education (e.g. two master's degrees) and were included in the other category. Some individuals wrote in the degree they were currently working on or referenced having a pre-graduate certificate (e.g. job development and job placement) or a post-graduate certificate (e.g. forensic rehabilitation counseling). Overall, the master's degree was the most common level by a significant margin.

As would be expected, the highest frequency of geographic region indicated work-taking place in urban settings (55.3%). Percentages gradually decreased in relation to the population of the area as would logically follow (46.2% in suburban and 16.8% in rural). Some members (n=28) commented on working in multiple settings, so multiple responses were sorted into each category and the total number of responses for this descriptive analysis was (N=238). Distribution of participants by U.S. Census region is relatively close to the proportion of U.S. population according to 2020 Census data (U.S. Census Bureau, 2021). There was a slightly greater incidence of participants in the northeast (New England & Middle Atlantic) compared to the population of individuals living there, but each region seems to be well represented for the data analysis.

ccording to study results most participants identify with working primarily in private-for-profit practice settings (84.2%). When comparing average salary with results found in other surveys (ACA and CRCC), this may partially account for the significantly higher average salary found in this particular research effort. Most participants were currently working full time (63%). Some write-ins included working 25-30 hours a week, being self-employed, and a few indicated that they were currently searching to find work. Most individuals appeared to be paid via billable hours (70%), a fact that was particularly interesting in the context of most respondents also reporting working full time hours (at

least 40 hours per week). Furthermore, the average salary for participants who reported being paid hourly for total hours worked was $189,005.20, those having a billable hour rate by case was $155,807.10, those who reported a set annual salary $117,075.90, and participants who wrote in their answer, $96,185.88.

The average number of years practicing was 31, with a standard deviation of roughly 11 years. The high level of clinical experience is a likely contributor to the relatively higher average salary found in this study when compared to other research on counselors' salaries (ACA and CRCC). The majority of participants reported having over twenty years of experience (79%), and there appeared to be a relatively similar number of professionals working in each experience band (3% 16-20 years, 2% 11-15 years, 1% 6-10 years, 1% 2-5 years).

A wide variety of professional credentials were represented, although CRCC status was represented significantly more than others (see Table 2). Some individuals specified multiple licenses (e.g., LPC, LCPC) or certifications (e.g., CDMS, CCM, ABVE) and were counted in each category, although, overall, proportion remained divided by the number of participants in the study. The most common write-in response was certified vocational evaluation specialist (n=16). Other responses were mostly isolated examples of specialized practice areas (e.g., Life Care Planner, Career Counselor, Case Manager).

Table 2

License and Certification Responses

License and Certification	Frequency	Proportion of Total Responses
Commission on Rehabilitation Counselor Certification	176	87.12%
Licensed Professional Counselor (LPC & LCPC)	53	26.23%
American Board of Vocational Experts	49	24.25%
Life-care Planner	47	23.26%
Certified Disability Management Specialist	43	21.28%
Certified Case Manager	37	18.31%
Rehabilitation Provider	23	11.38%
Case Manager	16	7.92%
National Board Certified Counselor	14	6.93%
Psychologist	7	3.46%
Licensed Rehabilitation Counselor	6	2.97%
63 Career Counselor	5	2.47%
Certified Professional Disability Management	3	1.48%
Psychological Counselor	3	1.48%
Registered Nurse	3	1.48%
Licensed Marriage and Family Therapist	2	0.99%

Licensed Clinical Social Worker	1	0.49%
Alcohol/Drug Counselor	1	0.49%
Certified Substance Abuse Counselor	1	0.49%
AALNC	1	0.49%
Occupational Therapist	1	0.49%
Other - Write In	44	21.78%

For those participants who have obtained licensure, the following table (Table 3) represents the frequency counts of where these licenses are maintained. Some individuals reported licensure in multiple states with most of these examples being geographically clustered regions like PA, NJ, and DE. Some individuals wrote-in that they were "licensed nationally" (N=3), which may also represent multiple states of licensure or a misunderstanding between the definition of licensure and certification, as currently there is no national-level counseling license in the United States.

Table 3

State Licensure

State	Frequency		State	Frequency
AL	0		NE	0
AK	0		NV	0
AZ	3		NH	0
AR	0		NJ	4
CA	4		NM	0
CO	2		NY	1
CT	0		NC	4
DE	0		ND	0
FL	7		OH	3
GA	3		OK	0
HI	0		OR	1
ID	1		PA	5
IL	1		RI	1
IN	0		SC	1
IA	0		SD	1
3 KS	0		TN	0

KY	0	TX	2
LA	3	UT	3
ME	0	VT	0
MD	3	VA	4
MA	3	WA	5
MI	4	WV	1
MN	1	WI	6
MS	1	WY	0
MO	1	Canada	1
MT	3	National	3

The second research question asked, "Are there any demographic variables that are related to answering yes to question 19a on the ACS? Specifically, our age, gender, race/ethnicity, disability status, temporary disability status, highest level of education, practice setting, primary geographic region, region according to U.S. Census, employment classification, pay rate, years practicing, and license and certification status predictors of future significant life events, such as a disability as defined by the ACS?" A multivariate analysis of variance (MANOVA) was conducted to detect differences between all of the variables mentioned above as well as overall differences. In this sample, there were no statistically significant predictors of disability status related to answering, "yes" on question 19a of the ACS found between any of the above dependent variables.

Qualitative

The third research question asked, "What effect would a significant life event or situation, such as disability (as defined by the ACS: hearing, vision, cognitive, ambulatory, self-care, and independent-living) have on the participant's future earnings capacity? Out of the 202 participants in this research sample approximately 89% of the respondents or 180 provided a qualitative response to this question and the write-in responses ranged from a few words to several sentences that were coded following a structural approach in which maintenance of respondent language was emphasized (Saldana, 2009; Gaudet & Robert, 2018). Subsequent coding attempts began to organize the codes into themes via Atlas.ti, and a final version of the codebook was created utilizing commonly accepted qualitative methodology (Chwalisz et al., 2008).

For the qualitative open-ended response to significant life events that have affected income (e.g., disability according to the ACS definition), the majority of participants did not report a significant life event that had an impact on income (67.2%). The exact wording of this open-ended question was, "Have you experienced any significant life events or situations, such as disability (as defined by the American Community Survey: hearing, vision, cognitive, ambulatory, self-care, and independent-living) that have impacted your ability to work? If so, please discuss." As mentioned, there were 180 participants who provided a response to this question. It is interesting to note that these events appeared to occur at a greater level of frequency than any disclosures of disability or temporary disability from earlier items. Although a direct statistical comparison could not be completed due to unequal representation, it was also interesting to note that for individuals who did not report a significant life event the average salary was $140,320, while the average salary for individuals reporting a significant life event was $163,318. There is a wider confidence interval for the significant life event group

as would be expected due to smaller number of participants, but it did generally appear that these individuals were able to return to work and obtain income similar if not higher to the no significant life event group. This seems to be an argument supporting the efforts of vocational rehabilitation and rehabilitation counseling given that individuals are resilient enough to return to work following a disability according to the ACS definition and maintain a significant earning capacity.

Discussion

To gather further information on the age of the participants in this study, it would be necessary to follow up on the average age when individuals begin working in the private sector of rehabilitation counseling and vocational rehabilitation to examine why the current sample tends to skew towards an older age bracket. It could relate to the fact that many participants enter the private sector of vocational rehabilitation after advanced education and establishing their professional practice. Future longitudinal research will determine if these outreach efforts to increase underrepresented populations in rehabilitation counseling were successful and if they had effect on the demographic portrait of individuals practicing in the private sector.

The average age and age range increased compared to the original study (from an average age of 55, in 2016, to 60 when the data was collected in 2021). New results show that about 80% of participating members were over the age of 50, a 10% increase from the original study. As with the original study, the majority of participants reported having over 20 years of experience. This increased by 10%, while the number of professionals working in each experience band decreased (3% 16-20 years, 2% 11-15 years, 1% 6-10 years, 1% 2-5 years). This appears to be due to the aging of the participants who belong to IARP.

It is important to note that there was a smaller sample size in this longitudinal study (202 participants) compared to the original study (412 participants). In comparison to the original study, the average income increased from $125,927.62 to $145,911.70 (+ $19,984.08), as did the median salary, which increased from $95,000 to $110,000 (+ $15,000). This gradual increase in salary within the past five years makes sense. It seems that income increased approximately by 15.86% in five years (for an average if 3.172% per year).

Within this data, the discrepancy of salary between genders also stood out, although more information would be needed to determine the seemingly significant difference here. Particularly considering the fact that there were more women in the sample, and it was the exact same ratio in 2016 (62% vs. 38%), it is possible that the small number of males represented happened to have relatively high incomes. This could have skewed the central tendency measures (in 2016, mean salary for women was $103,316.05, which increased to $127,533.69 in 2021, and the mean salary for men increased from $156,397.02 to $176,877.60). The amount of male and female participants was the same as the original study with more women in the sample (62% vs. 38%). Compared to the original study, average salaries for both men and women increased. However, women started to close the gap in earnings between the genders (+ $24,217.55 for females compared to + $20,480.58 for males). This is due to the increase in income within the past five years, from 2016 to 2021. However, it is also possible that these numbers are, in fact, reflective of an existing discrepancy between men's and women's compensation within the field of rehabilitation counseling (American Counseling Association, 2014; Commission on Rehabilitation Counselor Certification, 2021).

The field of rehabilitative counseling has emphasized the importance of multicultural sensitivity, and it has been suggested that there is an underutilization of rehabilitation services by members of minority communities (LeBlanc & Smart, 2007). This also appeared to be true for the number of minority members who are part of the current sample (it increased to 10.2% from 8.5% in 2016). It will be interesting to see if these recent endeavors to increase student membership in rehabilitation organizations will have an impact on the race and ethnicity distribution going forward. There seems to be more diversity within IARP membership, as the number of respondents that identified as Caucasian or White (87.4%) was lower compared to the original study (91.5%). There was also a slight in-

crease of respondents identifying as Latino/Hispanic (from 2.4% to 4.4%) and African American/Black (from 1.9% to 2.4%) in the current sample.

The majority of participants reported having a master's degree as their highest degree, which was the same finding as the original study but increased slightly from 76.7% to 78.5%. The number of participants with a doctorate degree increased from 11.2% to 13.4%, while those with a bachelor's degree as their highest form of education decreased from 6.9% to 4.3%. In contrast to the original study, no one in the current study held an associate's degree. Thus, the current sample is slightly more educated compared to the initial 2016 study.

It is important to note that members working in private practice increased by more than 10% compared to the original study. There was also about a 10% increase for participants being paid via billable hours. The average salary for these participants increased compared to the original study. This may indicate that there is a salary trend in this field towards billable hours for participants that practice as private rehabilitation counselors and/or vocational experts.

It appears that most IARP members did not feel that COVID-19 had a lasting impact on their income. Although the majority of participants reported that COVID-19 had affected their income for a period of time, there was only a 10% difference between this majority and participants who reported that COVID-19 had no effect on their income.

The distinction between the number of individuals identifying with having a disability and those reporting significant life events was also notable. It suggests that individuals are reluctant to identify as disabled, even temporarily, despite meeting the criteria established by the ACS. This may be due to the stigma and potential prejudice of identifying as an individual with a disability. It may also call into question how some vocational experts utilize the ACS to determine earning capacity of evaluatees during forensic vocational evaluations. It was very interesting that the participants who reported having a disability according to the ACS definition had a higher average salary compared to those who never experienced a disability, $140,320 vs. $163,618 respectively. It would also be very interesting to explore the average age that a respondent would answer "yes" to question 19a on the ACS and, then, determine if it would occur at an older age and its impact on future earning capacity (or lack thereof). There are potentially important implications for the above issues as rehabilitation counselors specialize in working with individuals living with disabilities, maximizing their earning capacity and quality of life. Currently rehabilitation counselors and vocational experts utilize significantly different methodologies to determine vocational rehabilitation potential and earning capacity of persons with a disability. It appears that there is a need for more peer-reviewed evidence based practices to objectively and reliably determine an individual's future earnings capacity. One of the criticisms of forensic rehabilitation counseling is that two different experts (plaintiff vs. defense) can arrive at very different determinations of an individual's rehabilitation potential and earnings capacity based on the same facts, vocational history, medical evidence and vocational testing data.

Limitations

Although every effort was taken to utilize sound methodology, including descriptive, qualitative, and ex post facto approaches, several limitations should be taken into consideration. The first limitation of the current study relates to the research sample and the study's external validity. Although the sample size of this study (N = 202) was appropriate for the analysis completed, a larger sample of rehabilitation practitioners would increase the generalizability of the findings. A second potential limitation related to the sample is self-selection bias. Self-selection bias occurs when the group being studied has any form of control over whether to participate. Lavrakas (2008) posits, "Self-selection will lead to biased data, as the respondents who choose to participate will not well represent the entire target population" (p. 808). Participants' decision to participate may be related to traits that could potentially affect the study, thus, the participants who completed the survey may be a non-representative sample. The data collected were obtained via self-report, which is also understood as a potential threat to validity. The final limitation is the lack of generalizability to other counseling practi-

tioners in the United States since this study only included counselors working in the private sector of rehabilitation counseling and vocational rehabilitation.

Suggestions for Future Research

A future study could be expanded to include longitudinal research with rehabilitation professionals working in the private non-profit and forensic sectors to track the growth of earnings of rehabilitation counselors working in the private sector. This research could also examine self-reported rates for billable hours that counselors working in the private sector charge for their services. It would be interesting to determine if there are geographical influences on the rates that rehabilitation counselors charge for their services (e.g., major metropolitan areas vs. rural areas) or by type of case (e.g., medical malpractice, marital dissolution, workers' compensation). The Delphi panel did not recommend that this question on billable rates be included in the current survey and thus this data was not collected in this study or the 2016 IARP Salary Survey.

Research that compares and contrasts the earnings of rehabilitation counselors working in the public domain across the United States, private non-profits, proprietary, and forensic sectors should be conducted and would increase the validity of the findings. In addition, future studies could delve deeper into the incidence of disability as defined by the U.S. Census Bureau and the American Community Survey and its longitudinal effect on earnings capacity and worklife expectancy for the individual in the (N=1) context. Also examining the incidence of transitioning into and out of a disability would be important information for rehabilitation counselors when working in a forensic environment. This longitudinal evidence would improve the reliability of estimating the future earnings capacity of an individual when completing a vocational evaluation.

Conclusion

The measurement of the impact of disability on an individual's future earnings capacity is a complex matter. This is the second empirical research effort that determined the ACS is not a reliable and valid instrument for estimating an individual's future earning capacity (Beveridge & DiNardo, 2017). This was confirmed when I met with ACS staff that designed and collected the data in 2016. There has been no research indicating that the ACS is an appropriate instrument to predict future earning capacity for an individual or in an (N=1) capacity during a vocational evaluation.

The available peer-reviewed research and the Bureau of the Census are quite clear that the American Community Survey was not designed and is not a valid instrument for measuring employment and future earnings for disabled individuals. Over an individual's lifetime persons can acquire a disability (e.g., via an automobile accident) and can also transition out of disability via a program of rehabilitation. The purpose of rehabilitation counseling and vocational rehabilitation is to assist individuals with disabilities to return to gainful employment and lead a satisfying and productive life. The research shows that utilizing census survey data that was designed for macroeconomic policy decisions for a vocational evacuation in the (N=1) context is not adequate, as it operates on the assumption of "once disabled always disabled." Only when the specific conditions of an individual are evaluated at the micro level (e.g., educational attainment, familial history, intelligence and personality testing data, medical and psychological evidence) can the degree of disability and other confounding variables be properly accounted for in a vocational evaluation. Until this is completed in a holistic manner, utilizing government sources, disability reporting will not be reliable and valid as the foundation for measuring the future earnings capacity for specific individuals.

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Appendix I
Significant Life Events that Affected Earning Capacity

Frequency	Code	Percentage of Total Responses
121	None reported	67.2%
20	Missing response	11.1%
16	Temporary Disability	8.8%
13	Recovery from Surgery	7.2%
7	Accident/Injury	3.8%
6	Chronic Illness	3.3%
5	Hearing Impairments	2.7%
5	Accident/Injury	1.2%
4	Motor Vehicle Accidents	2.2%
3	Ambulatory Issues	1.6%
2	COVID-19	1.1%
2	Family Medical Leave	1.1%
2	Hospitalization	1.1%

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Family Quality of Life

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Abstract. Recently, several studies have started to decipher the concept of family quality of life (FQL) as pertaining to the outcome of service delivery for post-secondary students with disabilities and their family members. More specifically, the researchers have sought to define the FQL in terms of participants, their interactions with their respective environments, and how their family members contribute to their perception of well-being (Schalock et al., 2001). It is recognized that family issues around students with a disability have been studied and reported previously, in terms of either adverse or positive effects (Baxter, 1987; Gray, 2002; Hayes, 1996); however, studies of family quality of life that are sensitive to a broader concept of family have just begun to emerge. As Turnbull et al. (2003) have noted, much of the family and disability literature focuses on the issues of the child with a disability within the family, and frequently the mother – or other legally designated legal guardian(s) – becomes deeply concerned with and focused on the life of the child with an intellectual disability. This means that the family may lack balance and may be affected by the sequence of events surrounding the interaction with the family member with disability. Such effects are not necessarily negative, but there is a wide range of challenges that families face in these situations when placed in academic settings. Generally, FQL studies attempt to explore how various domains of life are impacted when there is a child with a disability, as well as what family members' perceptions about family life are in general. Such studies also explore the effects of services, community, and the influence of each individual family member on the family as a whole. The same major quality of life principles (Schalock et al., 2002) may also be relevant to FQL. These have been employed in the development of survey instruments.

Keywords: Need

As defined by Poston and her colleagues (2003), there are ten domains that encompass the metrics of FQL, as seen in Figure 1.

Tigers Learning Independence Fostering Education and Employment (TigerLIFE) at the University of Memphis is the largest and most ethnically diverse program for intellectually/developmentally disabled adults in the state of Tennessee. Founded in January 2013, TigerLIFE operates under the Institute of Disability in the College of Education at the University of Memphis. It offers a diverse curriculum designed to help young adults succeed in obtaining and maintaining employment and living independently as citizens of the Memphis/Shelby County community. The objective of TigerLIFE is to guide students down the path to employment and help them become integrated into the work world alongside their non-disabled peers. Therefore, in order to advance the objectives of TigerLIFE, this study seeks to understand the intersection between family quality of life and the TigerLIFE participant's academic and occupational outcomes within the greater University of Memphis community.

Figure 1
10 Domains of Family Quality of Life
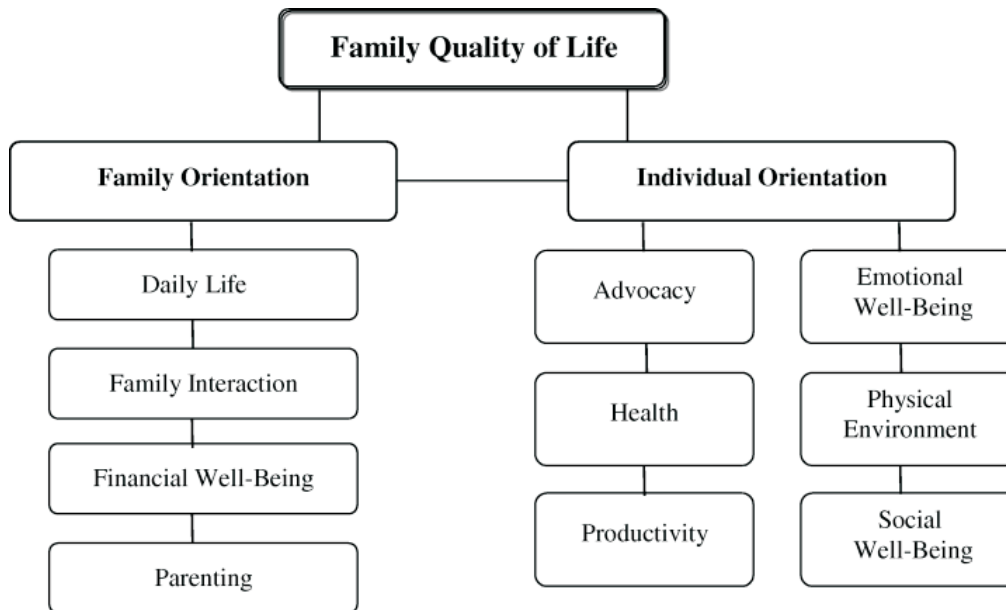
Study Significance

This study seeks to understand and evaluate the relationship between environment, across multiple life domains (including successful employment closure rates), and FQL.

Method

In order to address the research questions, essential variables were extracted from the survey questions and entered into IBM® SPSS® for simple sample and inferential population statistics based on the responses of the surveyed participants. A simple bivariate correlation analysis and a simple regression were conducted among all the variables to determine the relationship between participants' family quality of life, employment outcomes, and disabilities-related environmental and social factors. Participants included 15 associated family members of clients receiving services from TigerLIFE at the University of Memphis.

Family Orientation

Daily Life

The impact of inclusive educational programs extends beyond the academic setting into the daily life of TigerLIFE participants, as well as their guardians/caregivers. Unfortunately, excessive attention has been given to the performance and satisfaction level of students within the academic setting, whereas little attention has been devoted to critical elements both within and outside the family that may explain variations in the outcome of student performance. Thus, daily life itself is a domain of FQL studies worth investigating, in order to elucidate the dynamics between quantifiable metrics of FQL and students' outcomes. Our study asked the following questions to gather info about participants' daily life:

What level of disability-related support is needed for your TigerLIFE student?

How often can the student perform tasks such as:

- Simple Cooking
- Cooking full meals
- Laundry
- Home alone
- Travel alone

The level of support from caregivers corresponds directly to the level of independence of the TigerLIFE students. Once again, a substantial number of TigerLIFE students' caregivers only have to provide support for a few or some aspects of life (9 out of 14). Coincidentally, 9 out of 14 TigerLIFE students frequently or often cook their own meals, although 4 out of 14 can somewhat cook full meals; virtually all of the students can do laundry, at least sometimes (13 out 14); 9 out 14 TigerLIFE students can and do stay home alone; however, 10 out of 14 students can not safely travel alone. Essentially, we can see that most TigerLIFE students can survive and manage routine daily tasks.

Boelsma et al. (2018) showed that it is important to consider that internal factors influence the lives of families. The perspectives of family members of TigerLIFE participants, as well as the social environment of families — extended family members, friends, neighbors, professionals, etc. —are essential to gaining insight into how social support is linked to FQL. The current literature (Enhancing the Quality of Life of People with Intellectual Disabilities, n.d.) shows that a lack of acceptance and understanding concerns not only the person with intellectual disabilities but also their family.

When evaluating the quality of life (QOL) of families, it can be useful to use an FQL instrument. The two existing FQL instruments both aim to evaluate services and support for families, focusing on both emotional and practical support on a daily basis. In the context of TigerLIFE, supplementation of professional support often falls on this informal network.

This suggests the need for an instrument that is sensitive to the underlying processes that inhibit or foster the inclinations of members of social networks to provide support. Particularly, families of students with special needs often seek to meet dominant societal norms, and may encounter problems concerning understanding, acceptance, and support, which in turn could influence their FQL.

The lesson extracted from the current literature is that acceptance and understanding could be important underlying factors for the support that family members of a child with an intellectual disability (ID) receive. Also, implicit and explicit cultural norms and values could potentially influence the ways the larger society includes and supports people with an ID/DD and their families. More awareness and research on these topics could help to improve available FQL instruments and the lives of families. The stronger the support for daily assistance from the caregivers, the more successful the outcomes (*Enhancing the Quality of Life of People with Intellectual Disabilities*, n.d.).

Analysis of Survey Data

The survey data corroborated the established notion that the students who require the least assistance for daily routines tend to encounter the most optimal outcome when it comes to achieving independence and autonomy. Coincidentally, the caregivers who profess the highest satisfaction level also tend to be the ones that rate the highest in terms of helping their TigerLIFE students to achieve success.

Family Interaction

Conventionally, the family quality of life survey shows a family functional assessment of the Memphis TigerLIFE program following the traditional FQL assessment model, which focuses on the interactions of family members, specifically caregivers and TigerLIFE participants. It focuses on the family's daily activities and interaction patterns. These interaction processes seem to have a bigger effect on the family health status via the overall caregiver's satisfaction level than on its structure and function.

We asked survey participants to answer the following questions pertaining to family interaction:

- How many people living in your home require care (including young children, older adults, or family members with disabilities)?
- Have any members of your family given up their careers or education to care for your TigerLIFE student?

Fortunately, the overwhelming majority of the caregivers of TigerLIFE students (9 out of 14) care for 3 or fewer household members with special needs. This translates into a lessened probability of burn-out, smoother and more amiable interaction between the household family members, and more atten-tive and tailored care. In addition, these 9 out of 14 family caregivers did not have to give up their ca-reer or education goals in order to care for their TigerLIFE students, while the number of caregivers having to care for more than 3 family members with special needs reported increased stress.

Traditionally, work/family balance is associated with FQL. This is especially true when non-special needs household members have to defer their personal life/objectives for the needs of their family members with special needs. When caregivers do not spread their time and energy across their com-bined work and family roles (caring for family members), or when they derive little satisfaction from their combined roles, work/family balance is unrelated to FQL. Under such conditions, there is little time to allocate to multiple roles. Therefore, imbalance produces such small differences in engage-ment or satisfaction between work and family roles that the degree of balance has little or no implica-tions for an individual caregiver's QOL. Additionally, work/family balance is associated with QOL when there is substantial time to allocate to both their personal lives/work and taking care of family members with special needs.

QOL is invariably highest for those who are more engaged or more satisfied in family than work and is lowest for those who are more engaged or more satisfied in work than family. Inconsistent with common wisdom and our predictions, the QOL of individuals with work-family balance fell between these two extremes. Moreover, we had expected that individuals with work-family balance would ex-perience the least amount of conflict and stress. However, those who devoted more time to family ex-perienced the lowest levels of conflict and stress, while those who devoted a majority of their time to work experienced the highest levels. Those with work/family balance fell in the middle. In retrospect, the minimal stress reported by those more engaged in their role as caregivers is understandable, be-cause their restricted engagement at work may have resulted in less pressures at work, thereby pre-cluding high levels of work-to-family conflict and stress. These individuals may have made the deci-sion not to let their work responsibilities interfere with their family life. In contrast, individuals who were more engaged in work than family experienced the highest level of work-to-family conflict and stress. This finding is consistent with prior research demonstrating the impact of involvement at work on conflict stress. The imbalanced satisfaction favoring the family caregiving tasks was associ-ated with a high quality of life among those individuals who derived substantial satisfaction from their combined roles as opposed to those frequently experiencing burnout and stress. Thus, the vir-tues of work/family balance were anticipated, and the findings about work/family imbalance were consistent with prior research and established wisdom. Moreover, other factors such as Type-A Per-sonality and career success-personal failure have all pointed toward the dangers associated with over-involvement and burnout in work and caregiving responsibilities. Thus, most current studies confirmed the negative effect of work imbalance on the QOL in the special-needs household family and demonstrated that the deleterious effect is due to heightened levels of work-to-family conflict and stress for caregivers.

Preliminary Analysis of the Survey Data. Based on the survey data, it is evident that there is an intricate relationship between the number of TigerLIFE participants in need of care and the mem-bers of the household who sacrifice their educational and occupational endeavors in order to accom-modate these needs. More than half of the surveyees have less than two special needs family mem-bers, and more than half of surveyees sacrifice their career and educational goals.

Financial Well-Being and Health

The term "quality of life" (QOL) refers to a collection of objectively measurable categories that include health and well-being, individual situations, social interactions, activities and interests, and the effects of larger social and economic systems. The financial well-being of the family and the health of the individual directly correlate with the FQL. From the survey, we have found that most of the families are doing ok in terms of their financial situation. From the data, we can safely say that the family's financial situation greatly impacts the student and the family.Questions Asked included:

% (10 of 14) of the families tWhen you think about your total family household income, do you consider your family to be (financial situation)?

- Does your TigerLIFE student have a specific job goal at this time?

- Have family members given up their careers or education to care for your TigerLIFE student?

- Are there opportunities near your home for your family's total health care needs to be met (including easy access to health care providers, places to exercise, and availability of healthy food)?

The Likert scale from the survey showed that 71hat participated in the survey are doing ok financially, and 65% (9 of 14) of the families have no members of the family that have given up their careers or education to care for their TigerLIFE student. 5 out of 14 TigerLIFE students have a specific job goal at this time, 7 out of 14 have little idea of a specific job goal, and 4 out of 14 students do not have any job goal at this time.

Financial well-being and health may not appear to be related, but they are intertwined. We found that almost all the families doing well financially also have easy access to health care providers, places to exercise, availability of healthy food, etc, and almost 71% (10 of 14) of the families have good healthcare opportunities accessible to them. From the survey data, we can conclude that the family's financial well-being is directly proportional to the family's quality of life and accessibility of healthcare opportunities. Being on the better side of the financial situation helps the student and their family.

Parenting

Parents play an important role in the well-being of the family. They are pillars and provide emotional support to children. A proper family atmosphere, including siblings and guardians helping to raise a child, affects the child's development and emotional well-being. The relationship between parents and children is interrelated. Any changes in the family will affect the child's development. Children with disabilities, especially, need strong emotional support and care from their parents, siblings, and guardians. Families with disabled children need more emotional support to educate their children and provide them support to face society without any fear. Many studies have been done on parenting and how this will affect the child's development. This is a very sensitive subject and needs to be handled with proper research.

The University of Memphis Institute on Disability (UMID) has a program called TigerLIFE, where students with disabilities are taught how to stand for themselves and get a job. UMID recently conducted an FQL study by sending survey questions to the TigerLIFE student families. They were asked to answer survey questions to better understand how changes to family, career, or financial support affect students with disabilities. The questions that were asked on the survey relating to parenting were:

- What is your relationship with this student?

- How many of the following life changes have your family household experienced in the past year? (Count how many of the following have occurred to ANYONE living in your home; you may count items more than once if they occurred more than once or to multiple people)

For the first question, 10 students said parent or stepparent, two said grandparents, one said sibling, and one did not answer the question. To the second question, eight students said there were one-two changes, three students said three-six changes, and three students said there were no changes. These questions play an important role in the survey, as they indicate the child's mental health, as well as the atmosphere they were raised in and how it impacted the child's development. Children living with grandparents may tend to be pampered or may not be cared for adequately, given the grandparents own physical or mental limitations due to old age. Children living with siblings tend to become more like their siblings by imitating them, and parents' mental and physical well-being and financial support will affect the child's behavior. Any changes in life may trigger some effects in children with disabilities. We need to pay close attention to them and help them learn to overcome emotional stress. In the end, parents and guardians play an important role in a student's life, regardless of formal interventions and supports.

Individual Orientation

Advocacy

This FQL study asked three questions meant to assess the ability of TigerLIFE families' to advocate for their student's needs at the time of program completion. The two questions focused on advocacy were as follows:

- Where does your family usually turn for support? (Check all that apply–disability support services such as health care providers, therapists, or Vocational Rehabilitation counselors; church family and/or clergy; TigerLIFE staff; extended family; friends and neighbors; others)
- Would you be interested in coming to a support group for families of TigerLIFE students if one were offered on a monthly basis? (Yes; Sometimes; No)

In response to the first question, we found that of the 14 participants, four selected what we referred to as "disability support services," six selected church community and/or clergy, four selected TigerLIFE staff, eight selected extended family, five selected friends and neighbors, and no participants selected or specified "Other." We found that close social ties like family, church community, friends, and neighbors are the most popular outlets for external support.

In response to the second question, we found that of fourteen participants, only 3 selected "Yes," indicating that they would be interested in coming to a monthly support group for the families of TigerLIFE students. Seven participants answered that they would "Sometimes" be interested in the support group, and four participants answered "No," that they would not be interested in participating in this support group. This data reveals that, despite the availability of professional avenues for support, most participants still feel most comfortable reaching out to people with whom they have social ties when advocating for their own needs.

Physical Environment

This study also examined how families were impacted by their physical environment while participating in the TigerLIFE program. The question follows:

How many people live in your home that help care for your TigerLife student (may be siblings, parents, grandparents, etc.)?

Two respondents reported one, four respondents reported two, five respondents reported three, and two respondents reported five. No respondents reported four.

Individuals with intellectual or developmental disabilities are impacted by their physical environment and family dynamics. Factors to consider are: who they live with, how many people they live with that require care (elderly, underage children, other disabled individuals), whether they live with

family or in a group home, and where they live (urban or rural communities).These factors are fundamental to the overall quality of life for these individuals and their families (Floyd et al, 2009).

It has been consistently shown in the research that individuals with intellectual or developmental disabilities fare worse in rural communities (Adams et al, 2019). There are many reasons this may be true – for example, access to places of employment, transportation, or limited job opportunities. It has been found that individuals with intellectual or developmental disabilities that live with supportive siblings in the home show reduced behavioral disturbance and increased communication and social skills, as well as limited ability to resolve conflict. This undoubtedly increases their likelihood to succeed at inclusive higher education (IHE), a post-secondary program, and/or employment. It has also been found that siblings more often take over the role of primary caretaker for the individual with a disability as they get older (Bigby, 1997).

The impact of living with family members who also have an intellectual or developmental disability requiring care needs to be better understood. It has been shown that this can cause increased stress and even clinical depression (Cummins, 2001). This may not always be the case, however. While stress is often reported by caregivers, some factors can enhance or decrease this stress. For example, if the primary caretaker is the only caretaker for not only the individual with a disability but for others, as well, they will likely report more stress and negative well-being. On the other hand, if the primary caretaker has a support system through family, friends, organizations, or other entities that assist them in helping alleviate some of the burdens, they will report a decrease in these adverse side effects. This can impact disabled individuals' ability to work and, in addition, providing adequate care for these individuals may not be feasible for caretakers who have others to care for and little support. Overall, increased support proves to be most beneficial to individuals with intellectual and developmental disabilities.

Careers and Career Preparation

Research has centered around young adults with intellectual and developmental disabilities and social issues, which directly impact their lives. The pre-COVID qualitative study investigated various domains of life that affect a student in terms of health, stress, economic well-being, careers and career preparation, and overall QOL after completing an IHE. TigerLIFE, a post-secondary program focusing on career and community studies, allows students to continue their education beyond high school to increase employment opportunities. The following examination of the answers surrounding careers and career preparation attempts to understand the effects of IHE programs on employment outcomes. Post-secondary education and employment play essential roles in identity formation for typically developing adolescents as they transition to adulthood.

Fornauf (2019) suggests "that not exploring and committing to social and occupational identities during adolescence contributed to distress, or an identity crisis, in young people" (p.185). Employment is a complex issue in the transition from secondary education into work, and work experiences are critical to employment success and family dynamics. The study asked three questions about career, career preparation, and the impacts of the TigerLIFE program on the student and family at the time of completion of the program. These questions include:

- Does your TigerLIFE student have paid employment?
- Does your TigerLIFE student's income (whether from a job or SSI) help pay for household expenses, such as groceries, bills, or rent?
- Has your student's involvement in TigerLIFE helped your family financially?

The answer to the first question showed that out of 14 respondents only one student worked part-time. Another student had previously been employed but was not employed at the time of the survey. The remaining respondents had never been employed at the time of completion of the IHE program.

The answer to the second question provided more encouragement for the study's goal. Seven out of the 14 stated that some of the student's income helped pay for household expenses. While four out of 14 did not earn any money. Two of the 14 students stated that all their income helped with household expenses. Finally, only one respondent kept all of their income and spent or saved as they chose.

In answer to the third question, half of the respondents reported that involvement in the program did not hurt the family financially. four out of 14 respondents stated it somewhat or did not affect the family's financial situation after completion. While two out of the 14 noted that the student's involvement somewhat hurt the family financially. Finally, one out of the 14 stated that it had helped the family financially.

Parents and caregivers play an integral role in the progress their student makes in academic, social, and vocational skills. Research has shown that "the deficiencies in vocational preparation opportunities for secondary students with disabilities, and the importance of these opportunities for a successful transition to the workplace, are receiving increasing attention, and rightfully so" (Benz & Halpern, 1987, p.511). Additionally, IHE program design, parents, and instructors must set an example by promoting positive attitudes about school and the world of work.

IHE programs are designed to enhance work outcomes and life skills through internships within the community. The evidence of these questions only emphasizes the need for IHE programs to focus on real workplace experience to achieve paid employment. A lack of experience in the workplace – via internships, for example – makes achieving a secure job more challenging.

When everyone works collaboratively with a designed goal in mind, continuity of services can be better advocated for on behalf of the student. This collaboration creates a bridge to successful outcomes for the entire family unit through the world of work. Test et al. (2009) has suggested "a systematic review identifying predictors of positive IHE employment outcomes. These predictors included occupational courses, community experiences, and parental involvement in the program" (pp. 117-118). IHE aims to increase the economic opportunity for successful employment outcomes and independence for their students. IHEs, students, and families all play an integral role in the transition to sustainable adulthood. This study provided some insight into the results of the IHE program.

The population studied can benefit from vocational success and positively impact the individual and the family's overall financial situation. The study explored the relationship between employment and factors that influence the world of work, as well as the student's perception of the TigerLIFE program, and its impact on their future.

Social Wellbeing

This study asked three questions about the participants' social well-being and the impact it had on students and their families at the time of program completion. The questions were as follows:

- How often do friends and neighbors help your family do practical things, such as looking after family members, shopping, or taking care of your pets when you're away?
- Does your TigerLIFE student have more friends since beginning TigerLIFE?
- All things considered, how satisfied are you with your family's connection with people in your community?

In response to the question, "How often do friends and neighbors help your family do practical things, such as look after family members, shop, or take care of your pets when you're away?" three of the 14 participants answered, "Often," three more answered "Occasionally," two participants answered "Rarely," five participants answered "Never," and one participant did not answer the question at all. In response to the question "Does your TigerLIFE student have more friends since beginning TigerLIFE," nine of the 14 participants answered "Yes," four participants answered "No," and one participant did not answer the question.

In response to the question, "All things considered, how satisfied are you with your family's connection with people in your community?" three of the 14 participants answered, "Very Satisfied," six answered "Mostly Satisfied," four answered "Neither satisfied nor dissatisfied," and no participants selected the two most negative options, "Mostly dissatisfied" and "Very dissatisfied."

The collected data demonstrated two key findings about participants' social well-being inside TigerLIFE and their extended community. First, responses to the question about a student making friends via TigerLIFE indicated that TigerLIFE has had a positive effect on students' social life. These questions also revealed that TigerLIFE families at large do not regularly depend on their community for support. However, the questions gauging families' connection and satisfaction with their community at large suggest that families of participating students are satisfied with the level of connection they currently have with their community.

Overall Quality of Life

The ultimate goal of any QOL study in IHE is to improve and enhance academic performance and other aspects of personal endeavors. The metrics used by investigators to gauge the success of any IHE program, such as Memphis TigerLIFE, measure students and families'/caregivers' satisfaction level with programs and their perceived achievement of the stated objectives. Thus, the TigerLIFE family survey completed by the main caregiver of the TigerLIFE student offered insights into the student's and their respective caregivers' satisfaction with their overall quality of life as a result of participating in the TigerLIFE programs.

The Underlying Question

The Likert scale is utilized to assess the level of satisfaction measured numerically. The comment section is appended to allow survey participants to communicate any additional concerns or expressions of approval or disapproval that the mere cardinal ranking of satisfaction levels could not adequately address. This question was utilized to gauge the overall satisfaction of the caregivers with TigerLIFE.

Analysis of the Survey Results

Out of the fourteen students surveyed, only one explicitly expressed dissatisfaction with the program. The net overall responses are commendatory, while the majority of the comments in conjunction with the elevated cardinal scale denotation are positive.

Comparison with Other IHE Programs

There are currently 8 IHE programs (including Memphis TigerLIFE) located in Tennessee (The Tennessee Inclusive Higher Education Alliance, 2022): Access ETSU at East Tennessee State University; Eagle Access at Dyersburg State Community College; The EDGE Program at Union University; The IDEAL Program at Lipscomb University; Next Steps at Vanderbilt University; Tiger Edge at Tennessee State University; and the University of Tennessee FUTURE. The success of the Memphis TigerLIFE program is pronounced in the evidence-based approach via the evaluation of raw data from the program participants in addition to their associated family members or their main caregivers. No other data has been collected on other Tennessee-based IHE programs thus far. The strength of the Memphis TigerLIFE program thus lies in its empirically-backed emphasis on customization.

Connection to Other Family Quality of Life Domains

The survey data indicates that FQL is interdependent with QOL and linearly correlated. The surveyed who marked the highest satisfaction in the overall QOL also exhibited high satisfaction, noticeably in all other FQL domains individually, with only slight deviation. The closest relationship was the satisfaction level of community support, work productivity, and overall satisfaction levels.

Value of this Study to Vocational and Rehabilitation Experts

Increasingly, vocational experts are asked to evaluate employment options for or work with young adults with intellectual and developmental disabilities. For those who act as vocational experts in social security adjudication, work options for young adults are being re-evaluated for competitive employability, and this information is often part of testimony. For those involved in personal injury litigation, employability for persons with IDD is often at issue. For the typical rehabilitation counselor, up to a third of cases can involve IDD. In these and other cases, the role of families in the client's ability to work is not a trivial issue. Family involvement can make or break a client's employability and ability to sustain employment. Geist and Calzaretta (1982) began discussion of the relationship between successful job placement and larger systems, and the interest and need for this approach has only become clearer in subsequent studies. What families do or don't do to help a young adult with a disability engage in the world of work will often make or break the rehabilitation worker does or about which the vocational expert opines.

Future Research

This study aims to understand the impacts of IHE programs on the family's of students with IDD, as well as the factors related to successful employment outcomes. We believe gathering and analyzing this cultural and environmental data can have a profound impact on student success. Many other researchers on this subject posit that "the focus on culture in future transition research is one way to address persistent inequitable transition outcomes" (Unger, 2013, p.10). We believe that IHE internship experiences and workforce readiness instruction are two other variables that would be beneficial to examine. Additionally, we found that active, informed parent involvement is fundamental to effective transition for the success of students. This would also be an excellent topic for future research, as we believe there is more to be learned about the influence of parental (or other primary caretaker) involvement. Low employment rates of individuals with developmental disabilities (DD) remains a significant concern; as Carter (2013) suggested, "Future research is needed to compare the effects of different interventions on both proximal and longitudinal student outcomes" (p.15).

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Ethical Implications of Artificial Intelligence on Vocational Rehabilitation

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Abstract. This paper delves into the transformative potential of artificial intelligence (AI) in vocational rehabilitation (VR), while critically examining the ethical implications. It offers a comprehensive overview of AI, its applications in healthcare and rehabilitation counseling, and the ethical considerations that rehabilitation counselors must navigate when integrating AI into their practice. The discussion is enriched by recent research and literature in the field, providing a balanced perspective on the benefits and challenges of AI in VR. The paper concludes with a call for future research in key areas such as ethical guidelines for AI in VR, the impact of AI on employment in VR, accountability in AI decision-making, privacy protection in AI applications, and the effectiveness of AI in VR. These areas are pivotal in guiding the responsible and effective use of AI in vocational rehabilitation.

Ethical Implications of Artificial Intelligence on Vocational Rehabilitation

Artificial Intelligence (AI), a subfield of computer science dedicated to developing systems that emulate tasks typically requiring human intelligence, has instigated significant transformations across numerous sectors, including vocational rehabilitation (VR). This paper explores the profound ethical implications and transformative potential of AI in VR. It delves into the intricate workings of AI, its diverse applications in healthcare and rehabilitation counseling, and the ethical considerations that rehabilitation counselors must navigate when integrating AI into their practice. The discussion is grounded in recent research and developments in the field, providing a comprehensive overview of AI's current state and future implications in VR. The paper concludes with a call for future research in key areas such as ethical guidelines for AI in VR, the impact of AI on employment in VR, accountability in AI decision-making, privacy protection in AI applications, and the effectiveness of AI in VR. These areas are pivotal in guiding the responsible and effective use of AI in vocational rehabilitation.

Definition of Terms

Vocational Rehabilitation: The process of helping individuals with disabilities or impairments gain or regain the skills and knowledge needed to achieve employment and independence.

Artificial Intelligence: Artificial Intelligence: The application of computers and algorithms to execute tasks typically necessitating human intelligence, encompassing learning, decision-making, and problem-solving.

Ethics: The principles of conduct governing an individual or a group, often related to moral values and beliefs.

Machine Learning: Subfield of artificial intelligence that involves the use of algorithms and statistical models to enable computers to learn and improve their performance on a specific task without being explicitly programmed.

How Artificial Intelligence Works

Artificial Intelligence (AI) is a branch of computer science that aims to create systems capable of performing tasks that would normally require human intelligence. These tasks include learning from experience, understanding natural language, recognizing patterns, and making decisions (Russell & Norvig, 2016).

Machine Learning (ML), a subset of AI, is a method of data analysis that automates the building of analytical models. It's based on the idea that systems can learn from data, identify patterns, and make decisions with minimal human intervention (Samuel, 1959; Mitchell, 1997).

The journey to the current state of AI and ML began in the mid-20th century. In 1950, Alan Turing proposed the concept of a "universal machine" that could simulate the logic of any computer algorithm, marking the theoretical underpinnings of AI (Turing, 1950). In 1956, the term "Artificial Intelligence" was coined at the Dartmouth Conference, and this marked the beginning of AI as a field of study (McCarthy et al., 1955).

In the 1980s and 1990s, machine learning emerged as a significant part of AI, with the development of algorithms that could learn from and make predictions or decisions based on data (Mitchell, 1997). In the 21st century, with the advent of big data, AI and ML have seen exponential growth and are now integral parts of many industries, from healthcare to finance to entertainment (Jordan & Mitchell, 2015).

The Role of AI in Vocational Rehabilitation

AI applications are being used in physical therapy diagnosis and management for various impairments[2]. However, the adoption of AI in rehabilitation is not without challenges. A mixed-method study by Alsobhi et al. (2022) revealed that while AI holds promise in rehabilitation, there are significant barriers to its adoption, including cost and resource constraints (Alsobhi et al., 2022).

In the context of post-stroke motor rehabilitation, AI models are being personalized to improve the effectiveness of Brain-Computer Interfaces (BCI) based rehabilitation programs[3]. This personalization is achieved by identifying predictive factors of successful BCI-based motor rehabilitation (Trocellier, N'Kaoua, & Lotte, 2022).

AI is also being utilized to augment English instruction in higher vocational education. Innovative AI-based techniques are being proposed for course selection, leveraging student feedback (Ma, 2022).

Ethical Implications of AI in VR

As AI continues to permeate the field of VR, it brings with it a host of ethical considerations. The moral status of AI machines, the definition of relationships arising from machine use, value judgments, trust considerations, data accessibility, and privacy protection are all areas of concern (Hong, 2022).

For instance, the use of brain-computer interfacing (BCI) has witnessed a thematic shift, with a growing emphasis on research into ethical issues and the necessity for legal oversight (Alharbi, 2023). As BCIs become more invasive in the lives of individuals, the need for ethical considerations becomes paramount.

In the realm of sports injuries, the development of intelligent retrieval systems using expert systems has been proposed (Chen, Yu, Cai, Wei, & Tong, 2022). While these systems offer clear diagnosis and convenient query options, they also raise questions about the ethical implications of such AI applications.

Moreover, the ASCAPE project, which aims to provide personalized and AI-based predictions for quality-of-life issues in breast and prostate cancer patients, highlights the need for ethical considerations in AI applications (Tzelves et al., 2022). The project suggests potential interventions to physicians, offering a more modern and holistic approach to cancer rehabilitation. However, it also underscores the need for ethical oversight in the use of AI and Big Data in cancer care.

Potential Impacts of AI on Employment and Accountability

The escalating adoption of AI and machine learning bears significant implications for employment, economic disparity, and social unity (Tiwari, 2023). A systematic review of the relationship between AI and employment reveals a growing trend of published papers in this field, indicating a rising concern about the impact of AI on the job market (Acypreste & Paraná, 2022).

The use of AI mechanisms in e-Health systems is an example of how AI can transform employment in certain sectors (Antunes & Coutinho, 2022). These systems improve the processes of online consultations and diagnosis, potentially changing the way healthcare professionals work. However, this transformation also raises questions about accountability, especially when AI systems make decisions that have significant impacts on patients' health.

Moreover, the integration of AI in educational systems, such as the college student employment guidance system, can significantly influence the job prospects of students (Huang, 2022). While such systems can provide personalized guidance to students, they also raise questions about the accountability of AI systems in shaping students' career paths.

Privacy Protection Measures in AI

The use of AI in various sectors, including healthcare and tourism, has raised significant privacy concerns. For instance, in healthcare, vast quantities of personal data are gathered and utilized in AI algorithms, posing challenges to patient privacy (Wang, Zhang, Lassi, & Zhang, 2022). A comparative study of Chinese, United States, and European Union regulations reveals key issues requiring consideration when regulating healthcare data used for AI purposes (Wang, Zhang, Lassi, & Zhang, 2022).

In the tourism industry, the Personal Data Protection Act 2010 has been investigated for its adequacy in addressing the privacy challenges raised by AI (Mohd Shith Putera, Saripan, Mohd Bajury, & Ya'cob, 2022). As companies feed a vast amount of consumer data into AI, creating sensitive customer information, ensuring privacy and security through every phase of the data lifecycle becomes pivotal (Mohd Shith Putera, Saripan, Mohd Bajury, & Ya'cob, 2022).

The integration of privacy protection and blockchain-based food safety traceability presents potential and challenges (Lei, Xu, Liu, Liu, & Sun, 2022). Ensuring the privacy and security of food information can increase food harvests, reduce industrial pollution, mitigate environmental impacts, and obtain healthier and safer food (Lei, Xu, Liu, Liu, & Sun, 2022).

In the context of education, the application of "artificial intelligence + Internet of Things" (AIoT) in the construction and management of intelligent campuses has been studied for student privacy protection (Yi & Li, 2022). This research underscores the importance of privacy protection in the era of AI and the Internet of Things (Yi & Li, 2022).

Use of AI in Healthcare and Rehabilitation Counseling

The use of AI in healthcare and rehabilitation counseling has been on the rise, with a diverse range of applications across various sectors. For instance, a study conducted among healthcare students in Riyadh, Saudi Arabia, assessed their awareness, perceptions, and opinions towards AI (Syed & Al-Rawi, 2023). The results of this study can provide valuable insights into how future healthcare professionals view the role of AI in their field.

In the field of telehealth, AI has been used to innovate and improve healthcare delivery[2]. The use of AI in telehealth allows clinicians to make real-time, data-driven decisions, which can enhance patient experience and improve health outcomes (Amjad, Kordel, & Fernandes, 2023).

AI has also found applications in pediatric dentistry, where it is used for accurate diagnosis and assisting clinicians in clinical decision making, developing preventive strategies, and establishing appropriate treatment plans (Vishwanathaiah, Fageeh, Khanagar, & Maganur, 2023)

In the context of rehabilitation, AI has been used in the planning and design of forest park rehabilitation bases[4]. This application of AI demonstrates its potential in creating environments that promote health and well-being (Zhu & Ma, 2023).

Discussion of the Research

This document provides a comprehensive overview of the role of AI in vocational rehabilitation (VR), its ethical implications, and potential impacts on employment, accountability, and privacy.

The role of AI in VR is underscored by its potential to augment the quality of care and enhance outcomes. For instance, AI-assisted virtual reality technology is being explored in higher vocational education, and AI applications are being used in physical therapy diagnosis and management (Alsobhi et al., 2022). However, this document also acknowledges the barriers to AI adoption in rehabilitation, including cost and resource constraints.

The ethical implications of AI in VR are discussed extensively, emphasizing the moral status of AI machines, the definition of relationships arising from machine use, value judgments, trust considerations, data accessibility, and privacy protection (Hong, 2022). This document also underscores the need for ethical considerations and legal oversight as AI technologies like brain-computer interfacing become more invasive in individuals' lives (Alharbi, 2023).

The potential impacts of AI on employment and accountability are significant. This document suggests that the increasing use of AI and machine learning has implications for employment, economic inequality, and social cohesion (Tiwari, 2023). It also raises questions about accountability, especially when AI systems make decisions that have significant impacts on patients' health (Antunes & Coutinho, 2022).

This document also discusses the use of AI in healthcare and rehabilitation counseling. AI has been increasingly used in these fields, with a variety of applications across different sectors. For instance, AI has been used in telehealth to improve healthcare delivery (Amjad, Kordel, & Fernandes, 2023), in pediatric dentistry for accurate diagnosis and assisting clinicians in clinical decision making (Vishwanathaiah, Fageeh, Khanagar, & Maganur, 2023), and in the planning and design of forest park rehabilitation bases (Zhu & Ma, 2023).

Future Implications and Research

This document suggests that the increasing use of AI and machine learning has significant implications for employment, economic inequality, and social cohesion. As AI continues to permeate the field of VR, it brings with it a host of ethical considerations that need to be addressed.

Future research should concentrate on these areas and the formulation of ethical guidelines and governance mechanisms to guarantee responsible AI use in rehabilitation counseling.. More specifically, future research could explore the following areas:

1. Ethical Guidelines for AI in VR: As AI becomes more integrated into VR, there is a need for comprehensive ethical guidelines that address the unique challenges posed by AI. Future research could focus on developing these guidelines, taking into account the moral status of AI machines, the definition of relationships arising from machine use, value judgments, trust considerations, data accessibility, and privacy protection.

2. Impact of AI on Employment in VR: The potential impact of AI on employment within the VR sector is a significant area of concern. Future research could explore this in more detail, examining how AI might change job roles within VR, what new roles might be created, and how to best prepare the VR workforce for these changes.

3. Accountability in AI Decision Making: As AI systems make decisions that have significant impacts on patients' health, there is a need for research into how accountability can be ensured. This could include exploring how to make AI decision-making processes more transparent, how to ensure that AI systems can be audited, and how to determine responsibility when an AI system makes a decision that leads to harm.

4. Privacy Protection in AI Applications: The use of AI in VR involves the collection and processing of sensitive patient data, raising significant privacy concerns. Future research could explore how to best protect patient privacy in the context of AI, including the development of secure data storage and processing methods, and the creation of policies and procedures for handling patient data.

5. Effectiveness of AI in VR: While AI has the potential to enhance the quality of care and improve outcomes in VR, more research is needed to determine its effectiveness. Future studies could focus on evaluating the effectiveness of different AI applications in VR, identifying best practices, and determining where AI can have the greatest impact.

By focusing on these areas, future research can help to guide the responsible and effective use of AI in vocational rehabilitation.

Conclusion

Artificial Intelligence (AI) holds transformative potential for the field of vocational rehabilitation (VR), offering innovative solutions to enhance the quality of care and improve outcomes. However, the integration of AI into VR is not without its challenges. Ethical considerations, privacy protection, and accountability are key areas that need to be addressed as we navigate the future of AI in VR.

This document provides a comprehensive overview of these issues, highlighting the need for future research and the development of ethical guidelines and governance mechanisms. It underscores the importance of understanding the potential impact of AI on employment within the VR sector, ensuring accountability in AI decision-making, and protecting patient privacy in the context of AI.

Future research is encouraged to explore these areas in depth, focusing on the development of ethical guidelines for AI in VR, the impact of AI on employment in VR, accountability in AI decision-making, privacy protection in AI applications, and the effectiveness of AI in VR. Such research will be pivotal in guiding the responsible and effective use of AI in vocational rehabilitation.

In conclusion, as AI continues to develop and infiltrate various sectors, including VR, it is imperative to responsibly navigate these challenges. By doing so, we can harness the full potential of AI in enhancing vocational rehabilitation, ultimately improving the quality of care and outcomes for patients.

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Functional Capacity Evaluation

Ron Smolarski

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Since its inception, the functional capacity evaluation (FCE) has been a very suitable evaluation model for the rehabilitation community, specifically vocational rehabilitation counselors and vocational rehabilitation evaluators. By its own etiology and overall structure, this multi-component vocational functional test is not limited to direct service providers in rehabilitation (i.e., physiotherapists, occupational therapists), as assumed by many referral sources as well as rehabilitation literature reviews, rather it is best suited for graduate-level vocational rehabilitation practitioners.

There are several types of FCE models available for the evaluating practitioner. Some of these are used to establish functional baselines for setting therapy rehabilitation programs, some are used to assist physicians in identifying palatable restrictions for their patients prior to releasing them from care, and some models are used for determining functional losses and disrupted activities of daily living. The model that I prefer to use is the model endorsed by the National Association of Disability Evaluating Professionals, based upon the work and research conducted by Leonard Matheson, PhD. My evaluations only incorporate trait levels found in the U. S. Department of Labor Dictionary of Occupational Titles (DOT).

After 30 years of doing functional capacity evaluations, I have found that triangulation of multi-component evaluation functional tests with some profiling/pain indices has assisted me greatly in determining a person's physical demand characteristic for work, work tolerances, as well as safe engagement in simulated work tasks. Some of the tests and indices I use have been very efficient in my functional evaluation goals and include hand and spinal function sorts, the evaluee's pain evaluation, and DOT physical capacities, along with the McGill Pain Questionnaire and the Oswestry Disability Questionnaire, as well as the Functional Capacity Checklist. I will share with the reader just how my functional testing protocols are set, and which tests are used in a chronological order.

Step One: Engagement

I begin working with an evaluee by using the Hand Function Sort and Spinal Function Sort, both by Leonard N. Matheson and Mary L. Matheson. I administer these along with three other sheets: the anatomical pain figure (a figure on which the evaluee uses different color markers to indicate different types of pain) and two other sheets that list DOT physical capacities and ask the worker to indicate the degree of pain or discomfort associated with each task on a scale of 1 to 10. Then I ask evaluees to state in their own words how the discomfort affects them. After this, I ask them to complete two pain scales (the McGill Pain Questionnaire and the Oswestry Disability Questionnaire), and finally to fill out the Functional Capacity Checklist (FCC).

This initial evaluation gives me an excellent understanding of the evaluee's problem list, and I compare my impressions to the medical diagnosis. I then discuss items on the sorts and the FCC with the evaluee if I feel the worker may be under-valuing or over-valuing his or her condition, based on the diagnosis. I listen to the responses and determine if the evaluee is over- or under-reacting based on the data they provided me and my knowledge of the disability, as well as its impact on each physical capacity worker trait factor.

At this point, the evaluee knows that the upper extremity and back sorts we have done provide me with feedback as to their effort in doing the functional capacity evaluation. I check the evaluee's vitals at the beginning and at the end of the evaluation. I in turn know what kind of individual I am dealing

with in terms of the almighty truth, and I have a clear understanding of how the disability has impacted the worker.

Step Two: Physical Testing

Then I use the Jamar Hand Grip Dynamometer to evaluate hand grip strength (3 times per hand for each of the 5 settings). I am looking here to see if the worker is giving me full effort through consistency (coefficients of variation and research-based profile across 5 handle positions). Prior to the evaluation and at the end of the evaluation, I take the individual's blood pressure to make sure I am not working with a person who has an elevated diastolic pressure that could be detrimental to their health during testing.

Once I have determined that the diastolic pressure level is well below 115 mmHg, I perform timed upper extremity evaluations (manual dexterity, fine finger dexterity, motor coordination, tool usage) and compare the evaluee's results to norms. I am looking for discrepancies: are the scores all over the place or are they consistent? Four of the five scores should be in line with each other, and one should be an outlier if the evaluee has displayed accurate/typical results.

After each segment (finger dexterity, manual dexterity, motor coordination, tool usage, disassembly), and after each 10-pound incremental increase to lifting, I note whether the evaluee's pain levels are going up, going up and down, or staying the same.

I perform the lifting portion of the evaluation with the Simulated Work Environment Ability Test (SWEAT) instrument, developed by Claude Peacock, a CARF accreditation evaluator and vocational evaluator, to objectively measure the worker's capacities related to specific work function. He designed the SWEAT to profile functions related to the DOT and physical demand characteristics (finger dexterity, manual dexterity, motor coordination, strength, reaching/ handling, pushing, and pulling, standing, balancing, endurance, feeling, crouching). Dr. McCroskey developed the norms for the SWEAT machine.

Vocational evaluators (IPEC and CVE) can meet legal criteria by assessing the relevant strength and limitations of evaluees using the SWEAT test because it interfaces directly with the job profiling and job description and the General Aptitude test battery utilized by the Department of Labor. It provides validity and reliability by measuring specifically the worker traits as defined by the U.S. Dept. of Labor federal regulations in determining disability.

I compare the SWEAT trait levels/percentage results to job titles in the United States economy that are in the DOT, which is the Department of Labor standard. The worker's strength classification is determined by weight/force, position, and pace criteria, which indicate what the worker can be expected to do now and in the future.

The SWEAT measures isotonic lifting (contraction of muscle under resistance – for example, lifting weights from the floor to overhead at full extension) and upper extremity aptitudes. The isotonic lifting is measured within the sagittal plane, since physical measurements specific to lifting have been provided by the Department of Labor within the same classification. This measures the range of motion from 6" to 72". The upper extremity aptitude measures are standardized to the Department of Labor and Dictionary of Occupational Titles worker traits (motor coordination, manual dexterity, and finger dexterity). These worker traits are related to real work activity. The measurement is taken using a stopwatch to see how much time an evaluee takes to complete a task in each test. The results provide the vocational evaluator with a foundation to assist in assessing vocational disability, vocational placement, and rehabilitation.

The norms are based on the general working population (adult workers ages 16-70). Various tasks have been categorized according to the levels of strength associated with them: sedentary, light, medium, heavy, and very heavy. The research backing the SWEAT derived from a sample of 337 workers from the general worker population and related to the DOT and percentages of occupations that fall within the above strength levels.

I conduct the SWEAT going from 36" to 6" and 36" to 72," at 6" intervals (for example, 36" to 30" to 24," etc.). I stop the evaluation when I see that the evaluee's pain level is moving too high—99.9% of the time I eventually stop when pain increases while lifting with the upper extremities, but I try to finish the test even with increased pain. I make my decision to stop if the feedback from the evaluee is that the pain level is between 8 and 9 or if the pain increases after a steady feedback of pain level (as an example, if 4s for previous test move up to 5) because it is at this point that I determine that the worker must stop now, or I will cause harm. The previous points (pain levels 1 to about 7 or 8) provide me with a good understanding of how the worker deals with the pain. The actual physical testing portion provides me with a good understanding of whether the worker can continue working at a competitive and a sustained rate (two especially important variables).

Step Three: Review and Confirmation

After completing the physical testing, I review the medical reports and compare them to my evaluation data to determine if there are any discrepancies. I also consult with the treating physician, physiatrist or expert physician and share my findings. I also receive the physician's agreement to my findings. During my 30 years of experience assessing functional capacity, I have found that the FCE provides me with a good, grounded knowledge of what the worker can do realistically over time, because I am basing my determinations on a particularly good sample. I follow up on clients the day after the evaluation to determine if there are any pain/discomfort issues, how they slept, and whether there has been a change in their use of pain medications.

The above methodology is based on my training with Dr. Matheson, Dr. May, Dr. Stein, Claude Peacock, MA, Dr. McCroskey, and training through the University of Michigan Industrial Engineering Department with the 3 Dimensional Man software program that provides a safe lifting analysis. I encourage the reader to explore the literature further to learn more about this testing methodology made for vocational evaluators and counselors.

Author Notes

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Book Review

Story, K., & Miner, C. (2011). *Systematic Instruction of Functional Skills for Students and Adults with Disabilities* **(3rd Ed.).**
Charles C. Thomas, Ltd.

Reviewed by:

Jayasimha Reddy Tippireddy, MS, Management in Information Systems student at the University of Memphis

When writing an instructional book, the author generally gives a general overview of the topic to help his readers understand the depth and level of the book. The same goes for this book. *Systematic Instruction of Functional Skills for Students and Adults with Disabilities* is very accessible and reachable for the average reader. Like the previous editions the key questions are used consistently, which is a good thing as the readers will know what common questions are being discussed. The author used very little jargon or complicated words, as he wanted to make it easy for the people reading (teachers, service providers, etc.) to apply in real-life situations. Explaining the step-by-step process through the key questions and discussion questions is the book's major strength.

The window to the world case studies section in each of the chapters is the best part of the book as the author gives real-life examples of students and adults of various age groups with disabilities, and how they overcame their problems using easy techniques like roleplaying, taking part in activities, etc. These world case studies will be impactful to the reader, as they may be involved in some kind of similar situation in one way or the other. This encourages the reader to apply the instructions specified in the book which is the author's main goal.

The author utilizes empirical research to support the interventions that are discussed. On top of that, the usage of best practice recommendations, discussion questions, and school and community-based activity suggestions makes the text accessible for students and adults with disabilities. In the chapter on *teaching skills,* the usage of general case analysis form and generalization error patterns is a good addition, as it can be used to assess the range of stimulus variation and range of response variation of the student. Usage of both positive and negative teaching methods as mentioned on pg.77 helps avoid the error patterns.

The chapter on *Teaching social skills* is the most essential as it is a requirement for every student and adult with disabilities to be inclusive in the society and world. This book will be useful when the student or adult with disabilities transition into a newer environment or work setting. The book's greatest distinguishing trait is that it is written for practitioners rather than academics. It is a valuable resource for instructors working to improve the skills of learners with disabilities because of its format, readability, and extensive description of instructional methods.

Overall, this newest edition would be a tremendous tool for any teacher or service provider, especially given the target audience with little knowledge of vocational rehabilitation. This book is a must-read for students, teachers, and others providing services, instructions, supervision, etc. for students and adults with disabilities.

In Memory of Billy Joe McCroskey

April 14,1945 – May 13, 2023

Dr. McCroskey came from a humble rural Georgia family. He attended the University of Georgia under the mentorship of Dr. Tim Field. Billy and his best buddy at the time, Bill Wattenbarger, (affectionately known within the department as the "Two Bills"), developed the *Vocational Diagnosis and the Assessment of Residual Employability* (and the acronym of *VDARE*) as the essence of their dissertations. Ultimately, four other doctoral students used this same area of study for their dissertations as well. At the time, the University of Georgia program was one of the largest in the nation and Billy and his compatriots were visibly part of the training and research of the program, both within the College and nationally, through multiple publications and training seminars. Billy especially spearheaded much of the thinking and development of VDARE, and quite obviously, the rationale had a lasting impact within the field of forensic rehabilitation and consulting. Following graduation, Billy, largely on his own, developed his very successful software which is described below. Billy was a lifetime contributor to the field of vocational rehabilitation.

He held the rank SSG US Army, but also distinguished himself in the military during a time when everyone had a Top Security Clearance, he had Crypto. It was there he discovered the ability to see patterns others did not see. This became a fundamental skill in his Rehabilitation Counseling PhD program when he saw unique patterns in the Dictionary of Occupational Titles (DOT). The physical demands and cognitive requirements for each job combined to produce a normal distribution where no two jobs had the same value. Using this marvelous model of the world of work became the basis for his degree and profession.

Billy used the concept of job difficulty to explain – the higher the Vocational Quotient (VQ), the higher the wages for an occupation. Because he had organized the world of work with his Encyclopedia of Job Requirements and his VQ calculations, he was able to use this foundation to predict earnings.

The Vocational Quotient (VQ) distribution scaled the DOT to predict occupational skills long before anyone thought about the Federal Rules of Evidence. He published specific information so that all DOT programs could utilize the predictive power of the VQ with no limitations. The VQ was extremely effective in predicting low to medium incomes. Then he developed the Economic Quotient (EQ) that was a more direct predictor of higher incomes. Again, he published in his own *Journal of Forensic Vocationology* all the results so everyone could do the same.

We marvel at his ingenuity as he took mountains of government numbers and crafted them into a system that not only matched workers to jobs but also provided information about labor market conditions and earnings on a county-by-county basis.

His unique skill was the ability to see patterns extended to understanding the work of Vocational Experts. There was a research study of Rehabilitation Professionals using various DOT computer programs. Billy's program weighed some variables higher because he knew they were crucial in determining loss of earning capacity. As a result, the McCroskey Vocational Quotient System (MVQS) computer program was the best predictor of Vocational Experts' responses.

Billy's achievements sprung from a deeply held belief in the value of work, a deeply felt compassion for those with disabilities particularly in relation to work and making jobs accessible, and a most deeply held desire to make vocational evaluation a true scientific discipline.

He used his gifts to forever improve and change the professional skills of Vocational Rehabilitation Counselors. He was incredibly generous with the time he spent researching, teaching, and training

us to be better counselors and evaluators. Billy not only served his country, but he also served his professional community with the highest standards.

Unfortunately, the genetics that created his brilliant ability also carried the family traits of diabetes that ended his life prematurity. We are all grateful for what he created and saddened by the loss of glorious things he would have done if he had lived longer. We honor your work, and you will always be remembered with great respect. We salute Billy Joe McCroskey, PhD.

Kenneth L. Dennis, PhD

Tim Field, PhD

Cynthia P. Grimley, MS

Jan Lowe, MS

Ronald T. Smolarski, MA

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