Content Areas for Discussion
6th Edition – ABVE Certification Exam

1. Occupational Information/Data/Testing

a. Transferable Skills Analysis and Vocational Information During a Time of Transition
b. Evidence-Based Vocational Analysis: A Solution to the "Soft Science" Problem
c. The Importance of Testing in Forensic Vocational Disability Assessments
d. The Vocational and Rehabilitation Assessment Model (VRAM): Introduction of an Empirically Derived Model of Forensic Vocational and Rehabilitation Assessment

2. Transferable Skills

a. Understanding Transferability and Occupational Classifications: Implications for Vocational Forensics
b. Transferability of Skills: Historical Foundations and Development

3. Earning Capacity Issues

a. Estimating Earning Capacity: Venues, Factors and Methods
b. Estimating Worklife: BLS, Markov and Disability Adjustments
c. Estimating Earning Capacity: A Historical Review

4. Laws and Regulations

a. Daubert & ADA Decisions: Will Functional Capacity Evaluations Hold Up In Court?
b. Vocational Expert Testimony: What We Have Learned During the Post-Daubert Era
c. ADA Amendments Act of 2008: A Pocket Guide for Rehabilitation Professionals
d. A Fifty-State Survey Concerning the Admissibility of Expert Testimony

5. Expert Issues/Testimony

a. Interfacing the Economic and Vocational in Personal Injury Cases
b. Life Care Plan Survey 2009: Process, Methods and Protocols
c. White Paper: Who is the Client in Forensics?
d. Clinical Judgment: A Working Definition for the Rehabilitation Professional

6. Ethics

a. The Vocational Expert and Ethics
b. Forensic Ethics and Indirect Practice for the Rehabilitation Counselor

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Transferable Skills Analysis and Vocational Information During a Time of Transition

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Abstract. Vocational case managers, counselors, and experts are faced with a dilemma about Transferable Skills Analysis (TSA) because the U. S. Department of Labor (DOL) is making a transition from the venerable Dictionary of Occupational Titles (DOT) to the new Occupational Information Network (O*NET) system. The DOL is no longer updating the DOT, and it has actively promoted O*NET as a replacement for the DOT for career exploration and workforce investment purposes. Yet, an examination of O*NET reveals that it is not suitable for disability adjudication and vocational rehabilitation use. The DOL acknowledges the fact that O*NET is not designed for forensic use, and has been working with the Social Security Administration for two years to identify types of additional data that are needed to augment O*NET-SOC information for forensic purposes. This article describes the historical context of the DOT, explains some challenges facing both the aging DOT and the new O*NET, identifies the dilemma confronting vocational professionals because of this transition, and most importantly, suggests some interim solutions.

Transferable Skills Analysis and Vocational Information During a Time of Transition

Historical Perspective

Since its creation in the 1930s, the *Dictionary of Occupational Titles* (DOT) (United States Department of Labor (US DOL), 1939, 1949, 1965a, 1965b, 1966, 1977, 1991a, 1993b) has undergone considerable metamorphosis to meet changes in the world of work and the needs of its users. It was introduced in 1939 as a simple four-digit coding system to describe occupations in a standardized way for use within Employment Service offices for purposes of labor exchange. The realities of World War II production and personnel requirements underscored the need to develop suitable methods of matching people to job requirements (US DOL, 1944). Extensive testing and research programs by the military and DOL identified a series of core worker trait factors that became part of the DOT and ultimately emerged in 1947 as the General Aptitude Test Battery (GATB). Post-war efforts to match disabled veterans to occupational requirements, and to meet the growing needs of an expanding industrial economy spurred continued occupational research.

In the late 1950's, Fine (1955, 1957a, 1957b, 1958; Fine & Heinz, 1958) developed the conceptual foundation for modern transferable skills analysis, focusing on the importance of worker functions, work fields, and materials, products, subject matter, and services (MPSMS) when examining post-injury profiles. The third edition of the DOT (US DOL,

1965a, 1965b) unveiled a two-volume set using a new six-digit occupational coding structure designed to group occupations (Occupational Group Arrangement) and worker functions (Data-People-Things). One year later, it was followed by the *Selected Characteristics of Occupations* (SCO) (US DOL, 1966). This was a landmark release for the vocational industry, because it opened the doors for disability evaluation encouraged by the Social Security Administration (SSA). It also triggered the development of a significant number of commercial vocational evaluation systems. The SCO was expressly produced to assist professionals with disability evaluation. In 1972, DOL published the *Handbook for Analyzing Jobs* (US DOL, 1972) describing in detail the methodology for conducting on-site surveys for data collection and subsequent aggregation into the DOT. Recognizing the need for more efficient handling of the growing body of occupational knowledge and the need for a non gender-biased publication, DOL published its fourth edition of the DOT (US DOL, 1977), significantly expanding the release of discrete worker characteristic information at the occupational level rather than by occupational group (US DOL, 1981). The 1977 expanded occupational coding system uniquely identified each occupation by nine-digit number (up from six digits), for the purpose of computerized storage and retrieval.

Rehabilitation practitioners and software designers seized this new treasure of data. McCroskey, Wattenbarger, Field, & Sink (1977) developed a method of occupational profiling to take advantage of this new breadth of worker characteristics. Field popularized this approach in the *Vocational Diagnosis and Assessment of Residual Employability* (VDARE), the first systematic approach to manually use the DOT data to assess skill transferability and residual employability (Field & Sink, 1980). In 1978, the SSA published its regulatory guidelines for medical-vocational assessments of disability claimants and took administrative notice of the DOT, then in its 4th edition, as an authoritative reference for occupational information. SSA defined transferable skills in the *Code of Federal Regulations* [20 CFR 404.1568(d) and 416.968(d)] and set up its Medical/Vocational grids (20 CFR 404, Subpart P, Appendix 2) to facilitate its review of disability claims. As computing technology moved to the desktop, various commercial software systems were created to automate the arduous manual task of sorting through the various paper volumes of DOT definitions and worker characteristics. Building on Fine's concept of transferability, Botterbusch (1983, 1986) asserted the use of Work Field and MPSMS as the only true method for transferable skills analysis. This approach became widely recognized as the industry standard for transferability of skills analysis (Brown, McDaniel, Couch, & McClanahan, 1994; Field, 1999; Kontosh, 1999; Dunn & Growick, 2000; Weed & Field, 2001; Bast, Williams, and Dunn, 2002; Darling, Growick & Kontosh, 2002; Gibson, Earhart, & Lento, 2002).

The DOL released a small DOT supplement in 1986 (US DOL, 1986), later replacing it in 1991 with the *Revised Fourth Edition DOT* (US DOL, 1991a). In 1992, DOL released, in electronic format, more detail about Physical Demands and Environmental Conditions, particularly disaggregating important physical demands detail such as reaching, handling, fingering, and feeling. The DOL had published its procedures in the 1991 *Revised Handbook for Analyzing Jobs* (RHAJ) (US DOL, 1991b). Many of these disaggregated worker characteristics were later published in the revised SCO (US DOL, 1993b). Since 1992, DOL has made only a few minor modifications to the DOT data electronically, and it has not published the data changes in any widely disseminated printed format.

Some Challenges of the DOT

The steady evolution of the DOT had some interesting side effects. Other government agencies created their own occupational classification systems with levels of occupational detail that could be reliably sampled for purposes of their data collection. These federal agencies included the Bureau of the Census, the Department of Commerce, the Office of Personnel Management, and the Department of Defense. Even within the DOL itself, it created several simpler classification systems, one to gather labor market information based on the Occupational Employment Survey (OES), the other to aggregate occupations for its popular biannual publication - The *Occupational Outlook Handbook* (OOH) (US DOL, 2002b). Aside from the daunting and expensive task of updating this mountain of DOT data, the DOT data and structure began to age and fall out of step with a changing economic structure

(Miller, Treiman, Cain, & Roos, 1980; Botterbusch, 1993). Many DOT occupations have become obsolete or non-existent through business process and technology improvements. Others have combined and collapsed into a single "new" occupation. Information and biotechnology have spawned numerous new, emerging occupations not yet captured by traditional occupational sources. DOL sought alternate methods to collect data to reflect these changes in the workplace. It dismantled its network of Field Analysis Centers and moved to a job-incumbent survey model rather than using trained job analysts to collect occupational data (US DOL, 2002a).

Emergence of O*NET

In response to the changing economy and a growing desire for more current data, DOL began in 1991 to receive input from its employment network stakeholders through the Advisory Panel on the DOT (APDOT) (US DOL, 1993a). The various APDOT reports proposed a new "Content Model" for occupational information. After years of research, DOL introduced the *Occupational Information Network* (O*NET) in 1998 (US DOL, n.d.a). In this first prototype release, O*NET collapsed the 12,700+ unique DOT occupations into a significantly smaller number of occupational groups (846 *Standard Occupational Classification* (SOC) groups; 1,166 SOC-O*NET groups). The most recent production release, O*NET 4.0 (O*NET 5.0 available in Summer, 2003), has about 950 occupations. This aggregation serves one of the primary objectives of the DOL: to adopt a standardized occupational classification — the SOC — that can be used at its Employment Service offices, yet be expanded by using the O*NET-SOC coding system for more career counseling detail. The Office of Management and Budget (OMB) has mandated that all federal agencies use the newly revised SOC for occupational coding when it is appropriate to the mission of the agency (OMB, 1999). Most state Employment Service agencies are converting to the SOC in some way, although each agency is at various stages of deployment (US DOL, 2001).

The new O*NET Content Model (O*NET Consortium, n.d.), while drastically reducing the number of occupations, vastly increases the number of worker and occupational characteristics from 72 to more than 230. The 1998 O*NET prototype coding has already been replaced by the new O*NET 4.0/5.0 coding system that is a direct variant of the newly revised SOC system, the new federal Standard Occupational Classification. The breadth of information being assembled for the O*NET database is taking years to fully develop and deploy by the various agencies.

Some Challenges of the new O*NET

The O*NET information is intended primarily for purposes of career exploration, and career planning (US DOL, n.d.b). In addition, O*NET information is used for various workforce investment purposes, such as writing skills-based job orders or resumes, curriculum development, on-the-job training contracts, and related purposes. The DOL has indicated that O*NET is not designed for forensic use (P. Frugoli, DOL, personal communication with author S. Karman, June, 2003). Investigation of O*NET confirms that the system, by design, is not suitable for applications where occupation-specific information about the thresholds for physical, mental and skill-level demands of work are needed. Of particular concern to vocational professionals are the aggregation of O*NET data, the manner of data collection and the descriptors of work and worker traits (Cannelongo, 2002a).

The way in which O*NET occupations are aggregated results in a loss of specificity that is critical to vocational professionals. The O*NET taxonomy clusters approximately 9,500 DOT titles into fewer than 1,000 SOC-O*NET occupational groups. Many of the SOC-O*NET occupations contain a large, heterogeneous mix of jobs with a widely diverse range of strength and skill requirements. For example, the strength requirements for an SOC-O*NET occupational grouping may span several ranges of ability: sedentary through heavy. As such, O*NET groups often reflect a cluster of related occupations rather a single, discrete occupation. This high level of data aggregation makes it difficult for vocational professionals to determine if a disability claimant or injured person could perform an occupation when the individual's residual functional capacity and work history are taken into consideration.

The O*NET data collection methods also differ substantially from the DOT. Rather than deploy trained job analysts to observe jobs on-site, the new approach

by DOL is to have job incumbents complete survey forms. Certain dimensions (e.g. "Abilities") will be rated by job analysts without going on-site to observe or otherwise measure actual performance. Pre-testing of the survey forms provided an estimate of the time required to complete all of the items. To meet OMB guidelines for time burden on individual respondents, DOL divided the survey into 4 separate questionnaires, each of which is completed by 15-20 employees in each occupation, for a total of 60-80. (US DOL, 2000). This approach may introduce problems with internal sample consistency and with reliability for forensic purposes. It appears that the O*NET data collection may not cover enough of the lower skill level segments of the labor market (Cannelongo, 2000a). Beginning mid-2001, DOL initiated its plans to survey about 200 occupations per year, expecting to have O*NET fully populated with new incumbent survey data by 2008.

While data gathering for O*NET has been underway, the initial ratings for characteristics reported in O*NET are derived strictly from researcher efforts to collapse the old DOT data into the O*NET occupational groupings (US DOL, n.d.c). Using factor analysis, DOT titles were arranged into the current O*NET occupational groups. Then, job analysts rated the work and worker traits, or descriptors, for each of the new occupational groupings (Peterson, 1999). While many of the current O*NET descriptors are helpful for career exploration, they pose a particular concern for forensic professionals. For reasons detailed below, it would be difficult for a vocational expert to defend the choices of existing O*NET descriptors used in forensic case analysis. Investigation of O*NET descriptors reveals four areas of concern:

Link between demands of work and human function: Many of the descriptors are difficult to observe in the work place and difficult to relate to a client. For example, it is unclear how a job analyst might be able to rate the extent of "static strength" or "problem sensitivity" required to perform an occupation satisfactorily. It is equally unclear how a vocational professional could assess the level of "static strength" or "problem sensitivity" that a client could perform.

Terminology: The terminology and definitions of O*NET descriptors appear to reflect mostly industrial organizational psychology, and are unlike those used by SSA, the medical profession and numerous other users, such as vocational rehabilitation and forensic specialists. This does not help to resolve a long-standing communication problem among healthcare, forensic, and disability management professionals.

Redundancy: Some of the O*NET physical descriptors seem to describe similar attributes, e.g., explosive strength vs. dynamic strength, and gross body coordination vs. gross body equilibrium (Bainbridge, 2001). It is difficult to accurately measure job demands using terms that may overlap or reflect similar constructs. The problems created by such overlap would be amplified if rehabilitation specialists and SSA adjudicators try to interpret those terms and their measures to evaluate a client's or SSA disability claimant's functional abilities.

Scales: The measures for O*NET descriptors involve the use of ordinal scales rather than interval scales, and can lead to problems with objective interpretation. For example, it is difficult to quantify Trunk Strength on a scale of 1 to 7, with anchors such as "sit up in office chair," "shovel snow for half hour," and "do 100 sit ups" at points 2, 4 and 6, respectively along a 7-point scale. Also, the user cannot know what the descriptor scores mean in terms of the functioning level required to perform the occupation. The Likert scales, used in the O*NET incumbent questionnaires and converted into ratings of 1 to 100 for the online version of O*NET, are not linked to functional measures, such as amount of force required for a specified duration. Therefore, adjudicators and rehabilitation specialists cannot know what a score of 48 in Trunk Strength means, as reported for Food Preparation Worker (O*NET-SOC code 35-2021.00).

Despite the volume of these new characteristics, many physical demand characteristics important to the rehabilitation and forensic community are still not measured. Furthermore, concerns regarding terminology and redundancy affect the extent to which job incumbents may be able to understand the survey questions, which may, in turn, affect the reliability of the responses when survey responses are tallied. The reading level requirement for some questions may be too high for many job incumbents, and may be another source of survey error.

The International Association of Rehabilitation Professionals (IARP) has developed its own internal O*NET subcommittee (Cannelongo, 2000b) to evalu-

ate additional issues. Preliminary statistical analysis by the subcommittee has clearly shown the lack of homogeneity in the various SOC and O*NET-SOC groups when carried out to examine the DOT occupations that comprise each group. There is growing discussion of additional job demand detail beyond the O*NET level. The IARP has spearheaded the formation of a coalition of professional organizations called the Inter-Organizational Task Force (IOTF) interested in this new layer of occupational/worker trait detail (IARP, 2002). The goal of the IOTF is to assist DOL and SSA to establish a common, objective, measurable, and reliable framework that can best describe the physical, mental, cognitive, training and environmental demands associated with occupations. Representing a collective membership of 300,000 diverse professionals interested in these issues, the IOTF is a powerful force for developing a common shared language for more efficient and consistent service delivery (J. Cannelongo, personal communication with author J. Truthan, June, 2003; IARP, 2002). The SSA is continuing to work with DOL to best articulate the needs of the rehabilitation and disability evaluation community.

The Dilemma

To encourage its own departments to begin using O*NET-SOC instead of the DOT, DOL launched a significant marketing campaign to declare that the DOT had been replaced by the new 1998 SOC (Mariani, 1999; Levine & Salmon, 1999). Yet this message has been the source of a great deal of misunderstanding in the rehabilitation and forensics communities, creating a significant dilemma. While the O*NET database has the potential to add some new dimensions to understanding and describing an occupation for career exploration purposes, it was not designed for vocational rehabilitation and disability evaluation. As noted, many of the scales for the new dimensions can neither be measured nor quantified and the occupational groups are often far too heterogeneous in composition. If the DOT is "replaced" and O*NET is not adequate for rehabilitation purposes, then how does a case manager or vocational expert build a sound opinion that will be accepted by the court?

Recognizing the concerns of rehabilitation and forensic specialists, in joint meetings during the past two years, DOL staff have indicated to SSA and the IOTF that O*NET information is the successor to the DOT for purposes of career exploration, workforce investment/labor exchange, and business human resources functions (P. Frugoli, DOL, personal communication with author S. Karman, June, 2003). Collaboration among IOTF, SSA and DOL has resulted in an understanding that two modalities of occupational information are necessary: one that is intended for career preparation and exploration, and the other that is useful for forensic and rehabilitation purposes. Toward that end, SSA and DOL are in the process of developing plans to address the need for occupational information for disability evaluation and vocational rehabilitation (SSA, 2003a; 2003b).

In the context of the issues above and until other suitable occupational data are available, SSA indicated that it cannot use O*NET and that it will continue to use the DOT (SSA, 1999a; and SSA, 1999b). In the CFR, SSA takes administrative notice of the DOT as "reliable job information available from various governmental and other publications" (20 CFR 404.1566(d) and 416. 966(d)). Social Security Ruling 00-4p clarifies SSA standards for the use of vocational evidence involving "other reliable sources of occupational information" (SSR, 2000). The ruling states that SSA adjudicators must obtain a reasonable explanation for any conflicts between occupational evidence provided by vocational experts or specialists and the DOT. Adjudicators must then explain in their determinations or decisions how the conflicts were resolved. Also, SSR 00-4p states that SSA regulatory definitions and policy for strength and skill levels and for TSA are controlling in the adjudication. These regulatory definitions are based on DOT constructs.

Suggested Solutions

The SSA definition of skills transferability remains solid, defensible, and relevant today. The SSA and DOL plans are evolving to address the need for occupational information that is suitable for rehabilitation and forensic purposes. The SSA, IOTF, and DOL continue to work cooperatively together. A solution can certainly be derived, but it will take time to assure that the future occupational information does indeed have suitable mechanisms in place to properly examine transferability of skills, particularly for disability and forensic issues. Such efforts may include the introduction of a new layer

of occupational detail at the O*NET level. The DOL has already sponsored some research of internet-based training (distance learning) to establish the feasibility of teaching field professionals to reliably perform job analysis. Results solidly point to such an approach with inter-rater reliability extending from .77 to .98 (Cannelongo, Lechner, Keener, Carter, & Johnson, 2002).

Until such time that these collaborative efforts are completed, the DOT cannot be retired or written off for rehabilitation, forensic, and disability adjudication. Aging though it is, trained job analysts followed a clearly defined methodology on-site to validate the DOT, and it is reliable (Cain & Green, 1983). To the extent that vocational professionals use O*NET, its data collection is still underway and will not finish its first cycle of data collection until about 2008. To help rehabilitation and forensic professionals during this time period, the following points are recommended for transferable skills analysis during this transition.

- Continue to use the DOT. It has the longevity and defensible depth required by the courts (Daubert v. Merrill Dow Pharmaceuticals, 1993).
- Carefully examine DOT tasks and worker characteristics to assure continued relevance.
- Add another DOT code/description to work history to help best describe one actual position held. It may take several DOT codes to best capture the responsibilities of each job held in a client's work history. (Note: SSA Vocational Experts should adhere to current SSA policy).
- Use the proper method for TSA (i.e. Work fields, Specific Vocational Preparation (SVP) and MPSMS), as these taxonomies best fit the SSA definition of transferable skills (20 CFR 404.1568(d)(2) and 416.968(d)(2)). This is the generally accepted and the current industry standard practice. Standard practices do not change overnight. New standards cannot emerge until new methods and data elements have been created and validated. (Note: SSA adjudicators derive information similar to that reflected in Work and MPSMS fields from the DOT description of tasks and tools for given occupations.)
- Carefully screen the results of any search method. No computer system will ever replace the scrutiny of a skilled vocational professional.
- Be aware that some occupations no longer exist nor exist in significant numbers in a specific labor market. (Note: By law, SSA must consider occupations as they exist nationally. Therefore, for SSA cases, do not necessarily exclude occupations that are not prevalent in a given locale, as they may exist in significant numbers in the national labor market (E. Tocco, Office of Disability Programs, SSA, personal communication with author, S. Karman, May, 2003).
- Study all occupational suggestions for changed worker requirements, potential obsolescence, and combination with other occupations in today's economy.
- Augment your understanding of an occupation with information drawn from a variety of sources.
- Examine labor market information for relevant trends, being careful to understand that labor market information usually reflects many discrete occupations, not just one DOT occupation.
- Conduct a labor market survey to validate the continued existence of such occupation(s), current hiring patterns, prevalence, duties, tasks, skill sets, and hiring requirements.
- When possible and appropriate, do an on-site survey/job analysis.

Rehabilitation and forensic professionals should be poised to assist the DOL and the SSA to develop and deploy a variety of creative approaches to gather current occupational data. The DOL and SSA are seeking the active input of the rehabilitation and forensic community to discover the data needed to render opinions on important vocational issues. The IOTF coalition of various rehabilitation, health care and disability associations, and private industry represent a significant number of interested parties. Collectively and cooperatively, these parties can help DOL and SSA shape the next level of evolution necessary to properly address the needs for current, detailed and relevant occupational information in the rehabilitation and forensic communities.

As the opening historical perspective showed, change does happen over a significant period of time. This present time is an enormous opportunity to be heard and to work towards the implementation of worker and occupational characteristics that will truly benefit rehabilitation for generations. The IOTF, the DOL, and the SSA are receptive to the needs of the rehabilitation and forensic communities. Professionals are encouraged to become active in contributing to the continued evolution of a critical component of various public and private service delivery systems.

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Evidence-Based Vocational Analysis: A Solution to the "Soft Science" Problem

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Abstract: In the post *Daubert* era, there has been much concern about the admissibility of vocational analysis that relies on "soft science." Soft science, though, can be fortified with hard facts. Closely examining the evidence provides the vocational expert with those facts. Evidence-based vocational analysis is a methodology for evaluating the impact of injuries on the ability of an individual to work and earn a living. Evidence is gathered through systematic review of records, testing, and observation of the individual in his or her environment. These data are critically examined to determine correlations between medical evidence, vocational tests and measurements, and external behavioral evidence. Scientific skepticism must be observed in order that a methodical and logical analysis can be made of the objective evidence.

Medical Factors

Vocational analysis is founded on the accuracy, reliability, and validity of medical opinions. Flaws or weaknesses often exist in a patient's medical evaluations. Some professional research studies cited below illustrate some common examples of the problems faced when a vocational opinion is rendered. Clinical examinations and testing can be informative and appear unequivocal, but there is a false positive or negative error rate associated with all examinations and tests. There are times when medical or vocational information does not seem to have credibility. For example, 52% of asymptomatic subjects had a disc bulge at least at one level, while 27% had a protrusion (Jensen et al., 1994) Magnetic resonance imaging (MRI) of the spine can show herniated discs with no symptoms and herniated disks can fail to be revealed by MRI. Petterson, Hildingsson, Toolanen, and Bjornebrink (1994), found that there was poor correlation between pathologic MRI findings and clinical signs and symptoms.

Redmond and Rivner (1988) evaluated several methods of diagnosing carpal tunnel syndrome (CTS). They found that of 50 normal subjects, 23 (46%) had at least one false positive. The results of this study indicated that certain reported criteria for CTS were reported as abnormal in a high percentage of normal subjects, thereby making them of limited value in the diagnosis of CTS. Gerr and Letz (1998) found that subjects who had clinical signs of CTS but who were electrodiagnostically normal had much higher rates of false positives than electrodiagnostically normal subjects who were asymptomatic, raising into question the overly optimistic estimates of various tests for CTS. The results of this study indicate that certain reported criteria for CTS indicate abnormality in a high percentage of normal subjects, thereby making them of limited value in the diagnosis of CTS. Fifty percent of asymptomatic athletes who underwent MRI's of the knees had significant abnormalities. Twenty-five percent of these had no previous surgery and were unaware of significant injury (Brunner et al., 1989).

Vocational analysis is founded on the accuracy, reliability, and validity of medical opinions. Flaws or weaknesses often exist in a patient's medical evaluations. Some professional research studies cited below illustrate some common examples of the problems faced when a vocational opinion is rendered. Clinical examinations and testing can be informative and appear unequivocal, but there is a false positive or negative error rate associated with all examinations and tests.

Conversely, MRI can produce false negatives. MRI is commonly used to diagnose knee pathology. Kriegsman (1991) studied 102 patients who underwent arthroscopic surgery where MRIs were available. Sensitivity, specificity, accuracy, positive predictive value, and negative predictive value were calculated. The results indicated a high rate of false negative MRI findings. Lane (1998) found that radiographic evidence of the progression of hip and knee osteoarthritis was similar in runners and non-runners, calling into question opinions that a plaintiff's osteoarthritis is the result of acute trauma.

An element of medical assessment is the analysis of physical or functional ability. These evaluations generally are performed by licensed physical therapists. Evaluations usually are administered over a 3 to 5-hour period. Some evaluators will have the examinee return the next day to assess the impact of the testing conducted the day before. A number of assessment systems are used in an effort to standardize evaluations and to provide some measure of reliability and validity. These include Blankenship, Isernhagen, Workability, and ERGOS to name a few. Some physical therapists use their own approach. All of these systems have various problems, most seriously with reli-

ability and validity. Some proponents of these systems have conducted studies of reliability and validity of their systems, some have not, and some have done partial studies. Some of the studies have been peer reviewed; others have not. However, the most serious criticism is that no studies of predictive validity or utility have been conducted. No 5-year, 1-year, or even 6-month follow-up studies looking at whether the examinee was able to work at the predicted level have been conducted. The purpose of obtaining a functional capacity evaluation (FCE) in forensic vocational analysis (or for that matter, in Social Security or workers' compensation) is to determine what the plaintiff can do or will be able to do in the future. None of these systems can claim to do that.

Gross and Batte (2005) concluded that better FCE performance was mildly associated with indicators of faster return to work. However, FCE is not related to recurrent back problems, future pain intensity, or self-reported disability. The behavior and motivation of the examinee are challenges facing developers of functional evaluation systems, or for that matter, any type of evaluative testing. Secondary gain, litigation, physical condition, or just the energy or lethargy of the examinee can affect the examination. Methods of determining internal validity of the examination are questionable. Pain complaints also affect results. Pain and motivation cannot be verified and quantified with existing technology. Unfortunately, these variables can confound the evaluation (Becker, 2004; Rhea, 2003). Until the issue of predictive validity of these evaluations is resolved, it might be that the best assessment of functional ability is based on the expert considering multiple factors or patterns to increase objectivity. These patterns can be found by correlating the FCE with attending physician records if available, radiographic findings, clinical assessments from second opinions, and potentially, *sub rosa* observation of the subject.

Psychological Factors

A diagnosis seen increasingly in cases requiring vocational analysis is mild traumatic brain injury (MTBI). Neuropsychological evaluations can be even more problematic than the more objective medical tests. The symptoms and behavior of a brain-injured patient can be extremely complex. Occasionally, multiple evaluations across providers or over time seem to lack reliability. The patient's symptoms simply appear inconsistent. This can lead to confusion that might lead one to suspect that the patient is malingering. The patient might be malingering or embellishing to inflate the claim. However, he or she might not be malingering but rather exhibiting behavior that fits into an alternative diagnosis of conversion disorder or other somatoform disorder.

Making the differential diagnosis between malingering and conversion can be difficult. Conversion symptoms can be very similar to malingering. There are subsets of patients who do not recover from MTBI over the normal course of time and who might even worsen-the persistent post-concussive syndrome. The symptoms and cognitive deficits in these patients have no specificity and cannot be supported by objective measures. Frequently, an array of probable symptoms reported by the patient to different professionals often creates an inconsistent pattern. Differential diagnosis among many possible diagnoses is critical to avoid iatrogenic disability (Alexander, 1997). Further complicating diagnosis is the fact that TBI symptoms commonly occur in normal populations that have not experienced TBI (Babin & Gross, 2002). Usually, forensic neuropsychological professionals are not able to examine a plaintiff before a TBI. Greiffenstein and Baker (2001) compared MMPI-2 pre-morbid and post-injury profiles in a population who attributed major personality changes to their injuries during the course of compensation-related neuropsychological examinations. The pre-morbid examinations were all abnormal with indications of somatoform psychopathology.

A diagnosis of posttraumatic stress disorder (PTSD) also seems to be appearing more often as an element of complaint in lawsuits. PTSD can occur after witnessing a life-threatening event such as combat, natural disaster, terrorism, personal assault, or catastrophic accidents. However, PTSD is not inevitable after witnessing or experiencing such event. Well over half of Americans (60.7% of men and 51.2% of women) report exposure to at least one significantly traumatic event during a lifetime. But the prevalence of 1% to 9% of people in the general population (higher in women) makes it clear that only a relatively small fraction of people will develop PTSD after a traumatic event. This would lead to the conclusion that PTSD in litigation cases is overly diagnosed (Lyons & Greenfield, 2006). David Dobbs (2009) studied PTSD in veterans returning from Ramadi (the Iraq war). He contends that PTSD is a conceptually flawed diagnosis that is being greatly over-applied, especially to veterans, with disastrous results. Experts and critics assert that PTSD represents a faulty, outdated construct that has been so overextended that it routinely mistakes depression, anxiety, or even normal adjustment for a stubborn ailment. Veterans are misdiagnosed and placed in a treatment system that discourages recovery. Can that also be true of patients in litigated cases? Dobbs concludes that PTSD exists and we must treat it. However, cultural obsession with the diagnosis of PTSD has become a problem in itself, our own neurosis.

Not all researchers believe that PTSD is over-diagnosed. On the contrary, some believe it is under-diagnosed. Brunet, Akerib, and Birmes (2007) cite the fact that "experts" predicted that 1 out of 5 New Yorkers would develop PTSD symptoms after the 9/11 attacks. However, only 7.5% of a random sample of 1008 adults reported symptoms consistent with PTSD. The difference, they contend, is proof that the condition is under-diagnosed. The fact that the diagnostic criteria have become stricter tends to reduce the number of those diagnosed with PTSD. At the same time, better detection has resulted in stable rates. The researchers argue that a number of groups are underrepresented. These include men, who tend to under-report psychiatric symptoms, immigrants, and prostitutes. The researchers do admit that all psychological diagnoses are subject to malingering when secondary gain is involved.

The *DSM-IV-TR* sets forth six diagnostic criteria that must be satisfied. Criterion 1 is the gateway criterion that must be met. The person must have experienced, witnessed, or have been confronted with an event that involved actual or threatened death or serious injury to the self or others

and the person's response involved fear, helplessness, or horror. The fifth criterion is that criteria 2, 3, and 4 must be present for at least one month after the event. The vocational expert should be familiar with the criteria and confirm that the professional making the diagnosis is qualified.

Personality testing (often part of a neuropsychological assessment) is the most controversial area of psychological assessment in both pure vocational rehabilitation and forensic vocational analysis. Everyone living in the real world employs behavior as the basic datum and measure of a person, regardless of whether his or her views are labeled phenomenological, humanistic, analytic, or eclectic. The problem is when people speculate about human actions using circular models that fall into a discourse without appeal to objective evidence. Personality tests fall into this category. They measure conceptions, not data (Jenkins, 1979). Traditional psychological measurements most often tend to deal with speculative concepts so loosely operationally defined as to be useless. These "tests" yield labels that have neither descriptive nor predictive validity when checked against objective criteria. One case in point: the Minnesota Multiphasic Personality Inventory (MMPI) failed to discriminate between 20-year-old college females and 50-year-old, backward male schizophrenics (Jenkins, 1980).

Another frequently used instrument is the Myers-Briggs Type Indicator (MBTI), derived loosely from Jungian psychology. However, Carl Jung himself did not believe that personality types were easily identifiable and that people could be permanently pigeonholed into categories. He thought that to attempt to do so was nothing more than a childish parlor game. The criticism of this test is not just of its predictive validity, but also of its reliability (Paul, 2004). Paul pointed to a study by proponents of the test. More than half of those who took the test were categorized as a different type when they took the same questionnaire a short time later, and a study by the National Research Council in 1991 found that 39% to 76% of test takers were assigned a different type within five weeks to six years. Paul also cited Druckman and Bjork (1991), who indicated that there had never been a long-term study validating the ability of the MBTI to predict success or failure in a career.

Litigation

The legal arena in and of itself might confound the medical/psychological variables and the vocational analysis. In a workers' compensation setting, researchers found that 83% of the individuals in cases with attorney involvement had not returned to work when the case was closed, while 71% of the individuals in cases without attorney involvement had returned to work. The differences were highly significant and held across types of orthopedic injuries (Anderson & Dyksterhuis, 1995). Feinstein, Ouchterlony, Somerville, and Jardine (2001) concluded that there was an association between litigation and increased psychological distress from the outset of the litigation process. Differences between the litigants and non-litigants suggested that the pursuit of compensation might influence the subjective expression of symptoms following MTBI. In a longitudinal study of MTBI patients, there was a correlation between the seeking of compensation and the latency of return to work. The findings indicated that the presence or absence of compensation seeking post-MTBI should be routinely evaluated when return to work is an issue (Reynolds, et al., 2003).

Vocational Analysis

The standard methodology for preparing a forensic vocational report is well established. The vocational consultant should review all available pre and post-injury medical and psychological/psychiatric records. Educational and employment records should be obtained and reviewed. The plaintiff should be interviewed and tested if appropriate or warranted, as in the case of claimed head injury, changes in cognitive function, the client being foreign born and educated, or the client having a potential learning disability. If the vocational consultant does not have access to the plaintiff, perhaps because the defense counsel retained him, then review of the above records might have to suffice. However, a vocational interview and testing might be available from the vocational work of the consultant retained by the plaintiffs' counsel. The subjective complaints and symptoms of the plaintiff should be cross-validated with objective medical findings, psychological assessments, and the individual's observable functioning in his environment.

Vocational consultants administer aptitude tests to assist in determining the types of occupations or jobs the injured party might be capable of learning or performing in the future. There are a number of aptitude tests used. Perhaps one of the most familiar, if not historically popular, is the General Aptitude Test Battery (GATB), use of which has been discontinued by the government although it is still used by many evaluators. Other aptitude tests commonly used include the Differential Aptitude Test (DAT) and Career Ability Placement Survey (CAPS). All of these tests have advantages and disadvantages, and all have legitimate criticisms. Most importantly, all of these tests provide only a beginning foundation for developing an analysis. The most valuable information in determining the ability to perform or learn a job is the subject's education, work history, and avocational interests. As in all areas of analysis, the subject's actual performance in his or her environment is a better predictor of future behavior. Obviously, serious brain injuries or illness can affect both testing and future abilities.

Interest inventories are often administered after aptitude testing (sometimes in the absence of aptitude testing). Instruments used commonly include the Career Assessment Inventory (CAI) and the Career Occupational Preference System (COPS). The more useful interest inventories match interests to the results of aptitude testing. While helpful in a rehabilitation context, interest inventories might not be as applicable in a forensic setting. The issue in civil suits is not necessarily what a person would like to do, but rather what the person has the ability to do. An individual who has consistently expressed interest in an occupational area and who has taken steps (education, training, career advancement) to achieve employment in an occupational area must be taken seriously. That person's behavior is a clear indicator of his interests. Administering an interest inventory would be redundant in such a case. For that matter, a litigant's work history is usually a con-

vincing indicator of interest if the patient has a career history that is well developed. A comprehensive vocational interview can often provide more insights into a person's interests than an inventory.

One of the standard methods used by vocational consultants in assessing an injured party's vocational options is the transferable skills analysis (TSA). These analyses are seldom done by hand any longer. Numerous software programs simplify the process. All of these do essentially the same thing-compare an individual's access to the labor market by matching work history, aptitudes, physical ability, and other variables to job requirements suggested by the *Dictionary of Occupational Titles.* However, the concept of transferable skills analysis has limitations. The effect of an injury cannot be clearly delineated. The categories of the *Dictionary of Occupational Titles* and format of the transferable skills analysis might force either over or underrepresentation of impairments as disabilities. The application of one limitation can eliminate many, if not all of the possible jobs. It might not be possible to define aptitudes clearly. Consultants might mistakenly run a program and accept the results without question. This can harm either the plaintiff or the defense. Job possibilities might either be eliminated, harming the defense, or included, harming the plaintiff.

Software programs frequently used by vocational experts throughout the United States include Oaysis, SkillTrans, and McCroskey's MVQS computer job-person matching system. David Stein (2003) researched the courts, basis for experts. His article located key legal decisions from *Daubert v. Merrell Dow Pharmaceuticals* (1993), *GE v. Joiner* (1956) and *Carmichael v. Kumho Tire* (1999) and found that the scientific method is the standard for vocational evaluation and vocational expert testimony (Stein, 2003).

Dunn, Williams, and Bast (2005) evaluated different software programs and concluded:

> Transferable skills analysis software applications only provide suggestions for vocational alternatives that might be considered in job placement, planning, or vocational forensic venues … No software application can replace the professional skill of a trained and experienced rehabilitation professional, and that is not the intent of such software applications…. It is ultimately the rehabilitation practitioner, using knowledge of the local labor market, the characteristics of workers, and the demands of jobs, to use a well-articulated and reproducible methodology, which may include a TSA, to determine how to facilitate an injured worker's entry into the labor market and return to as high a level of economic productivity as possible. (p. 18)

When the consultant goes to the local labor market, he or she might discover that the requirements suggested by the *Dictionary of Occupational Titles* are neither necessary nor sufficient. At this point in history and technology, no "silver bullet" exists to provide the perfect TSA program.

Worklife expectancy is the probable number of years a person is likely to be both alive and working. Various vocational experts and forensic economists use four basic models to estimate economic losses claimed in personal injury, wrongful death, and employment law cases. Some experts theorize that the evaluee would work the number of years from a given point in time (injury, death, termination, etc.) until age 62, 65, or 67, this being a Social Security Administration-linked number (SSA Retirement Rules, pp. 65–67). The equation relying on SSA charts is simple, subtracting the probable "retirement" age from the date of event and obtaining a fixed number. The general public also thinks in terms of "retirement age" based on Social Security figures.

The second method used since the 1980s is based on Current Population Survey (CPS), calculated by "increment-decrement" data input. The U.S. Department of Labor, Bureau of Labor Statistics, has worklife estimates based on gender, education, life expectancy, and educational attainment categorized in groups including "less than high school," "high school," and "15 years or more of schooling." Data were studied by race characteristics, simply by "White" vs. "Black" and "other" categories. Smith and Horvath, economists, published the charts in August of 1985. A third method often seen is described in the article "Worklife in a Markov Model with Full-Time and Part-Time Activity" by Krueger, Skoog, and Ciecka (2006). Multiple tables offer considerable variety in specificity of the individual, including variations on active, in-active, part-time, and full-time work probabilities. Each chart categorizes according to sex and educational attainment.

The last worklife expectancy method developed is described in *The New Worklife Expectancy Tables* by Anthony Gamboa (2006). The Gamboa methodology purports to predict worklife probabilities by linking age, education, gender, and a concept called "level of work disability." Gamboa's "non-medically" and includes cognitive disability by severity. The programs offer probable earning computations on a year-to-year basis of life, participation, and employment (LPE).

No matter what paradigm one relies on, data samples from large populations have been extracted, not accounting for wide variations of health factors or other pre-existing conditions. For example, no charts exist for an individual with chronic heart disease, diabetes, and chronic obstructive pulmonary disease (COPD) who is overweight, sedentary, and a smoker. Common sense suggests this profile would reduce both life expectancy and worklife. Charts developed in the past are based on general population statistics, not to specific individuals with unique medical and socio-economic profiles. Worklife tables may be considered, as is the case with transferable skills analysis methods, to be starting points in overall analysis, not ends in themselves.

Ordinarily, assessment of one's wage-earning capacity would follow the analysis of worklife expectancy. After reviewing the injured party's medical records, educational history, and work history, and running a transferable skills analysis, the vocational consultant can move on to the ultimate goal of assessing the plaintiffs earning capacity, a term that is used loosely. Homer and Slesnick (1999) differentiate between actual earnings, expected earnings, and earning capacity. Actual earnings are the historical earnings obtained from records. Expected earnings are those that the individual is most likely to earn in the future. Earn-

ing capacity is the level of earnings that the individual who chooses to maximize his income could earn. Earning capacity is most often predicted by a combination of the following factors: age, education, where one is educated, dates of education, certifications, licenses, work history, geographic location, and residual functional capacities. Each of these standards has been relied on as a methodology in personal injury cases to determine loss estimates.

Homer and Slesnick (1999) point out that a court decision favoring one of the standards is not necessarily an endorsement of that measure. Actual past earnings could have been affected by individual choice. A person could have chosen a higher-paying occupation might have chosen one that was more rewarding in other ways. For example, a physician might have chosen to enter a charitable voluntary organization, such as the Peace Corps or Doctors without Borders, rather than entering private practice. A plaintiff might have been able to earn more, but chose not to in an effort to enhance the value of his lawsuit. A person might have understated income for tax purposes. Self-employed individuals may enjoy non-pecuniary benefits not available with a traditional employer-employee relationship. For example, one might choose self-employment for the personal challenge and the freedom to work one's own schedule; the opportunity to balance family and work needs; the ability to work out of the home and take advantage of legal IRS tax deductions such as in-home office use, purchase of and use of automobiles for business purposes, and purchase of specialized equipment and tools are reasons.

Expected earnings might appear to be the most easily defined and measured standard of loss. However, valuations are often assumed to be based on static variables that in fact are not static. The three factors that govern this are a person's abilities, the person's exercise of his or her preferences, and the market opportunities available for the person at the time. All of these are constantly changing. Economists have also studied an "age-earnings cycle" (Dillman, 1989). As one ages, earnings can be expected to increase. Perhaps the most difficult variable to assess is the person's preferences that are subject to constant change.

Earning capacity seems closely tied to expected earnings. Probability is central to the estimation of earning capacity. The difference is that earning capacity is usually not affected by voluntary, nonbinding choices by the worker. The ability remains-at least in the short-term-even if the individual chooses not to avail himself of it. Less precise definitions of earning capacity have led to general confusion and exploitation. In some extreme cases, a nebulous concept of capacity has been used to argue for far-fetched earnings assumptions. Generally, the courts have rejected these arguments.

It might appear that the courts are endorsing expected earnings as a measure, but this could be deceiving. What the courts are reflecting is the requirement that estimates of capacity be based on reliable evidence. Often the most reliable estimate will be actual past earnings. The evidentiary requirements of the court often lead to an analysis of earning capacity that is identical to estimates of expected earnings. While the courts have held that the loss of the ability to work is compensable, earning capacity is not measured by actual loss. An unemployed or sporadically employed individual is entitled to recovery from deprivation of what could have earned (*Landry v. Melancon,* 1989). However, damages for permanent impairment may not be based on speculation, probabilities, or uncertainty must; it must be shown by competent evidence that such damages are reasonably certain as the proximate result of the pleaded injury (*Fitzpatrick v. United States,* 1991, p. 1038). Impairment of earning capacity or loss of earning capacity is recoverable only when the earnings are reasonably certain to occur in the future (*Courtney v. Allied Filter Engineering, Inc.* 1989, p. 589). In *Jones Laughlin Steel Corp. v. Pfeiffer* (1983), the ultimate court findings stated that one could only provide a "rough and ready" estimate. For example, a lawyer might contend that his client, a student, would have gone on to become a physician, but for the injury. However, to support this argument, the student might have to prove that he had received outstanding grades in a pre-med program or high scores on the Medical School Admission Test. The court might be less inclined to accept the argument that a high school student might become a physician if this evidence is not produced.

Some courts have held that to focus too much on actual earnings ignores "capacity." Other courts have held that the plaintiff must introduce evidence of either his actual earnings or earning capacity. For the average worker, past history remains the most important source of information for the pre-injury earning capacity, assuming the evaluee has a well-established career. Past history often is the strongest evidence of what a person could do in the past and the best predictor of what he most likely could do in the future. Actual earnings are the starting point for determining capacity. If there is no evidence to the contrary, past work and earning history is assumed to be the best basis for estimation of earning capacity. The individual who has never worked might not be a lover of leisure with a high reservation wage, but someone who is simply incapable of holding a job. Pediatric evaluations present a new challenge to estimate allegations of future lost wages. In pediatric cases, one needs to rely in part on proxy wage estimates, be they national averages or correlations to the family's socio-economic status (Toppino & Boyd, 1993).

The vocational consultant must also consider both the supply side and demand side of the earning equation. On the supply side, consultants often measure personality and worker preference. Some jobs may be ruled out as impractical for the client, but other jobs might be merely undesirable or less preferred. The evaluation of personality and preferences might be less pertinent to earning capacity, but more germane to expected earnings. The difference between expected earnings and earning capacity are essentially preferences. On the demand side, the production of a list of jobs provides no evidence of the probability that the injured party is able to obtain these jobs. If the probability of the plaintiff being able to secure the job is ignored, only the supply side is being assessed. Assessing the demand side examines the probability that the person with identified abilities can obtain any of those jobs on the list in a given market at a given wage. Ignoring the demand side can result in highly unlikely pre and

post-injury estimates of earning capacity. Looking only at the supply side pre-injury can inflate the claim, injuring the defense. Looking only at the supply side post-injury can harm the plaintiff.

Horner and Slesnick (1999) offer a set of guidelines for assessing earning capacity that will not be repeated here. For an in-depth treatment of this topic, the article should be read in entirety. However, their summary is quite instructive:

> The judicial process, however, requires that an impairment of earning capacity be supported by reliable evidence. Often, there will be no reliable evidence that the person possessed an earning capacity in excess of their actual earnings, and that, if they were earnings maximizers, their earnings would be higher. The court must base its decisions on evidence, and thus it is common for there to be no difference between the earnings capacity that can be proven and expected earnings. (p. 17)

Conclusion

When we accept a case for a forensic vocational analysis, we should not assume the role of advocate, but offer an objective evaluation. Evidence-based vocational analysis is not cookbook vocational evaluation. Because it requires an approach that integrates the best external evidence of an individual's behavior and choices with clinical expertise, it cannot resort to a slavish, formulaic approach to individual analysis. Clinical evidence, and vocational testing and analysis can inform, but can never replace actual external observations and evidence. This expertise decides whether the external evidence supports the medical diagnoses and opinions as well as the vocational testing, measurements, and computer assimilations. The vocational expert must assess whether the clinical opinions apply to the individual at all and, if so, how they should be integrated into a vocational analysis.

When retained as forensic experts, we have no "client" but we do have an evaluee. The Commission on Counselor Certification (CRCC) defines the roles in the Code of Ethics for forensic experts under sections F.3 and F.4. However, all professionals come to their chosen roles with operative biases and need to be reminded that one method to overcome bias is to make evidence-based analysis their foundation, an umbrella from which everything in the process must be measured. Without a feedback mechanism, anyone can fail to consider a factual and objective basis for expressing opinions. Anyone who has been involved in a lab experiment is aware of the great lengths required to eliminate experimenter bias. Those familiar with the double-blind design of medical experiments recognize it as a method to increase scientific objectivity. When we look at the facts, there is a tendency to select the facts that might please the referral source. When we process data, we must be able to look honestly at all the accumulated facts and process them into an evidence-based, logical pattern. We must follow the evidence and apply logic when examining the facts to produce an informed opinion, and ultimately, to assist the trier of fact and render a fair decision for both plaintiff and defendant.

Recommended questions for increasing objectivity include the following:

1. Are the methodological choices that you have made reasonable, or are they arbitrary and unjustified?
2. Do you utilize a standardized check list of facts and evidence on every case for vocational analysis and use the same or similar methodology regardless of the referral source?
3. On cases absent of key facts or evidence, do you report this absence in your analysis?
4. Have you used or relied on test instruments with known validity and reliability?
5. Would you have used a different methodology if the opposing party had referred the client?
6. Have you disclosed what records and evidence are considered in the report?
7. Do you use software tools consistent with current practices of your industry?
8. Do you understand the federal rules of evidence sufficiently to be able to defend your opinions in court?

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The Importance of Testing in Forensic Vocational Disability Assessments

Jasen M. Walker and Fred Heffner

In forensic matters of vocational disability and earning power assessment, the vocational expert is challenged with making a comprehensive assessment, usually after one encounter with the litigant. Many vocational experts rely heavily, and often exclusively, upon one of several methods of Transferable Skills Analysis (TSA). Vocational tests and other psychometric procedures, including work samples, are commonly viewed as the primary tools of assessment in career counseling and vocational rehabilitation. TSA alone is not always an adequate means by which to determine an individual's post-injury job potentials. Ideally, a forensic vocational test battery might include standardized measures of academic achievement levels, aptitudes, personality characteristics, and occupational interests. Whatever its origin, vocational assessment with TSA alone can be inadequate, and the forensic vocational evaluation with both testing and TSA enhances the evaluator's capacities to accurately predict residual employability and earning power.

Background

The forensic vocational disability evaluation has received considerable attention since vocational rehabilitation professionals, initially subcontracted by the Social Security Administration as vocational experts, also began to provide testimony in workers' compensation matters and personal injury lawsuits. Field and Sink published their first of its kind monograph on the subject, *The Vocational Expert,* in 1981. At approximately the same time, the American Board of Vocational Experts (www.abve.net) was established to "preserve the integrity, standards, ethics, and uniqueness of vocational experts."

The vocational assessment and evaluation of an individual's earning power following the onset of injury and/or illness is generally considered a multi-dimensional process of reviewing pertinent medical information, gathering relevant data through interviewing, and determining an individual's worker traits and job skills that have the potential for transferability to the examinee's so-called residual functional capacity (RFC). In forensic matters of vocational disability and earning power assessment, the vocational expert is challenged with making a comprehensive and complete assessment, usually after one encounter with the litigant.

Notwithstanding the challenges of forensic disability assessment, it has been our experience over the past 30 years that many vocational experts rely heavily, and often exclusively, upon one of several methods of Transferable Skills Analysis (TSA), procedures that tap into databases of vocational traits, especially the *Dictionary of Occupational Titles* (DOT) (www.occupationalinfo.org), developed by the U.S. Department of Labor. TSA procedures were increasingly employed after Field and Weed published *Transferable Work Skills* in 1989. Vocational experts do not customarily employ standardized testing or measurement in their forensic vocational assessments, and in our opinion, that may be a methodological error in many forensic vocational assessments.

Havranek, Field, and Grimes (2001) detailed the VDARE process in *Vocational Assessment: Evaluating Employment Potential*. The authors wrote that "Vocational Assessment is a multi-dimensional process of observing and judging a person in action. Valid and reliable testing instruments should be used to assist the professional evaluator in gathering appropriate data for the decision-making process." (p. 60).

The proposition here is certainly not a criticism of the VDARE methodology of TSA, or for that matter, any other TSA product (most are proprietary). On

the contrary, the VDARE model is sound. But as a method of evaluating a person's future employability, like all other TSAs, it is limited. What is often overlooked in the VDARE model is the fact that the original called for the use of "documented references," including standardized tests and work samples to "clarify" aptitudes, interests, and temperaments among other characteristics in the Residual Employability Profile.

Vocational tests and other psychometric procedures, including work samples, are commonly viewed as the primary tools of assessment in career counseling and vocational rehabilitation. Why vocational tests and measures are not more frequently employed by vocational experts in forensic matters is subject to speculation. However, utilizing TSA only, even after having met with a workers' compensation claimant or personal injury plaintiff, may be an adopted methodology (even if limited) from the vocational experts' experiences in Social Security Disability matters. In Social Security Administration adjudications, the court-appointed vocational expert does not have access to the claimant but must come to court, review evidence, listen to testimony, and from those data make a determination of what the individual claimant's TSA might be in response to Administrative Law Judge queries or "hypotheticals." That tradition is, of course, less effective than when the assessment specialist has access to the injured claimant/plaintiff and can employ other assessment tools.

Walker and Petersen (2009) noted that many disability evaluators have traditionally relied almost exclusively on TSAs. Yet, despite its broad acceptance in the field of vocational disability evaluation, the TSA is not comprehensive enough to adequately assess disability and residual employability. As a method of assessment, TSA has several inherent flaws that argue strongly against its use as an exclusive approach. A major criticism of the TSA is its rigidity and potential for error, which often leads forensic evaluators to overlook a range of alternative occupations available to a person simply because the alternatives fall outside the TSA description of the person's prior employment. This is known as the unadjusted vocational profile (UVP) in the VDARE method of TSA. The UVP is achieved by collapsing the work history profiles into a single profile, representing the examinee's demonstrative pre-impairment worker characteristics or traits.

Walker and Peterson argue, however, that TSAs capture the essential functions of job descriptions that the person reportedly carried out in the past and are not necessarily representative of the evaluee's worker traits and characteristics. Job descriptions are certainly not universal as presumed by the U.S. Department of Labor in their DOT and the O*Net. For example, it would be absurd to think that all workers who are called "Office Managers" perform the same duties, and it would be equally preposterous to conclude that all Office Managers, by virtue of having the same job title, also have the same level of linguistic capabilities, hold the same interests, function with the same temperament, and possess the same potentials to learn alternative work skills. Yet TSA models extract worker trait data from job descriptions, not necessarily the person being evaluated.

Dunn and Cain (2001) reported that TSAs may be more effective for persons with certain trait capacities with relatively limited physical effects from injury or illness. For those who have greater physical effects from their impairments, TSA may not be as sensitive in identifying vocational alternatives. Dunn and Cain concluded, "More traditional vocational assessment methods (such as psychometric testing and work sampling) may be more sensitive in identifying appropriate vocational goals or vocational potential."

We have had the privilege of evaluating individuals from all occupational walks of life; from longshoremen with limited educations who are quite introverted to college graduates with advanced degrees who enjoy working with others. In some cases, comprehensive vocational assessments employing standardized testing have revealed evidence that TSAs could not. For example, some longshoremen have demonstrated through standardized testing that they possess high linguistic capabilities, vocational aptitudes, and personality styles revealing they can perform favorably in nonphysical employment requiring complex interactions with data and people, and not simply handling objects and things their job titles alone might predict.

Measuring an individual's mental and psychological competencies has merit. Mental measurements have been employed since the beginning of the 20th century. Entrance testing for college, law school, medical school, and the military has become the standard because it has predictive value. Before the federal government stopped publishing the General Aptitude Test Battery (GATB), most state agencies assigned the responsibility of the vocational rehabilitation of impaired and so-called "handicapped" people (the generally named Departments of Vocational Rehabilitation) utilized the GATB. The O*NET promotes the Ability Profiler and Interest Profiler. The most frequently employed aptitude test in America is the

Armed Services Vocational Aptitude Battery (ASVAB) used to determine a person's skills and aptitudes in a variety of subjects. The results enable the military to place applicants and recruits in the best possible slot for a person with that particular skill set.

Standardized test procedures that measure abilities, personality, and vocational interests are, in our opinion, essential elements of comprehensive vocational disability assessment. This is the case whether the results will be used for the purpose of occupational rehabilitation planning or for forensic assessment. In the latter case, measuring instruments as a component of the evaluation can be crucial since the examiner may have limited access to the examinee.

Meyer et al. (2001) pointed out the many benefits of using standardized testing as an indispensable tool in assessment and even demonstrated that many published standardized tests are as reliable as medical tests like x-rays and CT scans. The use of standardized testing provides unique information in that it can measure a person's aptitude for retraining in an appropriate (new) vocation. This information can lead to considerations that are not generally discernable from a traditional TSA.

Employing TSA without having any testing results may be a tradition (however limited) that derived from experience in Social Security Disability matters where the court-appointed vocational expert does not meet the claimant before the actual hearing. When the assessment specialist has access to the injured claimant/plaintiff prior to the court appearance, however, the vocational testimony can be significantly more accurate and useful to a jury or judge in understanding the litigant's occupational limitations and potentials.

Vocational Tests

Ideally, a forensic vocational test battery would include measures of academic achievement levels, aptitudes, personality characteristics, and occupational interests. By gathering data in each of these domains, the vocational expert is better equipped to assess and determine an occupational match. The identification of potential occupations that may be viable for the claimant adds a critical dimension not found in the TSA alone. The results of the vocational tests, when coupled with an employment history of the injured worker, provide the litigation with significantly more information on which to base a court ruling.

Academic testing measures an individual's abilities to read, spell, and calculate arithmetically. In general, these abilities are acquired through the course of formalized schooling. However, reliance on statements of educational attainment alone without contemporary academic testing is not recommended because rarely do educational levels equate perfectly with actual ability. On the contrary, it is unfortunate, but we have tested high school graduates who are functionally illiterate. Therefore, achievement testing is essential in determining decisively the injured worker's basic linguistic and mathematical abilities.

Aptitudes represent an individual's capacity for learning, and aptitude testing, therefore, is designed to predict an individual's ability to learn certain skills when given the opportunity. Such skills can include solving problems visually, understanding mechanical principles, perceiving differences in tabulated data rapidly and accurately, and comprehending written information. The work that a person is most likely to be successful in is work that involves aptitudinal strengths.

Personality testing is designed to determine an individual's specific character traits and can be used to assess whether an individual's temperament fits a particular type of work. That is, although a person's ability to perform specific work is critical in job placement, for that individual to have the right temperament to effectively carry out the work on a daily and sustained basis may be equally important for job success.

Measures of an individual's interests are equally useful. An interest assessment delineates the examinee's preferences for different forms of work. By determining likes and dislikes, work that a person would probably enjoy can be more specifically described. Obviously, individuals who enjoy what they do each day will have greater motivation to continue their work and will have a better chance to be successful in performing that work.

Assessment Validity

Along with the actual assessment of an individual's academic achievement, aptitudes, personality, and interests, vocational evaluation also requires making certain that the data obtained are an accurate reflection of the individual being tested. In determining the validity of test data, one would be well advised to examine three specific components of the process that include: standard performance level, consistency of performance, and response rate.

Additionally, motivation to perform can be assessed through observation of test-taking behavior and with

response style instrumentation. These factors, along with observed level of motivation, can be used to assess whether test results gathered are a valid representation of test takers' actual potentials.

Notwithstanding the surprise of sometimes discovering through testing that a high school graduate is illiterate, the concept of standard performance level would suggest that an examinee should perform at a level fairly consistent with his or her educational background or same age peers, and he/she should perform better on tasks that are more closely aligned with his/her academic and employment histories. That is, one would expect that an architect would demonstrate good mathematical and visual problem solving abilities, while an author would possess good language skills. A standard performance level would also suggest that there should be a correlation between an individual's intellectual ability (verbal and nonverbal) and acquired skills in verbal and nonverbal areas.

Performance consistency suggests that examinees should demonstrate a similar ability level on tests measuring similar skills (e.g., vocabulary, reading comprehension). Individuals should perform in a like manner on measures assessing like skills. In addition, test data gathered should not show significant variance during the course of test administration occurring at one particular time. Examinees should demonstrate minimal fluctuation within or between tests assessing similar skills that are administered at one sitting.

Response rate assumes that examinees should be able to respond to questions on timed (speed) tests at a rate that would place them within a performance range equal to their general ability as long as physical and/or mental impairments are not a factor in their test-taking speed. Additionally, examinees should be able to complete untimed measures within the time frame identified in the test manual.

Along with these specific factors, trained vocational evaluators can assess motivational levels through observational data gathered during testing. Although motivation is generally considered an internal dynamic, how examinees behave while taking tests can provide a significant amount of information about how invested the individual is in performing at a maximal level.

Obviously, motivation to perform optimally should also be questioned when individuals make statements about their disinterest in the test-taking process or in their performance while working. Additionally, one would hope that the test taker who is truly invested in his/her performance would be observed taking the time available to check responses for accuracy. Further, motivation should be questioned in individuals who engage in superficial conversation while working, succumb to possible distractions in the environment, skip or ignore test instructions or example problems, or work in an overly rapid and non-thoughtful manner. Thus, standardized testing not only yields quantitative data, but also permits the examiner to gather observational data regarding the examinee's approach to work-like tasks, the tests themselves.

To identify subject manipulation of test results, some tests, particularly personality measures, are equipped with their own validity scales. Other published tests, such as the Validity Indicator Profile, will yield data informing the examiner as to whether the test taker set forth valid and consistent effort on verbal and nonverbal measures of ability given concurrently.

The Basics of Forensic Testimony in Workplace Disability Litigations

To be a credible witness, workplace disability experts must understand the issues specific to workplace related injuries or illnesses, as well as the rules and standards of the American judicial system.

The Daubert Requirement

In 1993, the Supreme Court articulated a new set of criteria for the admissibility of scientific expert testimony. The original case was *Daubert v. Merrell Dow Pharmaceuticals, Inc. 509 U.S. 579.* In 1999, the Court, in *Kumho Tire Co. v. Carmichael 526 U.S. 137*, extended Daubert's general holding to include non-scientific expert testimony as well. In either case, the rulings relate to a case before a judge where the admissibility and validity of expert testimony is challenged by opposing counsel. In such case, the "expert" is required to demonstrate that his/her methodology and reasoning are scientifically valid and can be applied to the facts of the case. (Rehabilitation professionals are considered to be engaged in a scientific endeavor.)

It must be noted that in most, but not all, jurisdictions, an earlier standard titled the *Frye* standard has been superseded by the *Daubert* standard. In federal jurisdictions, the *Daubert* standard maintains while in some state jurisdictions, the *Frye* standard continues to be accepted. States that still follow the *Frye* standard include California, Florida, Illinois,

Maryland, Michigan, Minnesota, New Jersey, New York, Pennsylvania, and Washington.

The *Frye* standard holds that scientific evidence presented in court must be interpreted by the court as being "generally accepted" by a meaningful segment of the appropriate scientific community. In *Daubert*, the "expert" is required to demonstrate that his/her methodology and reasoning are scientifically valid and applicable with no reference to acceptability. The difference between the two standards is one of "general acceptance" versus a demonstration of "scientific validity."

Additional Requirements

Additionally, vocational rehabilitation professionals could benefit from practical experience with case analysis and opinion development, as well as the following specific methodologies:

- earning capacity evaluation
- lost wage analysis
- labor market surveying
- future care needs and "Life Care" planning
- functional capacity evaluations
- methods of judging quality and contemporary vocational rehabilitation services
- catastrophic case evaluation and management (especially spinal cord injuries, amputations, complex orthopedic and neurological injuries, and psychiatric illnesses) and
- vocational diagnostics via tests and testing methods

Key aspects of vocational assessment are:

- transferable skills analysis
- vocational testing
- job and jobsite modification/ergonomics
- rehabilitation plan development
- occupational retraining
- on-the-job training programs
- job analysis
- transition-to-work methods, and
- job placement

The Wellspring

Therefore, a primary source of preparation for forensic testimony, including meeting the Daubert requirement, is the administration and interpretation of standardized measures that will be used to establish the professionally certain vocational opinion. The vocational tests available in the United States are of very high quality in terms of validity and reliability standards, and forensic experts must demonstrate that they are capable of understanding their use and applying them to achieve optimal results.

Summary

In summary, it has been our experience as vocational disability evaluators over many years that too few vocational experts employ more than a TSA model in arriving at conclusions regarding an individual's residual employability and earning power. Nonetheless, assessment of occupational disability, post-injury employability, and earning power is a comprehensive process with increased predictive validity and reliability when the examiner uses multiple methods, including standardized testing.

TSA alone is not always an adequate means by which to determine an individual's post-injury job potentials. Vocational testing has substantial merit and increases the value of the one-time assessment. Employing a TSA only may be a vestige of methodology used historically in Social Security cases where the vocational expert has no pre-trial access to the claimant. Whatever its origin, vocational assessment with TSA alone is often inadequate, and vocational evaluation with both testing and TSA enhances the evaluator's capacities to accurately predict residual employability and earning power.

To expect the courts to rely solely on a determination of the vocational skills that an examinee has had, or claims to have had, in deciding on the future course for that individual would be to provide the court with less than the comprehensive information needed. Both the court and the individual litigant deserve more information and a more thorough analysis of what is possible going forward. The issue is not that more information is the goal. The issue is that vocational assessment without employing all possible procedures may be inadequate.

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The Vocational and Rehabilitation Assessment Model (VRAM): Introduction of an Empirically Derived Model of Forensic Vocational and Rehabilitation Assessment

Rick Robinson and Jamie Pomeranz

The current state of forensic vocational and rehabilitation assessment is discussed. The authors pay particular attention to research targeted at addressing the problematic issue of highly disparate and seemingly incongruent expert opinions of vocational earning capacity derived from a common fact pattern. An overview of the current and historical models of earning capacity assessment is provided, along with an assessment of the strengths and weakness of the models. Research results stemming from an examination of core variables in forensic earning capacity assessment is introduced. In addition to a set of core variables, the study also yielded a set of 29 domain level groupings of variables. Domain level groupings were organized into the Vocational and Rehabilitation Assessment Model (VRAM). The VRAM model is an empirically derived model for use in forensic vocational and rehabilitation assessment applications. The manuscript concludes with a discussion the VRAM model components and the key assessment issues relevant to each domain within the model.

Keywords: forensic, earning capacity, vocational assessment, rehabilitation assessment, model

Assessment of disability as it relates to vocational functioning involves the evaluation of multiple domains of endogenous and exogenous variables. Individual, social, economic, and political influences amalgamate to form the unique vocational and human capital profile an individual presents to an employer in consideration for work opportunity. Since inception of the vocational rehabilitation profession, substantial literature contributions have been made to describe factors and issues relevant to determining a person's vocational potential and earning capacity. Farnsworth et al. (2005) wrote that the process of vocational evaluation draws upon clinical skills from the fields of psychology, counseling, and education. Specific skills include file review, diagnostic interviewing, psychometric testing, clinical observation, data interpretation, and career counseling. These skills, when employed within the vocational rehabilitation process, are important to evaluating a person's skills, abilities, and capacity to perform work activity for which the person is either qualified or may be able to become qualified (Owings, Lewis, Streby, & Hildebrand, 2007). This vocational rehabilitation process and evaluation framework has given way to the vocational rehabilitation counselor's contemporary role as the generally accepted expert in vocational earning capacity assessment (Owings, Lewis, Streby, & Hildebrand, 2007).

In many litigated settings, the end result is a determination of injuries or damages sustained by a claimant or plaintiff (Neulicht & Constantini, 2002). Often, economic damages caused by a loss or reduction in a person's ability to earn wages or a salary can be significant and represent a large proportion of the total damages sought to be recovered (Cohen & Yankowski, 1998). In most courts of law, damages from lost wages due to an injury or death are measured by an earning capacity standard rather than an actual or expected earnings standard (Horner & Slesnick, 1999).

An actual earning standard would only acknowledge the historical earning record of a person and would not be prospective. According to Horner and Slesnick (1999), actual earnings are best conceptualized as a "series of outcomes of a complex stochastic process involving the interaction of a person's abilities and preferences with the needs of employers" (p. 14). An expected earnings standard is simply "a series of earning figures, which are the expected values of actual earnings in the corresponding time periods" (p. 14) (Horner & Slesnick, 1999). Expected earnings rely on a more mathematical solution and, therefore, are not directly observable. Because of the mathematical foundation of this construct, it does not account for changes in future earnings that are influenced by the unique vocational factors of the individual - namely the individual's abilities, available work opportunities, and the individual's vocational orientation toward future work. Reliance on a person's past vocational decisions to project future vocational course can be flawed, particularly in cases involving injury or a reduction in functional capacity for future work. Using an earning capacity standard, the expert's opinions consider expected earnings of a worker who chooses to maximize his or her actual earnings. Therefore, earning capacity is not normally affected by voluntary choices made by a worker regardless of whether he or she chooses to exercise his or her inherent abilities. Because of the importance that earning capacity plays in the calculation of damages, the ability to reliably predict a person's future earning capacity is crucial.

Despite numerous methods and protocols published in peer reviewed journals and textbooks (Andrew, 2004; Cohen & Yankowski, 1998; Drummond, 1996; Drummond & Ryan, 1995; Field, 1993; Havraneck, 2007; Havraneck, Field, & Grimes, 2001; Power, 2006; Roessler & Rubin, 2006; Rubin & Roessler, 2008; Sawyer, 2002; Shahnasarian, 2004a; Wattenbarger & McCroskey, 2004; Weed & Field, 2001), there remains a high level of variability in the final evaluation product of vocational rehabilitation consultants. In particular, the variability appears to be in the underlying foundation of variables considered in arriving at vocational conclusions.

In an investigation of attorney opinions of vocational rehabilitation consultant methodologies, Shahnasarian and Lassiter (2002) found attorneys have little confidence in the objectivity or consistency of methods used by forensic vocational rehabilitation consultants. In a study of variables considered by vocational consultants in preparing vocational reports, Robinson, Young, & Pomeranz (2009), identified a high degree of variability in variables documented by consultants in preparing reports outlining his or her expert conclusions. In a qualitative content analysis of 30 vocational rehabilitation reports across a range of venues, the authors identified 234 unique variables, but only 22 were found to occur in greater than 50% of the reports. This suggests a low level of methodological reliability in terms of variables documented by vocational consultants across evaluation settings.

The study by Robinson et al. (2009) demonstrated a need for research to clarify core variables to be considered by rehabilitation consultants in developing opinions of vocational earning capacity. By identifying core variables, progress may be made towards contracting the degree of variability in opinions, thus improving reliability and defensibility. Variability in opinion and methodology is particularly problematic in legal-forensic settings where vocational consultants retained by opposing parties routinely evaluate the same data and apply peer- reviewed methods, yet arrive at incongruent or contradictory opinions. Grimes suggested a lack of consensus about the theory of earning capacity may be related to the application of rehabilitation theory in adversarial settings where parties have competing interests. In a recent literature review by Shahnasarian (2008), a paucity of empirically-based research related to earning capacity assessment was identified. Shahnasarian opined a more highly evolved literature base would help control the issue of incongruent expert opinions derived from a common fact pattern.

Review of Vocational Earning Capacity Models

A comprehensive literature review of models of vocational earning capacity was completed. The authors found that much of the literature written on models of vocational earning capacity comes from the disciplines of vocational rehabilitation and economics. A summary review of the models identified in the literature review follows.

RAPEL

RAPEL is an acronym that describes five domains of analysis relevant to vocational capacity and rehabilitation analysis. The domains include the rehabilitation plan; access to the labor market; placeability; earning capacity, and labor force participation. While generally described in the literature as a "method" versus a model, RAPEL offers little guidance with respect to a methodological approach. Field (2008) described RAPEL as one of the most comprehensive methods (models) as it considers resources and strategies from a variety of sources. In conceptualizing RAPEL, Weed and Field (2001) described the model as a "comprehensive approach which includes all elements needed to determine loss of access, loss of earnings capacity, future medical care, work life expectancy, rehabilitation plan, placeability, and employability factors" (p. 246).

The rehabilitation plan component within RAPEL considers an evaluee's vocational and functional limi-

tations, strengths, emotional functioning and cognitive capabilities (Weed & Field, 2001). This component details the plan for establishing or increasing employment potential through training or accommodation, as well as future life care needs through the development of a life care plan (Weed & Field, 2001).

The access to the labor market component within RAPEL considers issues related to the evaluee's access to vocational choices or opportunities both before and following an injury (Weed & Field, 2001). Access to the labor market is determined through any number of sub-methodologies such as transferability of skills analysis, disability statistics, and professional experience.

Placeability within RAPEL represents the likelihood of an evaluee being successfully placed into an actual job (Weed & Field, 2001). They describe a person's placeability as the point "where the rubber meets the road." Considerations for determining placeability include impairment specific employment statistics; the economic situation within a community, and the availability of jobs within a specific occupation. Consideration of placeability also includes factors specific to the evaluee such as attitude and personality.

Earning capacity within the RAPEL model is a function of the previously discussed rehabilitation plan, access to the labor market, and a person's placeability profile (Weed & Field, 2001). They define earning capacity within this model as being based upon earnings paid to an individual for positions they can reasonably attain and hold. Earning capacity within this model can be operationalized through a number of methods such as categorizing jobs similar to the evaluee's parents and siblings (pediatric cases); ability to be educated or trained; computer generated information; and an assessment of an evaluee's potential based upon their unique worker traits.

Labor force participation within RAPEL addresses the conceptual issue of work life expectancy. This component of RAPEL attempts to determine the degree of reduction in expected work participation resulting from impairment. Issues relevant to a reduced work life expectancy include longer periods of unemployment between jobs, part time work vs. full time work, and lost work opportunity as a result of medical treatment follow up or earlier retirement age (Weed & Field, 2001).

The RAPEL model is clearly the most widely referenced vocational rehabilitation model of earning capacity analysis (Barros-Bailey & Neulicht, 2005; Berens & Weed, 2010; Field, Johnson, Schmidt, & Van de Bittner, 2006; Field & Weed, 2002; Stokes & Maestri, 2001; Weed & Field, 2001). The model has strong face and content validity within the vocational rehabilitation community, based upon its breadth of publication. The RAPEL model purports to be a comprehensive model that addresses a wide range of factors and variables. Within the domains of the RAPEL mnemonic is tremendous flexibility for consideration of various factors and variables relevant to the topic of vocational earning capacity assessment. RAPEL relies upon sub-methods and protocols of the professional's choice to address the various domains within the RAPEL framework. This high level of flexibility has the potential to compromise the reliability of the model. The principle question then becomes, can multiple consultants using the same fact pattern utilize the RAPEL model to arrive at reasonably consistent opinions. Empirical evidence of the RAPEL method's validity or reliability has not been reported.

Shahnasarian Model/Method

Shahnasarian (2001, 2004a, 2004b) described a method for synthesizing relevant case data and collateral source information. In sequential order, the method involves a review of existing records followed by an examination of the subject and subsequent formulation of opinions. Shahnasarian described the subject examination as involving three distinct components. First is the clinical interview and psychometric testing which focuses the examination on:

- background information;
- chronology of vocational activity near an event in dispute;
- potential physical problems or psychological problems that may affect career development;
- activities of daily living;
- mental health;
- education and special training;
- career development; and
- administration of standardized tests.

Following the clinical interview and testing, the consultant initiates labor market and associated research to address questions and hypotheses derived from the previous step (Shahnasarian, 2004a). In select cases, Shahnasarian (2004a) proposed consulting with collateral sources of information such as other experts, family members, caregivers, employers, and case managers. This method culminates in completion of the ECAF2, which is an instrument intended to "facilitate the systematic analysis and appraisal of loss of earning capacity" (p. 3).

The ECAF2 instrument describes 14 factors to be considered in analyzing a person's future career development and earning capacity (Shahnasarian, 2004c; 2009a; 2010b). The 14 factors are further organized into drivers and inhibitors. Driver factors are considered facilitative of higher earning capacity, while inhibitor factors tend to be detrimental to future earning capacity. Driver factors include stability of career

development, work propensity, demonstrated earning history, career motivation, and cognition. Inhibitor factors include phase of career development, subject specific issues, ability to apply prior skills, future career development prospects, prognosis, need and capacity for retraining, preexisting vocational handicaps, acquired vocational handicaps and vocational adjustment issues.

Since introduction of the ECAF (Shahnasarian, 2004c), the instrument has been subjected to a randomized study of its efficacy (Shahnasarian, 2004d). The ECAF has also been subjected to a factor analysis of its 14 factors (Shahnasarian & Leitten, 2006). A study of the methodological reliability of the ECAF found test-retest reliability coefficients ranging from .85 to .97 ($p < .01$) (Shahnasarian & Leitten, 2008). The focus of the Shahnasarian model appears to be aimed at satisfying the evidentiary requirements set forth in the Federal Rules of Evidence, rule 702 (U.S. House of Representatives, 2009). The model is flexible across venues and professional orientations, as it does not rigidly define the underlying protocols to be employed by the professional in reaching a conclusion.

The ECAF also includes an Impairment to Earning Capacity Rating Scale (Shahnasarian, 2004d). This scale ranges from zero to 100 with qualitatively derived anchor points defined as mild (1-20%); moderate (21-50%); severe (51-80%); and extremely severe (81-99%) (Shahnasarian, 2009b). An exploratory study to establish ECAF cut-off scores for the rating scale found that mechanical application of a formula or rating scale for earning capacity assessment was impractical (Shahnasarian, 2009b).

Although the Shahnasarian model purports to include economic considerations in the model structure, such considerations are not clearly evident when translated into the ECAF2 application framework. While the model is robust with economic supply side factors (factors attributed to the individual), there is no obvious consideration given to macroeconomic demand side factors. Macroeconomic demand side factors would include considerations such as unemployment, employer hiring requirements and geographic location. The model gives consideration to future career development prospects, but this appears to limit the scope of inquiry to industry specific change and innovation from a micro-economic perspective.

Deutsch/Sawyer Model

One of the earliest models of earning capacity assessment was presented in the pioneering vocational rehabilitation work of Deutsch and Sawyer (1986). The early Deutsch/Sawyer model considered five domains within the earning capacity model that included work identity of vocational goal, establishment within the vocational goal, skill and ability development to achieve proficiency within the vocational goal, experience within the vocational goal, and the degree of difference between historical (earned wages) and the average earnings for most workers within the alternative vocational goal. Within the model, foundational factors were also considered such as the evaluee's education, intellectual development, academic development, work history and transferable skills. Deutsch and Sawyer were among the earliest vocational theorists to differentiate between the concept of actual earnings and earning capacity. The measurement of a person's pre-injury and post-injury earnings are not necessarily reflective of a person's maximum ability to earn money- instead, earning capacity is reflected as a person's post-accident earning capacity or the potential a person has to earn wages.

Field (2008) critiqued the Deutsch/Sawyer model as being non-specific and global in nature. One of Field's critiques of the Deutsch/Sawyer model is that it offers no methodological recommendations to evaluate the many variables considered and therefore requires significant professional judgment to arrive at an opinion of earning capacity. The Deutsch/Sawyer model relies upon sub-methods and protocols which provide significant flexibility within the model, but, like RAPEL, this has the potential to compromise the model's reliability. Like RAPEL, the principle question is whether two or more consultants using a common fact pattern can apply the model and arrive at reasonably consistent opinions? No empirical validation studies were identified for the Deutsch/Sawyer model. Accordingly, its utility as a model rests upon its face validity.

Labor Market Access Model

The Labor Market Access (LMA) model was first introduced in 1981 (Weed & Field, 1994) and focuses on the importance of analyzing lost wages within the context of labor market conditions (Weed & Field, 2001). The underlying assumption in the LMA model is that it is possible to determine the extent of a person's vocational disability as a function of calculating a percentage loss of access to jobs within the geography of the person being evaluated (Field, 2008). The percentage loss of the labor market then becomes a function of comparing pre-injury and post-injury medical-vocational profiles.

The LMA model is dependent upon national government employment and wage statistics. The principle occupational data source used in LMA, the Dictionary of Occupational Titles (DOT) (U.S. Department of Labor, 1991), has been discontinued by the publisher and has not been updated since 1991. Accordingly, government statistics are no longer tied directly to DOT specific data. Estimates of specific employment numbers can only be roughly estimated through the application of imprecise crosswalks between the for-

mer DOT and the current data that is based upon standard occupational classification (SOC) codes.

Dillman's Loss of Earning Capacity Model

Dillman's loss of earning capacity model was first proposed in 1987 (Hankins, 2009). This model considers earning capacity to be a mathematical function of four variables that interact. Mathematically, this model is expressed as Impairment to Earning Capacity = f (L,P,T,C) where "L" represents reduction in labor market access; "P" represents reduction in average pay for residual jobs; "T" represents reduction in work life or hours available for work; and "C" represents reduction in the ability to compete in the open labor market. This model is best described as a mathematical model that does not involve assessment of specific jobs a plaintiff may be able to do post injury, but instead assigns values to each of the variables to arrive at a percentage of vocational earning capacity loss (Dillman, 1998). No empirical validity or reliability studies of Dillman's model were identified in the literature.

McCroskey Vocational Quotient System (MVQS)

The MVQS is a system of computer programs that is represented as an "unparalleled approach to matching people with their best job choices" (p. 1) (Wattenbarger & McCroskey, 2004). The MVQS analysis output consists of a list of jobs that are reasonably available in a specific labor market that are also consistent with an evaluee's unique worker trait profile. The MVQS job-person matching methodology is based on the Minnesota Theory of Work Adjustment described by Dawis, Lofquist, and England (1964) and Dawis, Lofquist, and Weiss (1968). The job-person matching process involves comparing the 24 most salient worker traits for a particular individual to the worker traits for each of 12,975 jobs in the application's database of jobs. With the list of jobs generated, the program is purportedly able to determine "labor market access, assess training and skill development needs, give counsel regarding vocational choice, estimate transferable skills, predict starting wages and future earnings, quantify disability and lost wages" (p. 2) (Wattenbarger & McCroskey, 2004). To make these computations, the program utilizes a feature unique to the MVQS in that each job identified is assigned a unique vocational quotient (VQ) derived primarily from statistical manipulation of the 24 most salient worker traits for each job.

Each job in the program's database is assigned a VQ. The larger the VQ for a particular job, the greater the job difficulty or demand placed upon a worker (Wattenbarger & McCroskey, 2004). Multiple studies have demonstrated the MVQS and VQ to have good validity and reliability in job prediction and estimation of earning capacity (McCroskey, 1992; McCroskey & Hahn, 1995; McCroskey and Hahn, 1998).

Rehabilitation Case Analysis Method (RECAM)

The Rehabilitation Case Analysis Method (RECAM) was first conceptualized by Sawyer (October, 2002) as a training tool that operationalized specific steps in vocationally analyzing a rehabilitation case. RECAM is comprised of six categories or domains of data that are sequentially analyzed to arrive at an expert vocational and rehabilitation opinion. The six broad RECAM functions include

- case referral and acceptance;
- initial case review;
- client interview and rehabilitation evaluation;
- case analysis and plan;
- report and recommendations; and
- case update.

Barros-Bailey and Neulicht (2005) described RECAM as being in its infancy. Since introduction in 2002, no additional information was identified in the literature describing the method's validity, reliability, or application.

Economic Foundations of Earning Capacity Assessment

According to Dillman (2009), economists view an individual in terms of human capital. Human capital is best described as the sum total of an individual's education, training, and intrinsic abilities presented to potential employers for labor consideration in exchange for wages. Dillman described two generally accepted economic variables that serve to moderate a person's earnings over time. These variables include general structural wage increases and the "age earnings cycle". Dillman (1988) defined general structural wage increases as those that are affected by the entire economy. Operationally, general wage increases may be viewed as "inflationary" wage gains.

The age-earning cycle is an economic concept that states that one's earnings are largely dependent upon one's age (Dillman, 1988). The typical wage earner will enter the labor market at a relatively low wage, rapidly progress in earning over his or her younger years, only to level off during mid-life. In some cases, wages will begin to decline as one nears the end of their work life expectancy. A flattening of the age-earning cycle then reflects a lessening of work opportunity over time. Further, a flattening of the age earning cycle may also suggest the typical learning curve of a job has peaked resulting in the realization of full wage earning "potential". Theoretically, absent

additional human capital investments, future wage increases will strictly be structural in nature.

The fundamental economic concepts of supply and demand are key influences upon the age-earning cycle. According to Horner and Slesnick (1999), supply side variables addresses what a person is able and willing to do for a given wage rate. A person's physical, emotional, and cognitive abilities determine the individual's work capacities within a given labor market. What a person is willing to do for a certain rate of pay is a function of his or her individual preferences. Horner and Slesnick described how personal preference in vocational selection has the potential to confound the concept of future earning capacity when the path chosen does not maximize income potential. Therefore, observations based solely upon a person's past vocational choices may not be reflective of their earning capacity given the person's unique vocational profile. Employees have the capacity to exercise individual choice based upon preferences that will subsequently impact their earning capacity. A person's expected earnings then are altered as the individual exercises individual choice in response to opportunities and preferences. Choices the individual makes with respect to occupational selection, will directly increase or decrease expected earnings, but has no impact on earning capacity which assumes individuals will make choices that maximize his or her earning potential.

Demand side economic variables are concerned with the probability of a person actually obtaining a specific job at a given wage rate within a particular labor market. Demand side variables are related directly to the question of whether an economic projection of future earnings has a reliable foundation, or is instead, based merely upon vocational possibilities and speculation (Horner & Slesnick, 1999). Demand side characteristics focus on the number of jobs with employers for a specified level of functional capacity at various wage levels. According to Horner and Slesnick, a vocational consultant who ignores the demand side characteristics is in essence not performing an earning capacity evaluation, but is instead, performing a vocational capacity evaluation.

Core Forensic Vocational Earning Capacity Assessment Domains

In a study by Robinson (2011), 29 construct domains considered core to the assessment of vocational earning capacity in a legal-forensic setting were identified through a three round Delphi consensus building study. Prior to initiating the study, Robinson, Pomeranz, and Moorhouse (2011) completed a literature review and found the Delphi method to be well suited for forensic rehabilitation research. The Delphi method's principle strength is the ability to extract variables or ideas from a diverse group of experts where consensus does not exist. The method allowed for qualitative expert input to be refined into a set of core construct domains and variables based on pure expert input that was untainted by social pressure or authority figures within the Delphi expert panel. Forty-seven expert panelists contributed construct domain level data with each meeting the following minimal study inclusion criteria:

- Each panelist held at least one nationally recognized vocational rehabilitation credential as a Certified Rehabilitation Counselor; Certified Vocational Evaluator; or held Diplomate or Fellow status with the American Board of Vocational Experts.
- Each panelist had completed at least five evaluations involving the assessment of vocational earning capacity in a legal-forensic setting.
- Each panelist had been accepted at least one time as a qualified expert on the issue of vocational earning capacity by a trier of fact before a civil or administrative court within the United States.
- Each panelist had been actively involved in the field of vocational rehabilitation within the preceding 12 months.

In soliciting construct domain level data, panelists were asked to think of a particularly complex case in which he or she (as the vocational rehabilitation expert) had been retained to assess an evaluee's vocational earning capacity. With this case in mind, panelists were requested to record all domains of variables believed to be essential to the evaluation. Expert input was analyzed using NVivo© (2008) qualitative data analysis software. NVivo© provided the researcher with a dynamic yet consistent method for coding individual data nodes. Each data node represented a single qualitative data element. Data nodes were then synthesized by combining like terms and ideas to derive one universal description of each domain and variable described by panelists.

Twenty-nine unique construct domains were identified in the Delphi study (Table 1). The majority of these domains were conceptually similar to those described in the general vocational rehabilitation literature (Andrew, 2004; Cohen & Yankowski, 1998; Dillman, 1987; Drummond, 1996; Drummond & Ryan, 1995; Field, 1993; Havraneck, 2007; Havraneck, Field, & Grimes, 2001; Power, 2006; Roessler & Rubin, 2006; Rubin & Roessler, 2008; Sawyer, 2002; Shahnasarian, 2004a; Wattenbarger & McCroskey, 2004; Weed & Field, 2001; Williams, Dunn, Bast, & Giesen, 2006). The high level of construct domain consistency between the Delphi study and domains described in the general rehabilitation literature emphasize the congruency between the fields of forensic rehabilitation counseling and non-forensic rehabilitation counseling. This high level of congruency is most likely due to the fact that forensic rehabilitation counseling has its roots in the

Table 1
Core Domains in the Assessment of Vocational Earning Capacity

Domain Name	Domain Operational Definition
Activities of Daily Living	Variables addressing self-care issues and assistance received either through personal care services or assistive devices and equipment
Avocational Activities	Variables related to hobbies and recreational pursuits
Behavioral Health	Variables that describe the behavioral relationship between the individual and his or her immediate and extended social environment(s)
Cultural	Variables that describe the behaviors and beliefs characteristic of a particular social, ethnic or other group
Economic	Variables that address a person's current and historical personal income and resources
Education-Compulsory (k-12)	Variables that address a person's education from kindergarten through the 12th grade
Education-Higher Education (college)	Variables related to a person's college level instruction
Education-Vocational and Apprenticeship	Variables that address a person's training through formal vocational instruction or apprenticeship training
Education-General Variables	Variables related to a person's educational development that are not clearly categorized into other educational categories
Financial	Variables that address the financial health, status and stability of the evaluee
Household Activities	Variables that address the evaluee 's participation in household activities
Job Acquisition and Maintenance	Variables that address issues related to obtaining and maintaining work
Labor Market Sampling Information	Variables related to employer derived data intended to obtain an understanding of a specific job of group of jobs
Labor Market Statistical Information	Variables related to sources of statistical data intended to obtain an understanding of specific labor market information
Language Skills	Variables that address language skills
Legal Jurisdiction	Variables that address aspects of a matter specific to the venue or jurisdiction within which a matter is administered or tried
Medical-Functional Capacity	Variables that address a person's residual functional capacity for activity and function
Medical-History and Treatment	Variables related to a person's past medical history and current treatment
Military Service Experience	Variables related to a person's military service experience
Past Work Experience-Variables Specific to the Employee	Variables that describe employee characteristics of each individual job a person has held during his or her work history
Past Work Experience-Variables Specific to the Employer	Variables that describe employer characteristics of each individual job a person has held during his or her past work history

Table 1 (Continued)
Core Domains in the Assessment of Vocational Earning Capacity

Domain Name	Domain Operational Definition
Past Work Experience-Variables Specific to the Job	Variables that describe characteristics of each individual job a person has held during his or her past work history
Professional Resources	Includes resources referenced by panel experts in rendering opinions of vocational earning capacity
Psychometric Measurement	Variables that address psychometric measurement of function
Rehabilitation Planning & Services	Variables that describe rehabilitation planning and services provided or planned for the evaluee
Socioeconomic	Variables that address individual, social and economic factors that are specific to the evaluee
Transferable Skills	Variables that address skills transferable from one type o f work to another without significant effort on the part of the individual or employer
Transportation	Variables that address transportation related skills and barriers
Work Life Participation	Variables that address the expected duration or reduction in how long a person may participate in the world of work

Note. N=29

early vocational rehabilitation movement (Owings, Lewis, Streby, & Hildebrand, 2007). Despite the high level of consistency between variables applicable to both forensic and non-forensic settings, three of the 29 domains of variables were unique to the forensic rehabilitation assessment venue. Unique forensic rehabilitation assessment variables included economic variables, work life participation variables, and legal jurisdiction variables.

Vocational and Rehabilitation Assessment Model

The Vocational and Rehabilitation Assessment Model (VRAM) (Figure 1) is an empirically derived structural model of vocational and rehabilitation assessment in a legal forensic setting. The structured presentation of VRAM is useful for visualizing the relationship and interaction of construct domains. The model is divided into three distinct operational modules: records review and rehabilitation interview (labor supply); labor market research and inquiry (labor demand); rehabilitation analysis and opinion formulation

Records Review and Rehabilitation Interview

The records review and rehabilitation interview are, in most cases, requisite first steps in conducting a vocational and/or rehabilitation assessment. Conceptually, at this step in the assessment process, the rehabilitation consultant is focused on identifying the multitude of evaluee specific variables expected to inhibit or facilitate present and future vocational and rehabilitation potential. This analytical review of existing evidence and rehabilitation interview findings are central to formulating a working hypothesis for further case specific research, analysis and hypothesis testing. The working hypothesis then becomes the operational expression of economic supply side considerations specific to the evaluee. Core domains to be considered in the evaluee specific supply side analysis include:

- Cultural considerations
- Educational experiences
- Language skills
- Socio-economic considerations
- Avocational activities
- Activities of daily living
- Household activities
- Behavioral health
- Past and present medical treatment
- Medical functional capacity
- Economic & earning history

- Current financial resources
- Military service experience
- Job acquisition and maintenance skills
- Past work experience
- Transportation resources

Labor Market Research and Inquiry

The labor market research and inquiry module provides ecological validity to expert opinions of vocational capacity. This module involves joint analysis of pertinent labor market and other economic statistics and local labor market sampling. Jointly, these construct domains yield the necessary data to evaluate the vocational employability and placeability of an evaluee.

Rehabilitation Analysis and Opinion Formulation

The rehabilitation analysis and opinion formulation module involves application of established rehabilitation methods and protocols that, along with the other two modules, contribute to development of expert rehabilitation opinions. Specific analysis performed require professional judgment be applied at this juncture to address referral questions specific to the case being evaluated. Core analyses in this module may include any or all of the following:

Psychometric Measurement. A core component of this module involves psychometric assessment of the evaluee. Psychometric measurement of various worker traits provides key data for analyzing rehabilitation need and employment potential. Psychometric assessment instruments are evaluee specific and require professional judgment to ensure appropriate instrument selection. The most common types of psychometric instruments administered at this stage include measures of intelligence, educational achievement, aptitudes, interests, personality, and temperament. Appropriate and accurate assessment at this stage is key to developing a residual vocational and rehabilitation profile that is subsequently considered in analyzing transferable skills to other work and issues of vocational employability and placeability.

Future Medical Care Needs. A second core component of this module is assessment of future medical care needs. In matters where the rehabilitation consultant has been retained to develop a life care plan, it is here where future care needs are evaluated. Apart from development of a life care plan, the time, frequency and duration involved in an evaluee's future medical care have a direct impact on both formulation of a rehabilitation plan and upon an evaluee's vocational employability and placeability within the labor market. Generally speaking, the more intensive future care needs are, the greater the impact upon a person's ability to sustain and maintain competitive employment.

Transferable Skills Analysis. Power (2006) described three different types of skills that include adaptive, functional and content skills. Adaptive skills are related to individual self-management and personality traits (Power, 2006). Functional skills are individual behaviors or abilities related to interaction with data, people, and things within a work environment or context. Content skills are best described as competencies a person has that are directly related to performance of a specific job or cluster of jobs. In cases where an evaluee cannot return to his or her previous work due to reduced functional capacity, identification of suitable jobs within the person's functional skill level is necessary. If applicable, identification of an evaluee's pre-injury skills is a requisite step to identifying alternative jobs.

Employability and placeability. The concepts of vocational employability and placeability are core elements in every assessment of vocational capacity. Employability addresses the issue of whether an evaluee is ready for work. Central employability issues involve selection of appropriate vocational goals that consider the evaluees vocational readiness characteristics such as aptitudes, personality, temperament, and residual functional capacity. While employability addresses work readiness issues, placeability addresses the question of whether an individual meets the hiring requirements of actual employers within a specific geographical labor market. While a job may exist within a particular labor market, if the evaluee in question would not be a reasonable candidate for employment consideration, then the suitability of the job as a vocational goal must be questioned. To be considered a viable work opportunity, the concepts of vocational employability and placeability must be demonstrated.

Wage Earning Capacity. Damages caused by a loss or reduction in a person's ability to earn wages, can represent a large proportion of the total damages in a legal claim (Cohen & Yankowski, 1998). Expert opinions of earning capacity are essentially prospective, projecting the expected earnings of a worker who chooses to maximize actual earnings. Accordingly, earning capacity is normally not influenced by a worker's vocational choices, but instead assumes he or she will fully exercise his or her inherent abilities. Earning capacity opinion formulation involves synthesizing the multitude of data elements that include both supply and demand side variables.

Work Life Participation. Work life participation is an emerging topic in the area of forensic vocational consultation. Gamboa and Gibson (2006) defined work life as the "total number of years in aggregate that an individual is likely to be alive and employed." Various

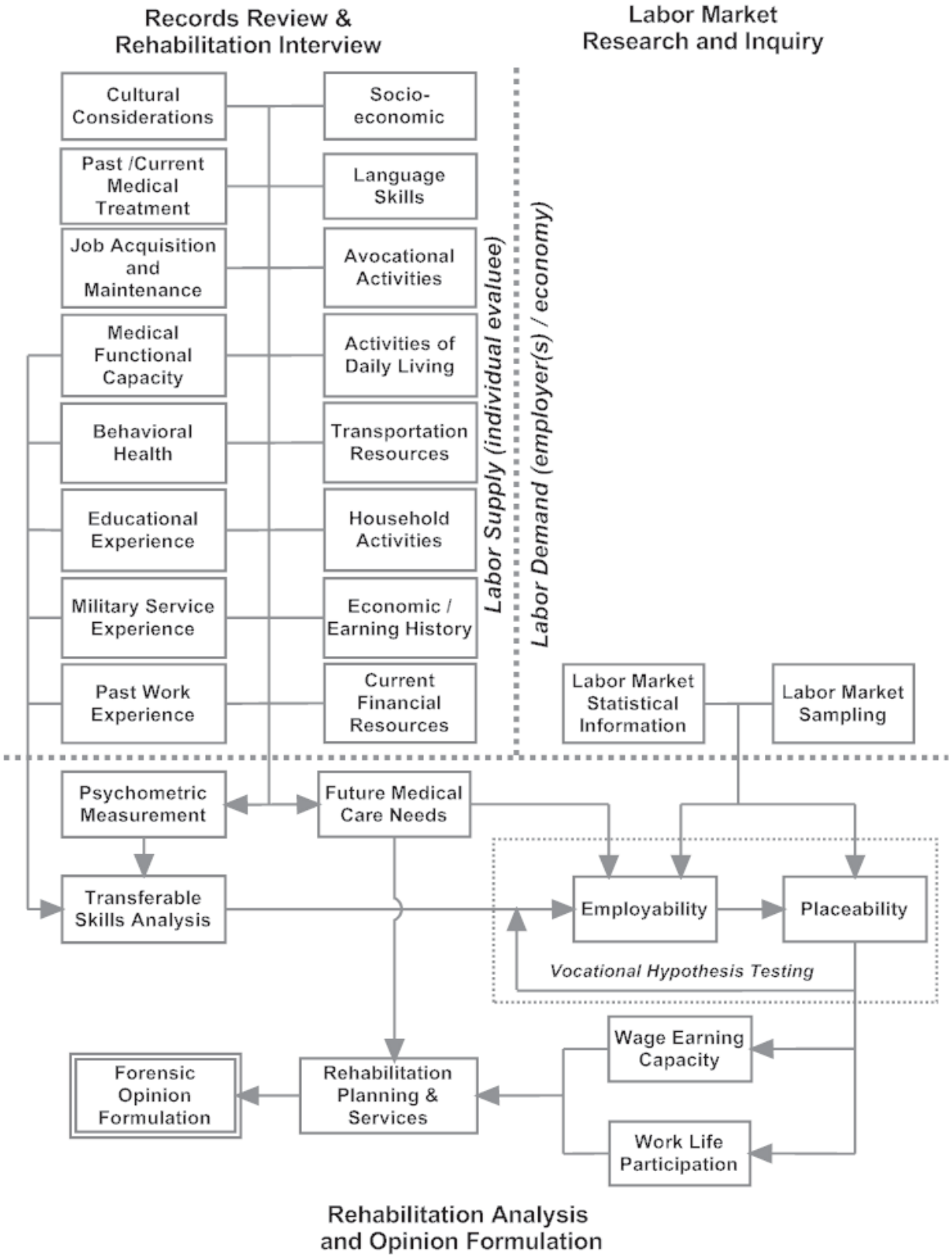

Figure 1. Vocational and Rehabilitation Assessment Model (VRAM)

authors have proposed methods for evaluating the longevity of a person's participation in the labor market (Ciecka & Skoog, 2001; Gamboa & Gibson, 2008; Richards & Solie, 1996; Robinson and Spruance, 2011; Smith, 1982; Spruance, Robinson, & McKay, November, 2008; Spruance, Robinson & Pomeranz, November, 2010). While experts generally agree that work life is a critical element in an assessment of vocational earning capacity, there is generally a lack of consensus on how the concept is best evaluated (Field & Jayne, 2008).

The literature supports consideration of the consistency of an evaluee's past work as a reflection of probable future work participation. Research has shown a relationship between interruption in employment and the erosion of accumulated human capital while removed from the labor market (Mincer & Ofek, 1982). Mincer & Ofek found the longer the interruption in work participation, the greater the impact on human capital erosion and subsequent wage level upon labor market reentry. Heckman & Borjas (1980), found "the greater the number of previous spells of unemployment and the longer the duration, the more likely is the event that an individual will be unemployed at a point in time" (p. 247).

Literature support was identified for the relationship between medical treatment of a health-related condition and the impact of treatment upon a person's future work participation. Certain chronic health conditions may limit a person to less than full time work due to participation in active medical treatment for an acute or chronic healthcare condition. Multiple studies have found that chronic health conditions are a significant driver of workplace absences (Collins et al., 2005; Stewart, Ricci, Chee, & Morganstein, 2003). Multiple studies have investigated the negative effects of specific chronic health conditions on work related absence. Such studies were identified for migraine headaches (Gerth, Carides, Dasbach, Visser, & Santanell, 2001; Lofland & Frick, 2006; Stewart, Lipton, & Simon, 1996); rheumatoid arthritis (Kessler et al., 2008); diabetes mellitus (Ng, Jacobs, & Johnson, 2001; Rodbard, Fox, & Grandy, 2009); allergies (Blaiss, 2000); mental health (Berndt, Bailit, Keller, Verner, & Finkelstein, 2000; Greenberg, Stiglin, Finkelstein, & Berndt, 1993; Stewart, Ricci, Chee, Hahn, & Morganstein, 2003) and back pain (Dagenais, Caro, & Haldeman, 2008; Hagan, Tambs, & Bjerkedal, 2002; Maetzel & Li, 2002).

The issue of retirement is also an important consideration in analyzing work life participation. In many cases, retirement results in a reduction of participation in work related activity. In a study by Uccello (1998), three key findings were discussed. First, workers with pension coverage are more likely to retire than are workers who do not have such coverage. Second, workers who face loss of health insurance benefits after retiring are less likely to retire. Lastly, workers with chronic health conditions or who are in poor health are more likely to retire than are persons in good health. Montalto, Yuh, & Hanna (2000) found a worker's health status coupled with the physical demands of the job were principle determinants in whether a worker extends his or her work life.

Rehabilitation Planning and Services

Rehabilitation planning involves developing and detailing an evaluee specific plan aimed at sustaining or improving physical, psychosocial, educational, and vocational functioning. Development of the rehabilitation plan involves consideration of data extracted from all three modules of the VRAM model. Data is synthesized into recommendations that are operationalized into measurable objectives with a specific timeline and when possible, associated costs.

Forensic Opinion Formulation

Opinion formulation involves summarizing the many conclusions that are drawn throughout the model. For example, the basic foundation of variables is identified through file review and a clinical interview. Conclusions drawn from review of records and the interview provide the foundation for psychometric instrument selection, transferable skills analysis, and clarification of future medical care needs. These findings directly influence the employability and placeability analysis of jobs considered suitable for the evaluee. Once conclusions are drawn regarding an evaluee's vocational employability and placeability, opinions are then formed of the evaluee's earning capacity and work life participation. Each of the conclusions drawn to this point influence and guide the formulation of the rehabilitation plan and the necessary services recommended for the evaluee. Each decision or conclusion drawn within the rehabilitation analysis and opinion formulation module should be summarized. This step in the VRAM model allows opinions and conclusions to be clearly stated which minimizes error in interpretation. Such a summary may also be useful for presenting opinions and conclusions to a trier of fact or jury.

Summary

The Vocational and Rehabilitation Assessment Model (VRAM) is an empirically derived structural model of vocational and rehabilitation assessment in a legal forensic setting. The model provides a clear picture for visualizing the relationship and interaction of construct domains considered core to forensic rehabilitation assessment. Discrete considerations are given to both economic supply and demand and how these features influence the vocational and rehabilitation process.

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Understanding Transferability and Occupational Classifications: Implications for Vocational Forensics

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Abstract. Occupational classifications such as Work Field and Materials, Products, Subject Matter and Services (MPSMS) are of particular relevance in the construction of vocational opinions. This article discusses the rationale for the use of occupational classifications in relation to vocational development theory, proprietary rehabilitation, and transferable skills analysis. Research related to the relevance of these classifications is discussed in the context of their use in construction of opinions of employability and loss of earnings capacity.

Understanding Transferability and Occupational Classifications: Implications for Vocational Forensics

As individuals progress through stages of vocational development, there is a gradual realization of strengths and limitations of skill, understanding of vocational interests, and preferences for work environments and settings. Proper insight into these variables is critical for making appropriate career choices, and to ensure a good "fit" for the individual and the work they perform. A critical consideration for vocational counselors is the quality of the match of individuals to work environments, or *work adjustment.*

The Minnesota Theory of Work Adjustment (Dawis, Englund & Loftquist, 1964; Dawis, 1987) attempts to explain how and why individuals continue employment in an occupation. This theory states that workers have certain needs and desires for rewards that work can provide. If a job can provide the rewards the worker seeks, the result is satisfaction with the job. Conversely, the work environment places demands upon the worker—quality and quantity of work, expected work attitudes and behaviors, etc. Satisfactoriness occurs when the worker is able to meet these demands. Work adjustment is the existence of both satisfaction and satisfactoriness between worker and work environment. The result is continued employment, referred to in the theory as tenure.

One of the prominent goals of vocational rehabilitation is the establishment and maintenance of work adjustment for individuals who have disabilities. In insurance rehabilitation settings, the focus is the expedient re-adjustment of individuals who have sustained career-altering disabilities. To facilitate this re-adjustment, a return to work hierarchy is followed to provide for appropriate vocational services:

1. Return-to-work, same job, same employer.
2. Return to work, different job, same employer.

3. Return to work, different job, different employer (Welch, 1979, p. 25).

This hierarchy emphasizes a return to settings that are most similar to those that the worker has experienced in the past. This accomplishes two purposes. First, occupations that are in concert with the worker's previous vocational experience will require the least vocational preparation, and therefore will result in lower service costs and speedier case and claims resolution. Secondly, occupations that are more similar to those the worker has performed successfully in the past are the most likely to result in vocational adjustment because of similar worker demands and rewards (Dunn, 1998).

While return-to-work is the central issue for many vocational consultants, the issue of loss of earnings capacity may become apparent should the injured worker not return to work, returns to work in a position at a lower salary than was present in the pre-injury occupation, or is no longer able to perform a more highly paid occupation due to the effects of the injury. Determining an individual's lost earnings capacity as a result of an injury is often difficult and the results of such investigations may be open to debate. However, certain principles can be considered concerning the individual's life experiences and personal characteristics prior to the injury that are known to have an effect upon the ability to earn. Among the more significant of these are the amount of education an individual has achieved and the level and type of skill development the individual has completed in preparation for a career (Weed, 2000). Therefore, identification of skills and their marketability and monetary value becomes critical when determining issues of loss of earnings capacity.

Transferable skills analysis is often employed to identify vocational alternatives that are within the worker's residual vocational and functional capacities, both for purposes of return-to-work and determining loss of earnings capacity. There are numerous methods for determining transferable skills. Objectively, the vocational consultant can use any of a number of commercially available software applications. Subjectively, vocational consultants use their experience and insight to determine the range and applicability of an injured worker's vocational skills (Kontosh, 2002). When the focus of vocational investigation shifts from actual job placement to compensation for loss of earnings capacity, transferable skills analysis remains relevant, as it is necessary to ascertain what type of work an injured worker could perform, before determining the monetary value of this work (Field & Weed, 1989).

Objective methods of transferable skills analysis are usually based upon the United State's Department of Labor's *Dictionary of Occupational Titles* (United States Department of Labor, 1991a) and *The Revised Handbook for Analyzing Jobs* (United States Department of Labor, 1991b). The *DOT* provides a means for defining occupations that constitute the worker's vocational history and the associated worker traits necessary to perform the job and occupational families to which this work belongs. The *RHAJ* provides the vocational expert with definitions of these worker traits and occupational families. A distinction is made between worker traits (such as aptitudes, temperaments, interests, and physical capacities) and characteristics of work performed (actual worker activities, tools and equipment necessary to perform work, and products and services produced as a result of labor). The former are considered to be possessions of the worker, while the latter constitutes demands of occupations.

Worker traits form the basis for acquisition of skills. Worker traits are generally not considered to be skills, per se, as they do not fit the definition of skill (learned behavior), but are often considered to be indicative of the capacity to learn or develop vocational skills. Characteristics of work performed are considered to be more indicative of skill. Occupations in the same families require certain learned and developed capacities of the worker in order to perform the work effectively, and are predictive (in theory) of transfer of skills of a worker from one occupation to another (Field & Weed, 1989; Wattenbarger, 1981).

Occupational Similarity: Its Importance in the Theory of Skill Transfer

Perhaps the most accepted definition of transferable skills is that presented by the Social Security Administration, in which transferable skills are defined as "skills that can be used in other jobs, when the skilled or semi-skilled work activities you did in past

work can be used to meet the requirements of skilled or semiskilled work activities of other jobs or kinds of work" (Federal Old Age, Survivors, and Disability Insurance, 1999, p. 383). This definition, discussed in greater detail below, provides a rationale for disability determination that has proven useful as a means for adjudicating Social Security disability benefit claims. It also provides a concise explanation of some aspects of the theory of skill transferability and more complex aspects of human behavior and learning that provide the theory's foundations.

Transferable skill theory is based upon the concept that learning in one context can transfer to another context, either positively or negatively. In positive transfer of learning, previous learning will assist individuals in learning new skills or meeting new demands. Negative transfer impedes these capacities (Ellis, 1965). In a vocational context, positive transfer of skill is sought through investigation of a worker's skill set, and occupational similarity is considered to be a key element in establishing positive skill transfer (Field & Weed, 1989).

Most transferable skill methods center upon two occupational groupings: Work Fields and Materials, Products, Subject Matter and Services (MPSMS). Work Fields are defined as "groupings of technologies and socioeconomic objectives that reflect how work gets done and what gets done as the result of the work activities of a job" (United Stated Department of Labor, 1991b, p. 2-3). MPSMS are defined as "basic materials being processed, final products being made, data, when being dealt with or applied, and services being rendered" (United States Department of Labor, 1991b, p. 2-3). Work Fields may be thought of as the action that is carried out by the worker (i.e., Sewing, Printing, Investigating, Counseling) and MPSMS may be considered to be the intent or product of that action (Textile Products, Printed and Published Products, Life Sciences, Social Services). Each specific Work Field and MPSMS category is assigned a three-digit code. The first two digits of this code indicate a more general classification that contains a number of specific categories that are similar in nature.

Transferable skills analysis relies heavily upon identification of Work Field and MPSMS represented in a work history, as well as creating a list of occupations within these occupational classification that are within the worker's residual physical capacities (Dunn, 1998). Differences in specific methods for performing this search are the reason for variations in software packages and results of search strategies. Despite these differences, the general concept of similarity of occupations, defined by occupational classification, has been central to the concept of transferable skills analysis since its inception. The following are two examples of the application of this concept.

Fine's Hierarchy of Occupational Similarity and Skill Transfer

Fine (1957) is the seminal source for transferable skills methodology. In creating the methodology for job analysis that was used to construct the *DOT*, methods of using this information to assist displaced workers in securing new employment was developed. The rationale for transferable skills analysis was based upon similarity of three factors between workers and jobs: Work Fields, MPSMS, and the relationship of the worker to Data, People and Things, identified as Worker Functions in the *DOT*. The rationale is represented in the following hierarchy:

> **First Order Similarity:** Same worker functions, same work field, and same MPSMS.
> **Second Order Similarity:** Same worker functions, same work field, and different but related MPSMS.
> **Third Order Similarity:** Same worker functions, same work field, and different and unrelated MPSMS.
> **Fourth Order Similarity:** Same worker functions, different but related work field, and same or related MPSMS.
> **Fifth Order Similarity:** Same worker functions, different and unrelated work field, and different and unrelated MPSMS (Fine, 1957, p. 944).

The relative importance placed upon the three criteria can be observed in the structure of the hierarchy. MPSMS is the first to diminish in significance to skill transfer, followed by Work Field. Worker Functions remains constant throughout the hierarchy. In more

modern methodologies for performing transferable skills analysis, such as those represented in software packages, this hierarchy is often echoed, with "most relevant" occupations represented in the first level of a search using exact matches in occupational classifications and lower levels of a search moving to more general (i.e., two-digit) categories. The final level of a search is usually based upon worker traits (rather than worker functions) independent of occupational classifications, and may be considered a modern descendent of the final level of Fine's (1957) hierarchy.

The Social Security Model

Perhaps one of the most common arenas, already mentioned above, for the use of transferable skills analysis in disability adjudication is in determination of disability for the Social Security Administration. The SSA model for transferable skills analysis is based upon three criteria: similarity in level of skill, similarity of tools and equipment, and the same materials or work outcomes to previous employment (Office of Hearings and Appeals, 1983). Occupational classifications can be used to measure this similarity in three of the four categories. Similarity of tools and equipment is encapsulated in the Work Field—occupations requiring the same activities of workers will require them to use similar implements in the conduct of their occupations. Similarity of materials and work outcomes is encapsulated in MPSMS. Level of skill is not represented specifically in an occupational classification, but is measured by the Specific Vocational Preparation (SVP), a worker trait indicating the duration of training a worker has completed in relation to a specific activity.

The Social Security model has served as a template for the establishment of rules relating to skill transferability in many other settings, such as Workers' Compensation. It draws heavily upon the use of the *DOT* to identify occupations, relevant worker characteristics, and occupational classifications from previous work and considers work possibilities based upon their similarity to these factors. Occupational similarity based upon classification of work is again seen as critical in producing valid estimations of employability.

Other Occupational Classifications

There are a number of other occupational classification systems that have been applied in transferable skill analysis. Perhaps one of the most commonly used has been the GOE (Guide for Occupational Exploration) code (United States Department of Labor, 1995). The GOE is a classification of occupations based upon interests of workers, represented by a six-digit code in which each successive set of two digits represents a more specific occupational interest category. GOE is closely tied to Occupational Aptitude Patterns (OAPs) identified through use of the *General Aptitude Test Battery* (GATB); each four-digit GOE category is therefore indicative of aptitude, as well as interest in relation to an occupational category. Transferable skills analysis procedures using the GOE may be included in some software packages, but are usually conducted manually. These manual procedures typically involve investigation of DOT-related publications, and methodology has been discussed periodically in the literature (Saxon & Roberts, 1983; Olsen, 1992; Saxon & Spitznagel, 1995). However, the use of GOE as a means of measuring occupational similarity in relation to skills is dubious. The classification system is based on a hierarchy of interests and (indirectly) aptitudes, neither of which indicate skills (i.e., learned behaviors) (Watters, 1984).

Other occupational classifications are described by Botterbusch (1987). These include the Standard Industrial Classification (SIC), Standard Occupational Classification (SOC), and the Census code, among others. The Census code is of particular interest to forensic vocational professionals because this is the code used by the Bureau of Labor Statistics to classify local, state, and national salary information for various occupations. While searches for occupational similarity could conceivably be conducted using these occupational classifications, they contain the same flaw as GOE codes—that is, they are not specifically related to skill as it is defined in vocational forensic settings.

Research into the Relevance of Vocational Components in Job Placement

The use of Work Field and MPSMS as criteria for measuring occupational similarity and measuring

transfer of skill between occupations has become the standard in the forensic arena. Empirical research into the relevance of these occupational classifications in job placement settings has, however, been scarce. Much of the trust that is placed upon transferable skills analysis may be based on the logic of the classification systems and the utility of the theory on which they have been based. It stands to reason that occupations requiring the worker to perform the same activities, in order to produce the same results, are related to each other and that skills would, therefore, transfer from one occupation to the other.

Comparisons of the relevance of the two occupational classifications in job placement were observed by Dunn (2000). It was found that the relevance of Work Fields from the work history to the occupation performed at placement was significantly greater than the relevance of MPSMS. The research also noted, however, that for the majority of the sample, neither occupational classification was congruent between work history and placement, indicating that most individuals who regained employment were able to resume work in occupations that were not likely to have been identified through a transferable skills analysis. Additional research by Dunn (2001) found that prediction of occupational congruence between work history and placement was more likely in individuals who had skills in working in people-oriented occupations, had lost less physical capacity as a result of occupational injury, and who entered rehabilitation and job placement in the shortest period of time.

There is empirical evidence that assessment of work history is a valid means of assessing worker trait capacities (e.g., Wattenbarger, 1981); however, Dunn's (2000) study indicates that predictions of occupational activity at placement after an injury through investigation of work history may be less accurate. This may be explained by a number of phenomena that relate to labor market factors, insurance claim characteristics, and the private sector rehabilitation system itself.

Local labor markets may vary in the quantity and diversity of employment opportunities that are available; furthermore, individuals who are capable of performing work in the local labor market that is relevant to transferable skills would, logically, be more likely to return to work more quickly and would be less likely to become a concern for workers' compensation carriers or insurance rehabilitation agencies. Dunn's study focused upon individuals who were not able to locate employment without rehabilitation intervention; these individuals were probably more likely to have fewer opportunities in their local labor markets relative to their residual functional capacities and transferable skills. When rehabilitation becomes involved in these claims, there are systemic pressures on both counselor and client to accomplish return-to-work in a swift manner; hence, clients and counselors may choose the work that is available (including unskilled or entry-level employment), rather than the work that would be most appropriate according to the injured worker's past experience. Attitudes of employers toward hiring of persons with disabilities or a history of work related injury have also been shown to be negative (Brown & McDaniel, 1987; Havrenek, 1991), causing additional limiting effects upon a claimant's vocational alternatives.

While these placement phenomena do not change or diminish an individual's acquired skills, they definitely appear to have an effect upon their predictive validity in relation to post-injury occupational placement. This effect may be only temporary, for as an individual becomes employed and is under less pressure from workers' compensation or rehabilitation to gain employment he or she has greater freedom to selectively search for employment that is more closely related to past vocational skills. Research relating to vocational outcomes of injured workers has typically considered only the immediate post-injury occupation; there is little research to provide information on vocational activity or job change after placement has occurred and rehabilitation activities have ceased. Research examining these vocational activities might indeed show that transferable skills are more predictive of occupational activity after the immediate issue of return-to-work has been addressed.

Forensic Issues: Employability and Loss of Earnings Capacity

Examination of the work history of an injured worker is be a valid means of assessing vocational capacities, yet the resulting occupational profile does not in and of itself predict vocational outcome. Transferable skills analysis, therefore, should be con-

sidered to be a conservative demonstration of the number and type of occupations an individual has the requisite skills to perform. It is not an exhaustive list of occupations that are accessible to the individual (the structure and characteristics of the labor market may make employment in these occupations unlikely), nor is it a complete list of all the occupations that the individual would be capable of successfully performing (it may not be sensitive to the opportunities for employment available in unrelated or entry-level occupations). Therefore, in relation to the issue of employability, this conservative method of performing transferable skills analysis serves only as a starting point for the vocational consultant. Transferable skills analysis, however, provides the best estimate of vocational potential available in rehabilitation and vocational forensics; furthermore, when coupled with the experience and knowledge of a qualified vocational consultant (adding experience in rehabilitation and job placement, knowledge of the local labor market, and subjective judgment of the relevance of vocational characteristics of the individual), transferable skills analysis can provide an accurate estimation of an individual's capacity for employment and earnings.

In the forensic arena, and in particular in relation to issues of loss of earnings capacity, these conservative estimates of occupational capacity can provide a basis for the creation of a defensible vocational opinion. Because the occupations identified through transferable skills analysis are those that are most closely related to an individual's most highly developed skills, they provide a means for investigating the highest level of earnings available to the individual in occupations for which they are most qualified through training and experience. The issue of employability may consider unrelated occupations requiring different skills in different settings, but these occupations are not likely to alter an individual's maximum earnings capacity.

The use of transferable skills analysis and occupational classifications should be considered in relation to the purpose of the vocational opinion. When performed for the purpose of determining employability, and in particular if the issue is actual job placement, the procedure may be viewed as a helpful but incomplete estimate of the complete number of occupations an individual is capable of performing or that are available to the individual in their labor market, and may require additional assessment information (Dunn & Growick, 2000). If the issue is one of earnings capacity, the restricted selection of subsets of occupations limited to past employment serves the purpose of the evaluation much better, and provides lists of occupations in which an individual's work experience and skill translate into a clear picture of earnings potential.

Summary and Conclusions

Work Field, MPSMS, and other occupational classifications serve a valuable purpose in vocational counseling and rehabilitation by providing a means for classifying occupations based upon similar skill and purpose of workers. Their use in forensic issues has been prominent since the emergence of vocational forensics as a distinct endeavor, and transferable skills analysis techniques based upon these classification have found their way into common rehabilitation practice.

Discussion of larger issues of vocational development and vocational potential involve not only objective information (such as that provided by the DOT), but also subjective factors that cannot be captured in a database or a classification system. Therefore, classic transferable skills analysis theory will probably never be a perfect procedure, as the subjective characteristics of an individual's environment cannot be captured by these methods. In job placement, transferable skills analysis serves as a tool to be used in conjunction with vocational counseling and vocational assessment, not used in place of it. In forensic settings, in which basic issues of employability and earnings capacity often do not lead to actual job placement, the Work Field and MPSMS classifications used in transferable skills analysis may still be a flawed methodology, but it is perhaps the best system that has been proposed or utilized in these settings.

Because the concepts of occupational classifications are based upon database information, their utility is closely tied to the validity of the database. The Dictionary of Occupational Titles has not been updated for many years and does not reflect the realities of the current labor market. Therefore, the current state of the art of transferable skills analysis is based upon obsolescent information about occupations and could be greatly improved through improvement of the database upon which it is founded.

The United States Department of Labor has attempted to update the occupational database through the construction of the Occupational Information Network, or O*Net (United States Department of Labor, 1998). This database promises to contain a number of improvements over the DOT in the area of access to information and description of vocational components that are more relevant in the 21st century labor market (Mariani, 1999). It is likely that vocational counselors will find this information useful in providing guidance to individuals seeking their first jobs, such as high school and college students. However, the database does not provide clear information on skill structure, physical demands, training requirements, and other vocational elements in a way that can be utilized by vocational forensic professionals to construct employability opinions based on vocational experience.

In response to these issues, a consortium of concerned professional organizations has formed the Interagency O*Net Task Force (IOTF) to make recommendations for the construction of a database that will be useful to vocational rehabilitation professionals in general and vocational experts in particular. Among the issues this task force will address is the issue of occupational classification, including a review of the structure of Work Field and MPSMS classifications (Gale Gibson, personal communication, May 23, 2002). These efforts are not likely to provide a perfect methodology for performing transferable skills analysis, but should greatly improve the state of the art.

There is much more that could be done to better understand the utility of occupational components in vocational rehabilitation. Research related to transferable skills analysis, occupational classifications, and vocational forensics in general has not been conducted at a level of intensity appropriate to the widespread acceptance and application of these constructs and techniques. Rehabilitation professionals, and in particular rehabilitation researchers, should do more to investigate these issues so that the opinions and recommendations of vocational professionals can become more accurate and useful in both vocational services and vocational forensics arenas.

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Chapter 6

Transferability of Skills:
Historical Foundations and Development

Timothy F. Field, PhD

Patrick L. Dunn, PhD

Introduction

Based upon a long history of the Social Security Administration's (SSA) involvement in and the development of the disability program, case law eventually mandated that vocational factors, as defined by the Social Security Act be addressed in adjudicating applicant cases for benefits. Relying on the terms, definitions, and program development of the SSA, a model for transferable skills evolved through the 1960s and 1970s that still serves as the prevalent method for transferability into the 21st century. Transferability is discussed within the context of the Act, the corresponding regulations, and a wealth of case law, including the relevance of this historical development for the current times. The application of transferability, apart from the Social Security Disability Insurance (SSDI) program, is appropriate for application in modern forensic vocational rehabilitation. Terms, definitions, resources, and methods are presented in this chapter to clarify the transferability process.

Background

The SSDI program, more than any other program, is responsible for establishing the notion of "transferable skills" (Hannings, Ash, & Sinick, 1972). Working in conjunction with the U. S. Department of Labor and the research of Sidney A. Fine (1955, 1957a, 1957b), and Fine and Heinz (1958), the SSA laid the foundation for transferability (U.S. Social Security Administration, 1964; 20 CFR 404.1502) with a reliance on the 1963 case of *Celebrezze v. O'Brient* that attempted to clarify further the intent of the disability law administered by SSA. The language relied upon by the Court of Appeals in *Celebrezze* was as follows:

> *"(1) to be under a disability, as defined by the Social Security Act, a claimant must be able to do not only his former work, but any other substantial gainful work; and (2) in determining whether there is inability to do such work, the test is 'what kinds of work can the claimant perform,' not whether such kinds of work are available for the claimant in the vicinity of his residence."*

In order to understand the development of the "transferability" notion in instances of a worker sustaining a work related injury or illness resulting in a disabling condition, and the subsequent opportunities for returning to work, it is important to review the origins of disability law related to disability insurance benefits. According to Zinn (1972), during the 1940's Congress made several attempts to establish a disability program under the Social Security Act. By 1954, it was determined by Congress that a disability entitlement would be established by a person possessing a severe impairments as a result of injury or disability as defined by "the

prevention of being unable to return to previous work and any substantial gainful employment" (Zinn, 1972, p. 1). To guard against awarding of claims related to "allegations of pain or other subjective symptoms, the law [would] require that the impairment be medically determinable" (Zinn, 1972, p. 1). In 1958, SSA legislation provided disability benefits for eligible persons between ages 50-64, but the age restriction was eliminated in 1960. During the same time period, the emphasis on eligibility expanded to include consideration for non-medical factors, such as age, education and work experience" (Zinn, 1972, p. 3). While the procedure for the determination of disability benefits clearly moved in the direction of the consideration of vocational factors (rather than merely medical factors), the hearing officers relied upon their "common knowledge" (Zinn, 1972, p. 4) of relating medical considerations to the world of work. A decision of the U.S. Court of Appeals (*Kerner v. Flemming*, 1960) turned out to be a pivotal and significant case in how disability determinations were decided.

The Kerner Criteria

In *Kerner*, the claimant possessed two disabilities: diabetes and a heart condition (myocardial infarction). Kerner had been employed as an automobile mechanic, salesman, and carpenter, and was a veteran of WWI. In spite of his work history, and his inability to perform past work of a similar nature given his medical condition, the hearing officer nevertheless determined that Kerner was not precluded from performing other substantial work of a lighter or less exertional nature. Accordingly, disability benefits were denied. On appeal, it was determined the case lacked "evidence as to employment opportunities . . . . a court cannot properly sanction a decision in a proceeding of this nature with such a lack of evidence to permit a rational determination ." While there may have been sufficient evidence of Kerner's medical condition, there

> *"was no real attempt to demonstrate the extent of impairment of function or the residual capacities. Unsatisfactory as this was, the evidence as to employment opportunities was even less. . . .the Secretary had nothing save speculation to warrant a finding that an applicant thus handicapped could in fact obtain substantial gainful employment"* (p. 3).

The *Kerner* case, sometimes referred to as the "*Kerner Criteria*", was remanded to the Secretary to take further evidence. It was

> *"for this reason, it was decided [by SSA] to employ vocational experts to testify at administrative hearings, at which time these expert witnesses would address their testimony to the claimant's particular and highly individual situation, in an effort to satisfy the Kerner criteria*" (Zinn, 1972, p. 5).

Clarifying Substantial Gainful Work

In part, there was an acknowledgment that the determination by the hearing officer alone was not sufficient to resolve the issue of whether a claimant had the capacity to engage in substantial gainful work considering the medically determinable disabilities, age, education and work experience. The cases of *Hicks v. Flemming* (1962), *Celebrezze v. O'Brient* (1963), and *Cyrus v.Celebrezze* (1965) helped to establish the Vocational Program in SSA which paved the way for the vocational expert program (Mr. Louis Zinn was the first Director of the VE Program). In *Celebrezze v O'Brient* substantial gainful activity was the issue whereby the claimant was applying for benefits since he could no longer find work related to his past jobs. The test of eligibility for disability benefits is that a claimant must be unable to perform any

substantial gainful work of a lighter nature anywhere in the local or regional economy. While *O'Brient* was unable to find work in his local labor market, he still retained some capacity to work in related and lesser demand jobs. Thus, it was determined that O'Brient was not disabled under the meaning of the SSA Act and the court held that the SSA program, in spite of O'Brient's situation, was not an unemployment program. The same conclusion was reached in *Hicks v. Flemming*, where the court expressed sympathy for Hicks who was unable to find employment, nevertheless the court held that "Hicks was not under a disability . . . . we cannot order unemployment compensation under the guise of disability insurance" (p. 2). No vocational expert was used in either of these two cases, although there was an initiation of a program developed by the Bureau of Hearings and Appeals "in 1962 [which] was the first formally organized effort to utilize vocational experts in quasi-judicial proceedings on a contract basis (Chick, 1972, p. 31).

The case of *Cyrus v. Celebrezze* (1965) contains a very important ruling involving the work of a vocational expert. This case was one of the first to utilize a vocational expert is a social security hearing. The medical evidence of the claimant's disability was substantial resulting in the conclusion that the claimant could perform only sedentary work, with difficulties sitting and/or standing for an eight hour day. However, the court found "overwhelming evidence establishing the claimant's disability" (p. 2). Turning to the vocational expert's testimony (a Dr. Edwin Thomas), the court was even more assertive in their finding regarding the test of establishing the ability for performing substantial gainful employment.

> *"An even more serious defect in the Secretary's finding, however, is the total lack of absence of proof that jobs exist in the local economy which Cyrus, with his handicap, is capable of performing. The Secretary's conclusion rests entirely on the vocational expert's reliance on capsule job descriptions appearing in the U.S. Dictionary of Occupational Titles and Estimates of Worker Trait Requirements (EWTR). The record is barren of evidence to show that he actually checked to determine whether the jobs he cited were available in the vicinity of Cyrus' home."* (*Cyrus v. Celebrezze,* 1965, p. 2).

The Court proposed that some of the jobs suggested (fancy stitch marker, hand, and white shoe doper, along with kennel keeper) were "reached speculatively" (*Cyrus v. Celebrezze,* 1965, p. 2) by the vocational expert. An even harsher assessment followed:

> *"The fanciful nature of Dr. Thomas' testimony is perhaps best revealed by his own comment that 'there are thousands of jobs here [in the Dictionary of Occupational Titles], some of them sound funny. Indeed, some of those suggested, particularly the job 'kennel keeper,' requiring physical activity in handling the animals, do sound funny when Cyrus' background and physical limitations are taken into account. But the exclusive reliance on these books (DOT and EWTR) is not enough . . . there must be evidence to show the reasonable availability of jobs which this particular claimant is capable of performing."* (*Cyrus v. Celebrezze,* 1965, p. 2).

Keeping in mind that the VE Program was a new venture of the employment and counseling professions, the testimony of Dr. Thomas was given during a time when the courts were defining the nature and extent of a disability that would warrant benefits under the SSA regulations. Part of the confusion centered on jobs that existed only within an area where the claimant resided, or "work which exists in significant numbers either in the region where such individual lives or in several regions of the country" (*Cyrus v. Celebrezze,* 1965, p. 2). However,

there clearly was the caution in the *Cyrus* case that an over-reliance on occupations listed in the U.S. Department of Labor's *Dictionary of Occupational Titles* (1965) did not meet the criteria of identifying jobs that were individualized to the capabilities of the claimant. In other words, if the claimant could not go back to any previous work, what other jobs existed that the claimant could do, that were both reasonable and that existed in significant numbers. As an understanding of the intent of the law evolved, subsequent language clarified further the "substantial gainful activity" issue:

> "*An individual shall be determined to be under a disability only if his physical or mental impairment or impairments are of such severity that he is not only unable to do his previous work, but cannot, considering his age, education, and work experience, engage in any other kind of work of substantial gainful work which exists in the national economy, regardless of whether such work exists in the immediate area in which he lives, or whether a specific job vacancy exists for him, or whether he would be hired if he applied for work."* (Zinn, 1972, p. 6).

Jobs in the Local, Regional or National Economy

Next, a determination was needed as to the meaning of jobs in the national economy. In *Gotshaw v. Ribicoff* (1962), the meaning of work which exists in the national economy was clarified to mean "work which exists in significant numbers either in the region where such individual lives or in several regions of the country" (p. 2). This finding was made explicit in the case of *Frye v. Richardson* (1971) during which a vocational expert, Dr. Daniel Sinick, a prominent counselor educator, testified regarding the work issue related to the claimant who had a back ailment and a disc removed. Dr. Sinick testified there were "in the claimant's region a significant number of jobs which the claimant would be capable of performing" (p. 2). Some of the titles Dr. Sinick suggested were basket cutter, basket filler in the fruit industry, mixing machine operator in the canning industry, hand-cutter and button machine operator in the textile industry, and several other related titles. While not specifically addressing the issue of transferable skills, Dr. Sinick did indicate that each of the jobs he recommended were consistent with the claimant's work history and level of skills. This case takes another step toward the transferability issue and is a significant step from reliance upon the *Dictionary of Occupational Titles* as was observed by the vocational expert in *Cyrus v. Celebrezze*

Concurrent to cases being appealed (as noted above), the Social Security Administration was also addressing issues through the process of administration policy rulings. Social Security Ruling (SSR) 64-47c (1963) was an SSA policy statement that addressed the issue of work that a claimant could do. Citing the cases of *Kerner v. Flemming* (1960), *Gotshaw v. Ribicoff* (1962), *Hicks v. Flemming* (1962), and *O'Brient v.Celebrezze* (1963), the issue of "what jobs are there means, within the context of the Act, what kinds of work can the claimant perform, not what jobs are there available for him in Kosciusko, MS" (p. 2). Furthermore, in citing *Hicks v. Flemming* (1962), "when a claimant's former employment is the only work he is capable of performing, the 'former work' means 'any' work; thus, the word 'any' includes former work and work of a different nature" (p. 2). This ruling helped to establish the foundation for future work of the vocational expert in the area of transferable skills (Sinick, 1972).

Substantial Gainful Activity and Vocational Factors:

Transferable Skills

A subsequent SSA ruling, SSR 82-41 (U.S. Social Security Administration, 1982), addressed the issue of transferability and work skills. This ruling is very definitive in terms of the vocational factors as they evolved following nearly two decades of the SSA's vocational program. Relying on sections of the *Code of Federal Regulations* (1995), including sections for the evaluation of disability,(residual functional capacity, ability to work, age, education, work experience, work in the national economy, and skill requirements), each construct is presented and discussed as a means of providing a foundation for the transferable skills analysis (TSA). The following definitions are abstracted from SSR 82-41, policy statement and the *Code of Federal Regulations* (20, CFR, 404), and all are essential components of the transferable skills process. The definitions below are brief abstracts only and a complete reading and understanding of the constructs is essential for a comprehensive understanding of these components with respect to transferability.

Transferability

> *Transferability means applying work skills which a person has demonstrated in vocationally relevant past jobs to meet the requirements of other skilled and semiskilled jobs* (U.S. Social Security Administration , 1982).

Skill

> *A skill is knowledge of a work activity which requires the exercise of significant judgment that goes beyond the carrying out of simple job duties and is acquired through performance of an occupation* (U.S. Social Security Administration , 1982).

Evaluation of Disability

> *[A claimant] must have a severe disability which significantly limits your physical or mental abilities to do basic work activities, prevent you from doing past relevant work, and from doing any other work* (20 CFR§404.1520).

Residual Functional Capacity

> *Your residual functional capacity is what you can still do despite your limitations* (20 CFR§404.1545).

Ability to Work

> *Your ability to do work depends on your residual functional capacity* (20 CFR§ 404.1561).

Age

> *Refers to how old you are and the extent to which your age affects your ability to adapt to a new work situation; age categories are "younger person" (under 50), "person approaching advanced age" (50-54), and "person of advanced age" (55 and over)* (20 CFR§ 404.1563).

Education

> *Education is primarily used to mean formal education or other training which contributes to your ability to meet vocational requirements* (20 CFR§404.1564).

Work Experience

> *Work experience means skills and abilities you have acquired through work you have*

done which show the type of work you have be expected to do; work experience applies when it was done within the last 15 years (20 CFR§404.1565).

Work in the National Economy

Work exists in the national economy when it exists in significant numbers either in the region where you live or in several other regions of the country (20 CFR§404.1566).

Skill Requirements

Unskilled, semi-skilled, and skilled work define other work (transferability). What we mean by transferable skills [is when] you have skills that be used in other jobs, when the skilled and semi-skilled work activities you did in past work can be used to meet the requirements of skilled and semi-skilled work activities of other jobs or kinds of work. Transferability is most probable and meaningful among jobs in which the same or a lesser degree of skill is required, the same or similar tools and machines are used, and the same or similar raw materials, products, processes, or services are involved (20 CFR§404.1568).

Rationale of Transferability

Transferability is a concept that was discussed as early as the late 1950's which pre-dated the involvement of the Social Security vocational expert by several years. Fine (1957a, 1957b) presented in a two-part paper, a brilliant analysis and discussion of transferability. Fine identified the basic assumptions underlying the concept of transferability of skills which are as follows:

1. Similar skills (knowledge and ability requirements) can be identified among jobs and transferability recommendations made on that basis;

2. When transfer based on similarities of skills is explained to workers, they will choose among the opportunities presented;

3. When transfer based on similarities of skills is explained to employers, they will accept workers with skills different from those initially sought;

4. Workers and employers are free to make the choices presented by transfer possibilities and will make them because of need;

5. Transferability is desirable from an educational standpoint since it shortens training and reduces cost (pp. 805-809).

As Fine (1957b) points out, “the dominate rationale for transferability [is that of saving] time and resources in training and conserving skill” (p. 938). Based on the work of the United States Employment Service (USES), Fine discusses the essential components of the transferable skills process. Namely, components considered included the worker functions of data-people-things; the work fields (containing information on machines, tools, equipment, and work aids); the MPSMS arrangement (materials, products, subject matter, and services); and many of the worker traits (specific vocational preparation, general educational development, physical demands, environmental conditions, aptitudes, interest, and temperaments). Fine (1957b) then proposed an order or “similarity and transferability” (p. 944) of steps to be followed with the first area of emphasis placed on the data-people-things arrangement, moving then to the work fields, and finally to the MPSMS arrangement. Eason (1972), Eddens (1972) and Colvin (1972) provide explicit information regarding the role of the vocational expert and the transferability procedures that an expert should follow in cases involving a social security claimant. Fine

(1957a) placed less emphasis on the worker traits, although they were part of the discussion in terms of knowledge and abilities. A more current discussion of the transferability sequence, a procedure for investigating the [worker] traits and [worker] characteristics, is also presented by Dunn, & Growick (2000). As will become apparent, more current transferability methods and programs place a much greater emphasis on the worker traits in terms of identifying skills that transfer. However, time has shown that the worker traits are really measures or characteristics of "abilities and capacities" which are quite different than the concept of "skills" (Field & Weed, 1988).

Resources for Transferability[1]

The *SSA Regulations* (20 CFR§ 404.1566) identified several publications which contain job data and could be useful in identifying and evaluating job possibilities for a claimant. These included:

Dictionary of Occupational Titles (U.S. Department of Labor, 1991)

Selected Characteristics of Occupations defined in the Dictionary of Occupational Titles (U.S. Department of Labor,1981)

Revised Handbook for Analyzing Jobs. (U.S. Department of Labor, 1992).

County Business Patterns (U.S. Census Bureau, 2012a))

Census Reports (U.S. Census Bureau, 2012b, 2012c)

Occupational Analyses (Annual, state employment data)

Occupational Outlook Handbook (U.S. Department of Labor, 2012b)

Resources have changed significantly since this list was compiled, although the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics remain major sources of job and related occupational data. The biggest change, however, has been the issues surrounding the *Dictionary of Occupational Titles*.

The Dictionary of Occupational Titles, Worker Traits, and O*NET

The *Dictionary of Occupational Titles* was first published in 1939, with a second edition in 1949, a third edition in 1965, and the fourth edition in 1977. A revision (mostly an update) of the fourth edition was published in 1991. In fact, the last major revision occurred with the 1977 edition. Concurrent with the dictionary section of the DOT was the development of what became known as the worker trait factors. Beginning with the Supplements (I & II) of the 1965 edition, each job title was described in terms of the worker characteristics referred to as traits. By the time the fourth edition was released, the traits were identified as 72 discreet factors that included information on physical demands, specific vocational preparation (SVP), general educational development (GED), aptitudes, environmental conditions, interests, and temperaments. Subsequently, the government published in 1981 *the Selected Characteristic of Occupations defined in the Dictionary of Occupational Titles* which provided some of the worker traits (physical demands, SVP, GED, and aptitudes), but not all. Realizing the need for the assessment of all the worker traits as a critical component to analyzing transferable skills, the full range of worker traits (all 72) was privately published in the *Classification of Jobs According to the*

[1] For a more complete discussion of transferable skills, see the special issue edited by Dr. Roger Weed (2002), The assessment of transferable skills in forensic settings. *Journal of Forensic Vocational Analysis, 5*(1), 1-57.

Worker Trait Factors (Field & Field, 1980), which was subsequently updated as changes occurred in the occupational areas (both DOT and O*NET) (through five editions: 1980, 1985, 1988, 1992, & 1999). The latest version, *The Transitional Classification of Jobs* (Field & Field, 2004) attempted to incorporate the O*NET (U.S. Department of Labor, 2012b) database as an alternative data source for transferability (although this was a stretch since the O*NET database was not adequately developed for the TSA process). As the DOT became obviously more obsolete over time, the Department of Labor produced a new occupational database referred to as the O*NET (Mariani, 1999). To the profession, including the Social Security Administration, it soon became apparent that the O*NET (1995) was not easily suited for analyzing transferable skills. The worker traits, which were quantifiable in nature, were replaced largely by "elements" of O*NET (U.S. Department of Labor, 2012b) which were more qualitative, rather than quantitative. Attempts were made (Field & Field, 1999; Field & Field, , 2004; and Gustafson & Rose, 2003) to try and incorporate the O*NET into the transferability process as required by the Regulations (20 CFR § 404.1566, and related sections), but to no avail. The SSA eventually authorized a study of the occupational problem and funded the development of a wholly new occupational system currently under construction, the : *Occupational Information Development Advisory Panel* (OIDAP), (Barros-Bailey, 2010). As of 2012, the OIDAP has been terminated by SSA with no definitive plans to address this "obsolete DOT" issue in the near future.

Continued Use of the DOT

With the demise (i.e., obsolescence) of the DOT and the irrelevance (considered by some) of the O*NET, there are scores of cases involving SSA determinations that use the DOT, or the substitution of an alternate to occupational information. In 1999, the Appeals Court in the U.S. 11th Circuit (*Jones v. Apfel*) allowed the vocational testimony of the vocational expert to "trump" the DOT because the DOT "is not the sole source of admissible information concerning jobs." A similar ruling in *Donahue v. Barnhart* (2002) entitles the ALJ "to accept testimony of a vocational expert whose experience and knowledge in a given situation exceeds that of the Dictionary's authors" (p.2). In the meantime, the SSA issued a policy ruling SSR 00-4p (U.S. Social Security Administration, 2000) which addressed the issue of vocational experts continuing to use the DOT or any other occupational resource. The essence of SSR 00-4p allows for any occupational resource that is considered reliable by the administration law judge (ALJ), or continue using the DOT even though it is considered to have a growing obsolescence. (See a comprehensive discussion of issues related to the transition of the DOT to the O*NET by Truthan & Karman, 2003).

Functional Capacity Evaluation and Job Analysis[2]

According to the American Physical Therapy Association, a functional capacity evaluation is "a detailed examination and evaluation that objectively measures the patient's/client's current level of function, primarily within the context of the demands of competitive employment" (p. 67).The functional capacity evaluation (FCE) is equivalent in SSA terms to the residual functional capacity (RFC) and serves as the basis for disability determinations (The reader is directed to chapter 4 of this text for a more complete discussion on medical evidence and functional capacity evaluation). A person's functional capacity to perform

[2] For an enhanced discussion of functional capacity evaluations, see the special issue edited by Gale Gibson (2004), The use of functional capacity evaluations in vocational forensics. *Journal of Forensic Vocational Analysis, 7*(2), 65-131.

work can be evaluated on any or all of the 72 worker trait factors. All of the vocational assessment and evaluation methods and procedures (as described in chapter 3 of this text) employ the worker trait factors, to varying degrees, as an integral part of the evaluation process (Rubin & Roessler, 2008). A basic assumption of the many and varied vocational assessment instruments and measures used by vocational rehabilitation consultants, is that an evaluee's level of vocational functioning can be quantitatively described by worker traits.

A second basic assumption is that each of the 72 the workers traits for each job listed in the DOT can be "rated" at various levels. Vocational evaluation, in part, involves assessing an evaluees highest level of vocational capacity, while a job analysis involves evaluating the highest level of demand characteristics inherent to a particular job - also identified by the worker traits (Blackwell, Conrad & Weed, 1992). In the transferability process, matching the client's level of functioning (equal to or less than) to the demand characteristics of a job is referred to as job matching (Weed & Field, 2012). However, the matching of the worker traits is only the first step in transferability as collateral decisions must also be addressed, including work skills, same or similar occupation(s), and the availability of suitable job with the labor market.

Finding Related Jobs

Referring to the Social Security program on disability determinations, the administrative law judge (ALJ) may request the assistance of a vocational expert (Wiener, 1964). Again, the SSA program clearly provides a history and a model for engaging the notion of transferable skills – a procedure and method that has widespread application to all related programs such as state and federal workers' compensation, and civil litigation cases (Dunn & Kontosh, 2002). Concurrent to the application of the notion of transferability in SSA cases, state agency rehabilitation programs also came to rely on similar procedures in developing a case with clients who possessed a disability (McGowan & Porter, 1967). However, the SSDI program was the primary consumer of assessing a client's potential for work through the utilization of the transferability process. Zinn (1972) identified two statutory definitions (Social Security Act Amendments, 1956; Social Security Act Amendments, 1958) of the role of the vocational expert in the TSA process:

> *First, what kind of work, if any, (transferability of skills) can this claimant do in light of his prior work activity and residual functional capacities considering his age, education, training, and [work] experience? The second issue concerns the existence of such appropriate jobs, their numbers and general location.It is vital that any jobs suggested as appropriate (transferability of skills) for the claimant be of a realistic nature. They should reflect (1) physical requirement and working conditions which will not aggravate his impairments and (2) occupationally significant characteristics demanded by these suggested jobs which are in consonance with prior work experience and require a minimum of orientation and training. (Zinn, 1972, p. 8)*

In addition to the resources listed above, Zinn (1972) suggested that the "most persuasive testimony concerning the numbers of existing and appropriate jobs is based on personal knowledge resulting from contacts with employers and observation of the jobs as they are performed; this should be part of the expertise of the vocational expert" (p. 9). Another source during the 1970s was the "vocational survey forms" by geographical areas which were developed by the Bureau of Hearings and Appeals and were readily available for vocational experts and ALJs. The forms included such information as the job title, the DOT number, and

description, the number of jobs in a location for each title, information on the physical demands, significant characteristics, GED and SVP. All jobs listed in the forms were either light or sedentary.

Another useful source of job information was compiled in Social Security Ruling 96-9p (U.S. Social Security Administration, 1996) in which 137 unskilled sedentary occupations based on the 1991, revised fourth edition of the *Dictionary of Occupational Titles*. The implication of these titles is that they are probably inappropriate for transferable recommendations with the humorous comment attached, "Is there a lot of demand for "Vamp-Strap Ironers" (DOT 788.687-158) in your area?" This suggests that it is wise for a vocational expert to possess first-hand and personal knowledge of jobs which exist in the local and/or regional economy of the claimant, and not to rely exclusively on source data alone.

The Traditional DOT Approach[3]

Transferability of work skills is the foundation of any attempt to identify similar or related jobs that are consistent with or equal to the functional skill levels of a worker. The process of TSA is important to career counseling and to issues related to finding jobs for people within the U.S. economy. Job matching requirements are essential in government sponsored programs such as SSDI, state and federal workers' compensation programs, and other civil litigation cases such as personal injury, medical malpractice, and/or product liability. The building blocks for this approach was developed in the late 1970s and referred to as the *Vocational Diagnosis and Assessment of Residual Employability (VDARE*), (McCroskey, Wattenbarger, Field, & Sink, 1977; Field & Sink, 1980; Field & Weed, 1988). The transferable skills analysis is essentially a process by which jobs are identified that are consistent with the worker's capabilities and functional restrictions (the worker's capacity to perform work may be reduced by limitations imposed from the results of a disease or injury). The TSA process, however, does not have to be complicated (Field, 2002). In fact, by sequentially following the seven basic VDARE steps listed below, in conjunction with other resources, the result will be a quick and reasonably accurate analysis for matching jobs to a worker.

The following section is abstracted from Field (2007), *Transferable Skills Analysis: A Basic Guide to Finding Related Jobs (pp. 20-23)*. Field's (2007) approach involves seven sequential steps, that must be followed in order (see table 6.1).

Table 6.1: Finding related jobs using a traditional approach

Step 1: Idendifying jobs in a person's work history
Step 2: Select an occupational code and title
Step 3: Profile the jobs

[3] This section on a traditional method of analyzing transferable skills is abstracted, with permission, from J. Field and T. Field, 2004; Field, 2007) and basically illustrates a "common sense approach" to understanding and implementing a transferable skills analysis (Field, 2002).

Step 4: Create an unadjusted vocational profile (UVP)

Step 5: Create the residual functional capacity profile (RFC)

Step 6: Find related or similar jobs

Step 7: Find jobs in the local labor market

This seven step method serves as a model of how TSAs can be achieved through a manual process (most computer programs use a similar strategy to this model). However, there is no correct or single way in which to complete a TSA, and it is evident that the courts will rely a vocational expert's methodology, whatever it is, as long as it is considered reliable.

Computerized Job Matching[4]

As early as 1971 (Ash, 1972), the *Cleff Job Man Matching System* was developed by Dr. Samuel H. Cleff of the ADP Personnel Data Systems, Inc. (p.54). The system was designed to describe and match both the job and the man on sixteen common behavioral dimensions. Using a computer with a job register of 250 titles, Cleff developed a "procedure for analyzing the client's physical and emotional capacities using the same sixteen dimensions of work, thus providing a vocationally functional profile of the client (p. 55). With the SSA vocational expert in mind, this first step of job matching addressed the issue of a vocational recommendation, if relevant to the case. The second issue was being able to identify jobs that existed in sufficient quantities that the client could perform.

Since the early 1980s, with the advent of the desktop computer, several computer job matching programs were privately developed and marketed to the educational and rehabilitation communities. These programs were refined to filter a job match by utilizing a large variety of variables in the job search. Beginning with the DOT database (descriptions and the worker traits), and being able to search by one or more occupational arrangements (work fields, MPSMS, industrial designation, interests/GOE), and then cross to employment survey data (Census, SOC, BLS, etc.), a computer printout could be generated that allegedly reflected the most suitable jobs for a particular claimant. While this information can be very useful in identifying jobs that a claimant may be able to perform, the rehabilitation professional and vocational expert should use the results with caution - especially when a case is being litigated. While computerized information on transferability is often admissible in hearings and courts (*Hughes v. Inland Container Corp.*, 1990), two court cases (*Perez v. IBP, Inc.*, 1991, and *Kinnaman v. Ford Motor Company*, 2000), imply that it is clearly incumbent upon the expert to use the computer results with caution and to not overly rely on the output as the basis for a vocational opinion. In an interesting survey of the use of computerized job matching programs, Kontosh and Wheaton (2003) showed that 44% of professionals did not use such a program. This was based on a survey of 13,164 cases, reported by 75 forensic rehabilitation consultants, of which 36.9% cases involved social security. The remainder of the survey sample involved cases related to workers' compensation, personal injury, case management, and a few miscellaneous cases in various other areas. A second major area of concern with any program that premises

[4] Consult websites for further information on the computer programs: Skilltran, SEER, McCroskey, Oasys, etc. See also Dunn, Williams & Bast (2005).

output (occupational matches or recommendations) on the DOT database must be ever mindful of the continuing obsolescence of the DOT. While the rehabilitation community waits on the arrival of a new occupational database, it may require rehabilitation professionals to rely more on Zinn's suggestion – namely, become familiar with the labor market within the geographical location or region in which the claimant resides.

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Estimating Earning Capacity 1(1), pp. 5-40, 2008

Estimating Earning Capacity: Venues, Factors and Methods

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Abstract: The estimation of earning capacity in cases involving disability, injury or disease is an important task for the forensic rehabilitation consultant. This paper reviews the issue of earning capacity in light of the various venues requiring such a determination. Selected factors are also discussed as well as some of the resources available for use in making determinations. The paper concludes with a brief discussion of the various methods used in the economic area regarding the value of future dollars.

Introduction

For the forensic rehabilitation consultant, the task of estimating earning capacity is sometimes both confusing and difficult. The short history of this aspect of the work of the rehabilitation consultant may be clouded, controversial and muddied, to say the least, especially when trying to understand the world of estimating capacity and providing a dollar value to individual cases involving injury and disability. In addition to the concept of earning capacity, collateral issues also come into play (e.g., current and future earnings, estimating lost earnings, and estimating future lost earning). What appears to be most confusing relates to the issue of methodology; namely, how does a professional go about making determinations on any of the issues related to earning. In particular, what method or methods would meet the requirements as set forth by the Daubert (1993) and Kumho (1999) rulings of the U.S. Supreme court, and also the expectations as identified by the Federal Rules of Evidence (2002, i.e., FRE 403 and 702).

Legal and Program Definitions

This section reviews the legal definitions of many of the more critical constructs related to earning capacity. A review of the significant program areas, including civil settings, addresses the various program approaches for understanding the similarities and differences that exist relative to earning capacity.

A reasonable starting point in this discussion is to provide adequate definitions of the major constructs related to earning capacity. All of the following definitions are taken from Black's Law Dictionary (2000) and the U.S. Department of Labor, Occupational Employment Statistics); for purposes of this discussion, these definitions of terms will be used throughout this paper. This section lists the more general constructs related to earnings capacity; as each venue (SSA,

OWCP, state and federal court, etc.) is discussed, additional legal terms will be introduced for each respective venue.

Capacity: *The role in which one performs an act (Black's, p. 163).*

Damages: *Money claimed by, or ordered to be paid to, a person as compensation for loss or injury (Black's, 320).*

Diminution: *The act or process of decreasing, lessening, or taking away (Black's, p. 369).*

Earnings: *Revenue gained from labor or services . . . .(Black's, p.414).*

Earnings: *Remuneration (pay, wages) of a worker or group of workers for services performed during a specific period of time. The term usually carries a defining word or phrase, such as straight-time average hourly earnings. Because a statistical concept is usually involved in the term and its variations, the producers and users of earnings data should define them clearly. In the absence of such definitions, the following may serve as rough guidelines:*

Hourly, daily, weekly, annual: *period of time to which earnings figures, as stated or computed, relate. The context in which annual earnings (sometimes weekly earnings) are used may indicate whether the reference includes earnings from one employer only or from all employment plus other sources of income.*

Average: *usually refers to the arithmetic mean; that is, total earnings (as defined) of a group of workers (as identified) divided by the number of workers in the group.*

Gross: *usually refers to total earnings, before any deductions (such as tax withholding) including, where applicable, overtime payments, shift differentials, production bonuses, cost-of-living allowances, commissions, etc.*

Straight-time: *usually refers to gross earnings excluding overtime payments and (with variations at this point) shift differentials and other monetary payments. (OES).*

Future Damages: *Money awarded to an injured party for an injury s residual or projected effects that reduce the person s ability to function (Black's, p.321).*

Lost earnings: *Wages, salary, or other income that a person could have earned if he or she had not lost a job, suffered a disabling injury, or died. There can be past lost earnings and future lost earnings (Black's, p.414).*

Future Lost Earnings: *See lost earnings (Black's, p. 414).*

Income: *The money or other form of payment that one receives, usually periodically, from employment, business, investments, royalties, gifts, and the like (Black's, p.611).*

Income: *The receipt by an individual of any property or service which he can apply to meeting basic needs. (CFR 416.120).*

Wage: *Payment for labor or services, usually based on time worked or quantity produced (Black's, p.1275).*

Mean wage: *An average wage; an occupational mean wage estimate is calculated by summing the wages of all the employees in a given occupation and then dividing the total wages by the number of employees. (OES).*

Median days away from work (Safety and Health Statistics): *The measure used to summarize the varying lengths of absences from work among the cases with days away from work. The median is the point at which half of the cases involved more days away from work and half involved less days away from work. (OES)*

Median wage: *An occupational median wage estimate is the boundary between the highest paid 50 percent and the lowest paid 50 percent of workers in that occupation. Half of the workers in a given occupation earn more than the median wage, and half the workers earn less than the median wage. (OES)*

Wages and salaries: *Hourly straight-time wage rate or, for workers not paid on an hourly basis, straight-time earnings divided by the corresponding hours. Straight-time wage and salary rates are total earnings before payroll deductions, excluding premium pay for overtime and for work on weekends and holidays, shift differentials, and nonproduction bonuses such as lump-sum payments provided in lieu of wage increases. (OES)*

Worklife estimates: *Estimates of the number of years individuals would spend in the labor force based on mortality conditions, labor force entry and exit rates, and demographic characteristics. BLS has not produced worklife estimates since February 1986. Last publication: Worklife Estimates: Effects of Race and Education PDF 1.32 MB*

Factors Relevant in Estimating Earning Capacity and Loss[1]

For purposes of illustration, let's assume that a young man by the name of John Doe was permanently and totally injured at age 25. This resulted in no expectation of returning to work for the remainder of his life. At the time of injury, John was employed as a construction worker making $15,000 per year. John's injury, without question, has seriously and permanently restricted his ability to earn money in the future. In a nutshell, John's lost earning capacity is measured as the difference between earning capacity if there had been no injury and earning capacity after injury (Brown & Johnson, 1983). Curtis and Wilson (1976) quote from the decision in an Alabama court case that:

> *No general rule can be formulated that would control the admission of evidence to prove a man's future earning capacity. It must be arrived at largely from probabilities; and any evidence that would fairly indicate his present earning capacity, and the probability of his increase or decrease in the future, ought to be admitted. (p. 226)*

This quote clearly highlights the difficulties in determining the future earning capacity and alludes to many of the complexities involved in such an analysis. In the final analysis, there is no precise method or approach that is consistently used in all courts for the determination of the question of future worth. While the following list is not meant to be exhaustive and may not be relevant to all venues (see next section), the variables that are cited are issues most frequently taken into account in presenting information on future lost capacities.

l. Age: The age of the worker is vitally important (Eden, 1976). The younger the person is, the longer the person would be able to remain in the work force. Additionally, the younger a person is the more likely that the person will have greater

opportunities for promotion within a career tract. Other factors that have a direct relationship to age are job mobility, further education, and career changes, to mention a few. (See also CFR 404.1563).

2. Educational and Training: The educational or training level of a person in terms of their knowledge, skills and abilities is a major consideration in the assessment of a person's capacity to work and earn money. A reasonable source for definitions these factors can be derived from one or more of the following two sources:

- CFR 404.1564 and CFR 404.1568 "Your education as a vocational factor" and "skill requirements."
- Revised Handbook for Analyzing Jobs (1992).

3. Work Experience: One of the best predictors of future employment is a review of relevant past work and is an excellent indicator of potential, or transferable job skills. (See CFR 404.1565)

4. Disability and Functional Capacity: There are several definitions of disability, again largely depending on the venue. SSA defines disability "as the inability to do any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to last for not less than 12 months." (CFR 404.1505). Under the Americans with Disabilities Act, a disability is defined as "a physical or mental impairment that substantially limits one or more of the major life activities (Federal Register, July 26, 1991, 1630.2.g.1). A major referent for many compensation programs is the *AMA's Guide to the Evaluation of Permanent Impairment* (5th Edition, 2000) which provides quantifiable formats for assessing functioning. The functional capacity to be able to perform work is relevant both pre and postinjury and is an important consideration in most venues (i.e. CFR 404.1561; Field, 2007).

5. Worklife Expectancy: This factor is very similar to the age factor in that one can estimate how many years remaining the worker has within the work force (Borland & Pulsinelli, 1983). What needs to be estimated is the expected retirement date of the worker as a variable on determining remaining years of work life. In 1982 the Bureau of Labor Statistics in the Department of Labor developed work life expectancy tables as a means of assisting a determination of this question (Bulletin No. 2157, New Worklife Estimates). Another publication is Bulletin 2254, Worklife estimates: Effects of race and education (USDOL, 1986). It may be interesting to note that higher educated persons are statistically more likely to be in the workforce longer than those with less education, even though they enter the work force at a later age (e.g., 18 for high school and 22 for college). More recent worklife tables (Gamboa, 2002; and Skoog, 2002) will be discussed in another section.

6. Wage and Gender: The issues of wage and gender of workers in the U. S. economy are critical issues with respect to future employment opportunities. It is a well-known and documented fact that both minorities and women tend to be underemployed and under paid when compared with white male workers in the labor force. The 1990 Bureau of Labor Statistics wage data indicates that women are paid approximately 22% less than men across all occupations. The 1990 census clearly substantiated that minorities tend to be more underemployed and paid less than non-minority persons. Additionally, unemployment rates are always higher among minority group and people who are more attractive earn more than less attractive people. Clearly then, employment opportunities are not equal for people in our society, and this assumption needs to be taken into account in any future lost wage analysis. On the other hand, studies by the

Brookings Institute indicate the wage differences between men and women are narrowing and women are entering more professional jobs.

7. Geography: Different states and sections of the country will vary in their respective opportunities for employment. For instance, the states of Florida, Arizona, Nevada, Georgia and other states bordering these big four are the fastest growing sectional economies in the country. Productivity will tend to increase which, in turn, provides a much greater opportunity for employment in all occupational categories. Conversely, the states of Alaska, Michigan, the Dakotas and Pennsylvania are in a relatively non-growth period which in turn tends to depress these economies. Geography, therefore, may be a restrictive factor in establishing future employment opportunities and may have a direct bearing on potential wage.

8. Occupational Groups: In geographical areas where the economy is rapidly growing and expanding, there is a much greater probability of employment in all occupational groups. While this observation may be generally true, there are clusters of occupational opportunities which may either contribute to or limit employment opportunities. For instance, in the state of Alaska in 1998 opportunities for employment in the oil business were tremendously decreased and in the 1970's and 1980's, textile occupations through Georgia, North and South Carolina were greatly diminished. Occupations in the auto industry continue to be slow through Ohio, Illinois, and Michigan, but there was great promise for future employment in these occupations in Tennessee, South Carolina and Alabama with the building of new auto plants in that state. The computer manufacturing industry slowed significantly in the silicon valley of California while occupations in web design, business management and engineering soared in nearly all sections of the country.

With respect to the individual worker, the occupational group in which one is employed will have a significant bearing on their future earnings. For instance, a man who is 30 years old and still working in entry-level occupations will most probably continue in similar entry-level occupations throughout the remainder of his life. On the other hand, a recent woman MBA graduate from one of the Ivy League schools will have enormous potential for career promotions and added responsibilities throughout the remainder of her work life. In other words, some people in some jobs are very immobile in terms of occupational potential. On the other hand, other persons with higher levels of education or skill and access to opportunity will have a much greater latitude of occupational mobility and earning potential.

9. Labor Market Surveys: An understanding of the labor market can be especially critical with respect to estimating future earnings of an adult worker. In particular, the labor market that is most germane to the worker is of utmost importance. Current employment opportunities as well as future trends are necessary in making a reliable estimate of future employment and earning. Utilizing large-scale labor surveys is possible, although most rehabilitation experts will rely on brief telephone and/or card file surveys. Sometimes it may be appropriate to obtain local or national information from the following:

a. American Community Survey collects demographic data, including disability and income data, from three million households.

b. CPS (Current Population Survey) and SIPP (Survey of Income and Program Participation) which are both surveys generated by the U.S. Bureau of Census.

c. Employment Development Division for the state.

d. State career information systems often located at universities or employment offices.

e. Manufacturing guides from the state department of labor or division of industry and trade.

f. Wage rates for selected occupations (not available in all states) from the State Department of Labor.

g. Personal contacts with vocational rehabilitation counselors and job service counselors.

10. Employability: The percentage of lost employment relates to the issue of "employability". This should not be confused with "placeability" which involves the job placement of the worker back into the work force. Employability addresses the question: "To what degree (percentage) is the worker able to be employed within any given labor market (i.e., jobs that exist vs. jobs that are available in a particular labor market)." By putting aside the issues of placement and vocational interest and taking into account the worker's functional limitations and/or capacities (both pre and post-levels of functioning), a determination can be made regarding employability of the worker. The Labor Market Access approach calculates a "lost employment" percentage by accounting for the worker's functioning levels and comparing this functioning to an actual labor market.

11. Life Expectancy: Life expectancy differs from "work years remaining" for obvious reasons. Most people retire from work at or about age 65 but do keep on living. Some awards will be made on the basis of years of life remaining and not simply years of work life remaining (Hanke, 1981). This is usually considered the realm of the economist if the client is "normal" as determined by a qualified professional or the physician if the client is different from "normal." The life expectancy is particularly important in calculating damages described in life care plans.

12. Average Weekly Wage: Two types of wage data can be used in estimating future lost earning: (a) the individual worker's particular wage at the time of injury, or (b) the Average Weekly Wage generated by the U.S. Department of Labor. Most analyses are calculated with the worker's current wage as the beginning point of the analysis, although an analysis utilizing the average weekly wage (AWW) is possible. The functional capacity of an individual at the time of injury, a third approach, may more accurately reflect earning capacity rather than wage at the time of injury or the AWW.

13. Median Wage: Median wage data are available from the Bureau of Labor Statistics. These data provide "reasonable approximations" of earning for various census occupations within the labor market. The most reliable wage information is directly related to specific wages of specific jobs, although the tradeoff is relating the worker's future earning potential to a few jobs and not an expanded labor market.

14. Age-Earnings Cycle: Earnings are not always governed by the usual factors associated with work and pay, such as training, education, the labor market, work capacities of the workers, etc. The age-earning cycle takes into account that a worker's earnings are directly related to one's age. During the worker's lifetime of earning, there is a greater growth rate of wages in the early years, a leveling off during the mid-life years, and a decline as one nears the end of the worklife (Dillman, 2000; Horner & Slesnick, 1999).

15. Actual v. Expected Earnings: According to Horner and Slesnick (1999) "*actual earnings* are what a person actually earns, *expected earnings* are what a person is expected to earn, while *earning capacity* is what that person is able to earn" (p.13).Rather cleverly stated then is that "earning capacity is the expected earnings of a worker who chooses to maximize the expectations of actual earnings" (p. 15).

16. Future Lost Earning: The whole point of earning capacity analysis is to determine, in an equitable and reasonable manner, future lost earnings of an injured worker. The next section discusses some of the approaches that have been employed in liability cases in the determining of future lost earnings and earning capacity. As the old philosopher once said, "You can't make your dog walk on all fours all the time." The most relevant factor in the determination of future lost earnings is the venue (program) in which the claim is being made.

17. Estimating a Wage Base: A wage base developed by the vocational consultant serves as a starting point for the economist in estimating loss and/or future earnings. A wage base can be established for jobs by one of eight methods: utilizing a minimum wage, the wage at time of injury, the average weekly wage, five representatives jobs from a survey based on the worker's functional capacity, job history, an average of jobs from the worker's job history, an average of the top 20 jobs from a job matching list, or the average wage of a few jobs within an immediate labor market (Field, 1993; Horner & Slesnick, 1999). (See Table 1 for application to venues).

18. Admissibility: With the advent of three specific U.S. Supreme Court rulings (Daubert v. Merrill Dow Pharmaceuticals, 1993, Kumho Tire v. Carmichael, 1999, & General Electric v. Joiner, 1997) and with the growing emphasis of the Federal Rules (Stein, 2006), especially FRE 702, it is incumbent upon rehabilitation professions to prepare recommendations and opinions that will stand the test of admissibility by state and federal courts, including the use of reliable resources (Field & Choppa, 2005, Choppa, Field & Johnson, 2006). Estimating earnings capacity and future earnings requires a reliable methodology (Field, Johnson, Schmidt, & Van de Bittner, 2006).

Information Resources

Labor Market Information

In order for a rehabilitation consultant to calculate the degree of disability for an injured worker, it is imperative that a clear understanding be made of how labor market information can be developed and utilized.

For the sake of argument, assume that there are three basic levels of labor market information, some of which are more suitable than others depending on the venue in which the case is being reviewed or adjudicated. Basically, data are generated from:

(a) Federal and/or national surveys administered by the federal government. These data surveys include BLS data, Census Data, including the SIPP and CPS database, and the American Community Survey data. For purposes of code identification, the federal government, across several agencies, utilizes the Standard Occupational Code (SOC) for purposes of coordination and cross-referencing.

(b) The next level of data is usually generated by Departments of Labor within the respective 50 states. These data surveys are generally

Table 1
Applying wage data to each of the venues to establish a wage base (preinjury)

Wage Data[1]	SSA	VA	St-WC	Fed-WC	Civil
Min. Wage[2]	x	x	x	x	x
Wage at Injury[3]	-	x	x	x	x
Avg Weekly Wage[4]	-	x	x	x	-
Five Jobs/Func Cap[5]	-	-	x	x	x
Job History (actual)[6]	-	x	x	x	x
Averaging Wage History[7]	-	x	x	x	x
20 Jobs/Computer[8]	-	x	x	x	x
Survey Labor Market[9]	x	x	x	x	x

[1] *Federal wage surveys*

[2] *Established by DOL*

[3] *May over or under estimate one's capacity to work and earn money.*

[4] *Based on global estimates; see website.*

[5] *Matching to jobs based on assessment and capacity to work.*

[6] *Similar to wage at time of injury.*

[7] *Averaging of wage history would require retro-active present value.*

[8] *Job matching computer programs; various wage databases.*

[9] *Large scale state, regional and national surveys; aggravated data.*

coordinated and formatted with the national surveys, but reflect more detail about specific occupations within a state. Many times there are targeted labor market surveys which investigate the numbers, types and wages of jobs within a particular occupational cluster (i.e., jobs within the allied health field).

(c) The next level may be the most refined of all in that it includes a very targeted labor survey with a particular client in mind. Following an effort to establish an RFC, the consultant attempts to match the client to those jobs which clearly fit the client's level of functioning and occupational interests. This approach easily allows for finding alternate jobs based upon different scenarios regarding the client's level of functioning, such as might exist with a period of additional training for the client.

For additional information of these occupational resources, consult the list of websites in the Reference section of this paper.

Life and Worklife Tables[2]

The following data sets are critical in the development of a case involving an estimate of earnings capacity. In a future issue of this journal, a more in-depth treatment of these resources will be examined.

DOL Worklife Tables (Bulletin 2254)*: The most widely used source (BLS) for estimating work life in states of active and inactive, these tables are*

generally accepted by the courts as credible evidence. Consult the BLS Handbook of Methods for an explanation of how data are gathered and evaluated.

***The New Worklife Tables**: Known as the "Gamboa Tables," this resource which utilizes CPS and ACS data is privately developed and appears to be more controversial with regard to their reliability ad validity. Admissibility in court is mixed (Scupp, Peterson v. Grabel, 2001; Jackson v. Roadway Express, Inc., 1999; and Hough-Scoma v. Wal-Mart Stores, Inc, 1999). The Gamboa Tables have been criticized (Rodgers, 2001; Skoog & Toppino, 1999), although Gamboa argues that the tables are not a problem when used properly by the expert. (See website for an excellent review of court cases and commentary).*

***Millimet Worklife Tables**: Privately developed tables utilizing CPS data and emphasizing the states of employed, unemployed, and inactive (differs from BLS format). Not frequently cited.*

***Markov Process Model of Worklife Expectancies**: A set of tables developed by Ciecka, et al. (1995; see also Krueger, Skoog & Ciecka, 2006; and Ciecka, et al., 2007) based on age, sex, race, education and the activity/inactivity of workers in the labor force.*

***Life Tables:** US historical life expectancy tables, 1901 to present. (Arias, 2006; see also Richards & Abele, 2000).*

A real problem with any of the worklife tables is that they fail to distinguish adequately between types and levels of disabilities. While the Gamboa Tables use the three DOL categories related to disability, these are considered by many too non-specific and global in most cases. In determining an more reasonable and accurate estimate of worklife expectancy, it is incumbent upon the forensic rehabilitation consultant to take into consideration as many of the factors (previously discussed) that are relevant to the individual case.

Venues

Estimating earning capacity and related constructs cannot effectively be understand without a knowledge of a particular venue. According to Black's (2000),

***Venue:** The proper or possible place for the trial of a case, usu. because the place has some connection with the events that have given rise to the case (p.1260).*

While venue often times refers to a geographical location, determinations in this broad area of estimating earnings capacity is simply not defined by a location (i.e., state court, federal court), but also the nature and scope of the judicial program. As will be discussed, estimating lost earning in California or North Carolina can be markedly different in the field of workers' compensation. The same holds true for other settings and programs as well (venues), i.e., the state and federal compensation programs, the Veterans Administration, and state and federal courts in civil disputes. Therefore, the type of program (venue) is perhaps the first consideration in applying a determination regarding lost earnings (five basic venues are discussed).

A more perplexing problem is that terms related to earning capacity may take on different meanings depending on the source of the program. For instance, any discussion of earning capacity and related constructs are usually associated civil or personal injury cases usually dominate. However, the general issue of employability is very germane to the field of workers' compensation and even SSDI (So-

cial Security Disability Insurance). The issue is further compounded by a variety of program requirements as set forth by the many different types of compensation programs (by state, plus federal programs). An additional source of legal definition and constraint is established by case law. This section identifies and presents the most salient sources of definitions and parameters from these sources and/or venues. Therefore, the type of program (venue) is perhaps the first consideration in applying and understanding a determination of earnings capacity.

Venue #1: Social Security

Social Security Disability Insurance (SSDI) and Supplemental Social Insurance (SSI) are two of the largest social programs providing safety-net support and services for people who are disabled or disadvantaged and who can no longer work and earn money. SSDI is the larger of the two programs and more directly relates to people with a work history prior to the presence of a disability. The SSDI does not address the issue of earning capacity. However, the language that exists in the federal regulations related to a person with a disability and their potential to return-to-work is significant. SSDI has long been considered the granddaddy of all the rehabilitation consulting program. Indeed, the SSA Vocational Expert (VE) program is generally the starting place for many VEs, especially those who expand their practice into the forensic area.

Under SSDI, a person with a disability is evaluated on a variety of factors as defined below:

> *If you can do your previous work, we will determine that you are not disabled. However, if your residual functional capacity (RFC) is not enough to enable you to do any of your previous work, we must still decide if you can do any other work. To do this, we consider your residual functional capacity, and your age, education, and work experience. Any work (jobs) that you can do must exist in significant numbers in the national economy. (20 CFR, 404.1561).*

The work related factors, as defined by the Social Security Administration (SSA), such as age, education, work experience, physical exertion and work skills, including the notion of transferable skills, are all defined and discussed in detail within the federal regulations (20 CFR, 404.1563-65, 404.1567-68).

Substantial gainful activity (SGA) is an important concept as well and is defined in two parts:

> *Substantial work activity is work activity that involves doing significant physical and mental activities. Gainful work activity is work activity that you do for pay or profit. (20 CFR, 404.1572).*

These regulations and definitions are still prominent today in terms of assessing past work while considering residual functional capacity, and the important factors of age, education and experience of people with disabilities. While the SSA does not require any estimations of future lost earnings, the program does require an evaluation and assessment of the capacity to work and earn money. Accordingly, the SSA program has provided a significant foundation for the assessment of work and earning money across the spectrum of earning assessments in all compensation programs, and , in particular, cases involving personal injury.

Venue #2: Department of Veteran Affairs

The Department of Veteran Affair's compensation program was developed to address the issues of loss and disability by veterans. The VA adopted a rating schedule (Halstrom, 2000) in 38 C.F.R.4, "as a way to determine the extent of an injured veteran's impairment of earning capacity in civil occupations.

Halstrom illustrates how the VE schedule would be used (even in civil cases) in determining a reduced earnings capacity. A woman was injured on her way to work while riding a city train that collided with another train. The woman suffered multiple injuries, including damage to her spleen, scarring after surgery, depression, and posttraumatic stress disorder. By using the VA rating schedule, a combination of the injuries resulted in a whole-body disability rating of 40%. Multiplying her wage at time of injury ($29,000 annually) by 40% and multiplying by the number of work years remaining (the assumption was that she would work until the retirement age of 65), her future lost earning capacity was estimated at $359,600, not reduced to present value.

This is a rather simplistic approach that would not be allowed in most civil cases (VA cases, maybe). The first serious problem is equating a direct relationship between a disability rating and a loss of earning capacity. Second, assuming one's work life expectancy would be a retirement at age 65 is not always defensible, especially given the existence of by federal and private tables for estimating worklife (see brief section on work life tables).

Venue #3: Workers' Compensation (State)

Programs in the workers' compensation area are as varied as the 50 states and the various federal programs. In the first instance, each state is responsible for developing and administering its own respective program. While there are general themes which are consistent for the state programs, there is also a great deal of variability between the programs on the rules and regulations regarding disability and compensation. The federal employee, depending on the source of employment, is subject to the respective compensation programs as well. Under the Office of Workers' Compensation Programs (OWCP), a number of programs exist: Federal Employee Compensation Act (FECA), the Jones Act and the Longshore and Harbor Workers' Compensation Act (LHWCA). Rather than reviewing the many compensation programs, information is drawn from the Longshore and Harbor Workers' Compensation program (LHWCA) in order to illustrate common parameters of many compensation programs - either state or federal. Following are selected definitions from the glossary of the LHWCA:

> ***Average Weekly Wage:*** *AWW is set at one fifty-second part of the employee's average annual earnings.*
>
> ***Functional Loss:*** *Describes a situation in which a physiological function can no longer be performed by the individual . . . which should be measured in quantifiable terms.*
>
> ***Impairment:*** *The loss, loss of use, or derangement of any body part, system or function.*
>
> ***Loss of Wage Earning Capacity:*** *A computation of economic loss which takes into consideration a claimant's age, degree of disability, education, work history, training, and the availability of work in which the claimant lives.*
>
> ***Disability:*** *Disability is generally an economic concept, or, more specifically, the inability of an employee because of injury or other factors,*

to earn the wages which the employee was receiving at the time of the injury in the same or other employment.

Further, consider the North Carolina Workers' Compensation program, in which benefits following injury and disability are designated by a "schedule"...whereby compensation is awarded as a percentage of the loss of a body part or function.

Schedule of Injuries: *The rate and period of compensation, based on the loss of a body part or function.*

The concepts underlying workers' compensation laws in the United States originated from Germany, in 1884 and Austria, in 1887 (Obermann, 1965; Weed & Field, 2000; Wright, 1980). In 1893 the U.S. Commissioner of Labor studied the need for insurance and compensation which led to a cooperative insurance law in Maryland in 1902. The law was declared unconstitutional because, among other reasons, it denied the right of trial by jury (Obermann, 1965). By 1908, the United States had passed a law referred to as "workers' compensation" for federal employees. Maryland tried another approach which limited coverage to coal and clay miners but it was repealed in 1914. New York also passed a law for injured workers, a part of which was declared unconstitutional. In spite of the conflict from the beginning, workers' compensation laws were slowly enacted and, by 1911, ten states had some form of workers' compensation law. By 1921, 45 states and territories had some form of workers' compensation law. They all varied by scope, benefits, system of benefits and administration, which continues to exist to this day. However, all 50 states have some type of workers' compensation law/industrial insurance program.

Although the laws vary, each state has adopted a similar definition of injury which describes an injury caused by an accident "arising out of and in the course of employment" (U.S. Chamber of Commerce, 1993). Additionally, a common provision among workers' compensation laws is medical coverage related to the injury and wage benefits/compensation. Many states also provide for vocational rehabilitation to facilitate a return to employment for the injured worker. Although many have lobbied for a federal law to standardize the workers' compensation programs in the United States, vigorous opposition exists from the states.

With workers' compensation laws in place, employers were relieved of liability brought on by a worker injured on the job. In return, the injured worker was to receive necessary medical treatment, lost wages, and in some states, possibly vocational rehabilitation or retraining if unable to return to his/her regular job. For information of state programs, comparisons and a summary of the state laws, visit the AFL/CIO websites listed in the reference section.

North Carolina: For illustrative purposes, the North Carolina Compensation Program (97-29 and 31) describes what is somewhat typical of many other state workers' compensation programs. A "schedule of injuries" provides a formula for the amount of compensation for a specified number of weeks. For example, a worker with a loss of a hand would be compensated at the rate of sixty-six and two-thirds on wage at time of injury for a period of 200 weeks. A loss of a thumb would also be for a pay rate of sixty-six and two-thirds, but for 75 weeks. The schedule lists in detail other body parts lost to injury and their corresponding compensation. In cases of total and permanent disability, compensation, including medical expenses, shall be paid for the remainder of the worker's life. Many states have adopted a similar format for compensating disabilities, although other states have modified their compensation program to recognize the different categories of disabilities: temporary partial, temporary total, permanent partial, and permanent to-

tal. States that rely on a schedule of injuries and compensation usually have minimal disputes once the nature and extent of the injury is accurately decided.

California: Some states, e.g., California, have passed new legislation (2005, including a new schedule) which requires a more exact approach for valuing the cost of an injury, including diminished earning capacity and earnings for the injured worker. This scenario is described in an comprehensive and excellent fashion by Van de Bittner (2006):

> *The new law modified Labor Code 4660 (1997) by replacing consideration of an injured employee's diminished ability to compete in an open labor market with an employee's diminished future earning capacity. Thus, with this provision of the new law, California has changed from an employability standard to an earning capacity standard in determining an injured employee's permanent disability rating.*

The suggestion is that a numeric formula based on data will yield a percentage loss of earnings when calculated with aggregate labor surveys. Van de Bittner provides a comprehensive list of factors germane to the considerations of worklife expectancy, pre and postinjury earning capacity, and future earning capacity. A formula is developed to account for each of these factors, although considerable clinical judgment is required in order to determined the values to be entered to the formula. This represents a significant departure from traditional state workers' compensation program that have relied on a schedule of injuries such as described in the North Carolina program.

Venue #4: Workers' Compensation (Federal)

As noted previously, there are several federal compensation programs (www.dol.gov/esa) that have been developed for various setting and/or occupations. These include:

> *Federal Employees' Compensation Act (FECA) (federal and postal workers around the world)*
>
> *Longshore and Harbor Workers' Compensation Act (HLWCA) (federal employees on navigational waters around the United States)*
>
> *Federal Employees Liability Act (FELA) (railroad workers)*
>
> *Merchant Marine Act of 1920 (i.e., The Jones Act) (sailors on American ships and vessels)*

Since most of the federal programs have similarities in terms of the definitions and compensation guidelines, the Longshore and Harbor Workers' Compensation Act will be presented. LHWCA provides medical benefits, compensations for lost wages, and rehabilitation services to employees who are injured during the course of employment. LHWCA serves approximately 27.000 cases per year with $747 million dollars expended for medical and rehabilitation services. Relevant terminology is:

> ***Functional loss:*** *Describes a situation in which a physiological function can no longer be performed by the individual. It should be measured in quantifiable terms.*
>
> ***Impairment:*** *The loss, loss of use, or derangement of any body part, system or function. Impairment does not necessarily equate to disability since and individual could have an impairment and not be disabled from work.*

Loss of wage-earning capacity: *A computation of economic loss which takes into consideration a claimant's age, degree of disability, education, work history, training, and the availability of work in the area in which the claimant lives.*

Average weekly wage: *The average weekly wage for an employee is calculated at 1/52 of the employee's annual earnings.*

Under the LHWCA program, the American Medical Association's *Guide to the Evaluation Permanent Impairment* is used to evaluate permanent medical impairments. It appears that the degree of impairment corresponds directly with compensation for the disability.

Venue #5: Civil Litigation, Personal Injury and Earning Capacity

This section discusses the various approaches to estimating earning capacity in the general venue of civil cases (i.e., personal injury, marriage dissolution, wrongful death, professional negligence, etc.). Over the last decade or so there has been considerable debate as to who is best qualified to offer opinion on earnings capacity. The following three positions have evolved:

The **Vocational Rehabilitation Consultant**, as generally defined by McGowan and Porter (1973), is described as a "coordinator" of services. The rehabilitation counselor relied upon and coordinated a variety of services in behalf of a person with a disability in areas of medical and vocational diagnosis, planning for services, job placement, and case closure. As the private sector of rehabilitation consulting evolved through the 1970s, the basic process was essentially the same; just the "venues" changed (SSDI, Workers' Compensation programs). When it came to the issues of economics, such as projecting future lost earnings, it was, and still is, usual and customary for the rehabilitation consultant to forward the rehabilitation report to an economist for such determinations. In the case of Smith v. M.V. Woods Construction Co., Inc., (2003) the court ruled that the plaintiff's "vocational rehabilitation expert was not qualified to express opinion on past and future loss of earnings, past and future loss of household services, and future medical services; such matters are generally subject of expert testimony by an economist."

The **Vocational/Economic Consultant** was represented by a small, but growing contingent of professionals who felt they could offer testimony in both areas. With additional training and skill development, rehabilitation consultants were moving more often into the realm of making economic determinations in the specific areas of pre and postinjury wage earning capacity, decisions regarding estimations of remaining worklife, and projections future earnings or loss.

The **Economist** is usually the professional assigned to make economic projections, including necessary adjustments in the dollar amount such as age-earnings cycles, and discounting to present value. The work of the economist is predicated on the pre and postinjury base wage calculations of the rehabilitation consultant. However, the economist must rely upon the necessary foundation data supplied by the consultant (or any other consultant providing relevant information). In Hobbs v. Harken (1998), an economist expert's testimony on future lost earnings was disallowed because the expert admitted that he assumed the disability was permanent when there was no medical or rehabilitation foundation. The interface between the two disciplines has been discussed at length by Dillman (1987).

Wage Loss Analysis

Wage loss analysis refers to that procedure which addresses the amount of wages lost by a worker as a result of injury. For instance, if a worker was being paid $12,000 a year at a rate of $1,000 a month or approximately $250 per week, what would be the total amount of wages lost taking into account number of days, weeks, or months the worker was unable to return to his or her job as a result of the injury? If the injury was of such a nature that it prevented the worker from returning to work for a period of one year or more, a simple tabulation of all of the months and/or years of lost time would be added to determine the amount of lost wages as a result of the injury. The calculation of lost wages is a rather simple and straightforward process and really does not take into account many of the other factors related to the issue in question of lost earning capacity.

Earning capacity is related to the notion of lost future earning related to the client's capacity to work and earn money. In some cases, the loss of earning capacity is straight forward. For example, a man who was 55 years old and who had been driving a truck for a living since he was 19 was injured in a motor vehicle accident leaving him tetraplegic. His loss of future earnings was based on the amount of money he was making at the time of injury and projected over the remaining work life expectancy. In this case the individual probably also had achieved his realistic earning capacity.

In other cases, this may be less clear. For example, the man in the above case also had his 18 year old nephew in the car with him. The boy suffered extensive head injuries which rendered him incapable of gainful employment for the rest of his life. Since he had very little work history (paper boy) the task for estimating loss of earning or earning capacity is more complicated.

One method is to opine about what specific jobs or job categories in which the individual might have been able to engage (Deutsch & Sawyer, 1999). A second is based on the LPE method, which is an estimation of the life expectancy, work force participation and probability of being employed as supported by government statistics (Brookshire & Smith, 1990; Lees-Haley, 1987). Another is to estimate the educational level the person might have attained and turn to Census research for median income a person with the those traits could be expected to earn over his or her lifetime. For clarification, the loss of earning would generally be based on past history whereas earning capacity would be based in prognostication or estimation based on certain "worker traits."

The second and third methods are not specific to the injured party and rely on global data for a just award. This has its own problems for both the plaintiff and defense attorneys (Field, Weed & Grimes, 1986; Lees-Haley, 1987; Weed, 1987; Weed & Field, 1994). For example, say the 18 year old was a high school graduate but his I.Q. was 85 (average is 100) and he graduated 988 in a class of 988. Clearly the defense attorney would argue that the government statistics would overestimate the earning as it applies to the individual. On the other hand, assume the 18 year old was class president, considered well above average in intelligence and graduated in the upper third of his class. In this case, even if the parties agreed that the plaintiff had not planned to continue with his education, the plaintiff's attorney would likely argue that the government data was too conservative.

In any event, most cases do not fit neatly into various categories. It is not unusual for a plaintiff to be in their late 20's with a lower level job history but active plans to complete college "starting the next term after the injury"; or a 35 year old who had just started her own business but is injured enough that she can not continue in the business venture but can work at some other job; or a housewife who has a college degree or was planning to return to work after the kids were old enough

to take care of themselves. In yet other cases, a person may have been severely injured but able to return to a modified job with his old employer where he earned the same income, but has clearly lost the opportunity to work in the occupation of his choice and has lost access to a wide variety of occupations or prevented from advancement within his chosen profession.

Everyone's earning capacity is not achieved at the same life stage. One author offers an age-earning cycle concept which indicates that the average individual may not hit their peak earning until about the age of 40 (Dillman, 1987). For children, adolescents and young adults, the accuracy of loss is dependent upon a number of individual factors and the ability of the rehabilitation expert to take these factors and translate them into defensible figures. Depending on the individual, one would expect the reliability of actual wage history for determining earning capacity will increase as the age increases. After the peak earning years, previously suggested at about the age of 40, actual earning would likely be the base from which the economist would project losses if the person was totally disabled (Dillman, 1987). If the individual is unable to return to work at their usual occupation, then the expert would compare actual preinjury earning with expected postinjury earning. It is recommended that a similar approach be used following a functional capacity assessment (identify classes of jobs). For adult clients, this can be supplemented by a labor market survey conducted in the local labor market about the availability of these suggested job titles and their wages.

At the other end of the spectrum on earnings capacity, opinions about younger persons who have not yet settled into a career need to be approached somewhat differently (Deutsch & Sawyer, 1989). For children the study is based on worker traits which can be identified from school records, standardized testing, work history to date, family background including aunts, uncles, parents, grandparents, and other factors (Isom, 2002; Weed, 2000). Worker traits include the physical demands and working conditions of the job, general educational level, vocational preparation time generally required, aptitudes, interests and temperaments needed to perform the occupation.

In cases of marriage dissolution, the issue is often times related to alimony rather than a disabling condition. In the case of Gavron v. Gavron (1988) in the State of California, the primary issue is often typical of marriage dissolution cases, namely, a stay at home wife and a wage earning husband. In this case, the wife assisted the husband in obtaining a professional degree in dentistry (working during the early years and contributing to his earning capacity), but then became a homemaker when the husband began his professional practice. Under the civil code in California,"a court is to consider as a factor [in spousal support] the supported spouse's marketable skills and ability to engage in gainful employment." Following 25 years of marriage, the wife did not return to school for further education and training, and live primarily off the funds received through alimony. When the husband attempted to reduce the alimony amount after several years, the court ruled that the full alimony amount should continue because the supported spouse "had no prior awareness that she would be required to become self-sufficient." The code also stipulates that a professional trained in the areas of assessing marketable skills and career options be engaged in the assessment of a spouse's skills and abilities, if appropriate.

In summary, the question of lost future earning takes on a whole new dimension and involves a much more demanding and complicated analysis to determined (discussed earlier) a fair and equitable settlement for the client than it would seem at first blush. Again, a large part of the determination is directly related to the venue issue or the nature of the program in which the issue may be adjudicated. See Table 2 for a summary of the application of selected factors to the dif-

Table 2
Summary of the application of selected factors to the different venues

Venue	Disab	TSA	Empl	Survey	Wage Base	Act v. Exp	Work Life	Fut LE	Admiss
SSA	x	x	x	x	–	–	–	–	x
VA	x	x	x	x	x	x	–	–	x
St WC	x	x	x	x	x	x	x	x	x
Fed WC	x	x	x	x	x	x	x	x	x
Civil	–	x	x	x	x	x	x	x	x

Headings: Disability, Transferable Skills Analysis, Employability, LMA Survey, Wage Base, Actual v. Expected Earnings, WorkLife, Future Lost Earnings, Admissibility

ferent venues. As the information in the table reveals, all venues require some degree of attention to transferable skills analysis (TSAs), the issue of employability following injury, the use of survey labor market information, and admissibility of testimony in a hearing or court. However, there is a great deal of variability between the requirements of compensation programs and a review of the regulations is suggested for a better understanding of how the factors are applied.

Methods for Evaluating Lost Earning Capacity

There are several different approaches or methods of estimating the loss of earning capacity in cases of partial but permanent disability. The following methods are often referenced by practitioners, but are not all inclusive regarding methods that might be used. These methods have all had an impact on the development and progression of methods used today by most professionals. While each of the methods discussed emphasize the use of data and information, each method requires a significant degree of clinical judgment and decision-making on the part of the professional (see Choppa, et al., 2004 for a discussion of the efficacy on professional clinical judgment in opinion development).

The Deutsch/Sawyer Model

Deutsch and Sawyer (1986) have suggested that preinjury earnings and postinjury earnings really do not reflect an accurate picture of the person's ability to earn money. More importantly,"the client's postaccident earning capacity, or the potential to earn" (p. 8-2) is really the target of an assessment of diminished earnings. An assessment of earnings capacity would include:

1. Whether the client has a relatively well-established work identity or vocational goal;
2. The degree to which the client is established in this vocational goal;
3. To what degree the individual has developed the necessary skills and abilities required to show proficiency in the chosen vocational goal.
4. The number of years of experience the individual has in the vocational goal; and

5. The degree to which a difference exists between the individual's earned wages and the average earnings for most workers in the chosen vocational goal. (P. 8-3).

In addition to the obvious emphasis on a career goal, the model suggests that "per-accident earnings do not accurately and consistently reflect the actual capacity to earn or develop earnings in cases involving individuals under the age of 30" 9p. 8-3). This emphasis on vocational goals and age is somewhat of a departure from the LMA model which emphasizes the pre and postinjury functional capacity evaluations. The latter model suggest a correspondence between vocational functioning and selected jobs and wages. The Deutsch and Sawyer model does include other factors for earning capacity assessment including education, intellectual development, academic development, work history and transferable skills. In establishing a wage earning capacity it is also necessary to choose a representative sample of jobs that reflect an individual's maximum capacity for developing vocational and earning potential. (P. 8-5)

The model then proceeds to suggest that a referral to an economist is appropriate to calculate an estimate the diminution of lifetime earnings. This model, while suggesting a number of variables to consider, does not provide any guidelines on procedurally what to do; a great deal of judgment and experience is required in the decision-making process for capacity assessment.

Labor Market Access/Wage Loss

The LMA approach, developed by Field & Field during the 1980's, (see also Field, Choppa & Shafer, 1984; Weed, 1987; Field, T., 1988, & Field, J. 1999) emphasizes the necessity to analyze lost wages with respect to labor market conditions. The LMA approach is based on large-scale labor market information that is cross-referenced to median weekly wages supplied by the Bureau of Labor Statistics. The labor market surveys were provided by the annual Bureau of Census surveys and adjusted by annual labor market survey information from both the federal government and state departments of labor.

The advantage of the labor market approach is that it establishes a "reasonable approximation" of a beginning wage base at the time of the injury which then can be compared with estimated earning based upon a reduced level of functioning postinjury. The alternative to this approach is to use the actual wages that were earned by the worker at the time of injury, and then to estimate what the worker might be able to do in particular jobs postinjury. The LMA approach has the added advantage of taking into account the issue and question of lost opportunity to be employed postinjury by comparing an individual's pre and postinjury level of functioning to a particular labor market. In this sense, the LMA approach takes into account specifically the questions of geography and labor market conditions within geographical areas. The other aspect of the LMA approach is that it provides approximations of potential wages for an injured worker, pre and postinjury, which can be provided to the economist who then can make projections of lost earnings or lost future earnings. However, as with any computerized approach the professional must understand the data that is generated as well as how the computer processes the data with an explanation to the satisfaction of the court (Perez v. IBP, Inc., 1991, & Hughes v. Inland Container Corp., 1990).

The Labor Market Access approach is a two-step process. First, the preinjury level of vocational functioning of the worker is compared to jobs in a geographical area, and secondly, the postinjury level of functioning (or the RFC) is compared to jobs that exist in the same geographical area. By comparing the worker's levels

of pre and postinjury functioning to the Pittsburgh economy, for example, it is possible to calculate a percentage of access to jobs in Pittsburgh prior to injury as well as a percentage of access to jobs after injury. This is accomplished by subtracting the number of jobs (civilian labor force) available to the worker after the injury from the number of jobs available prior to the injury and dividing the result by the number of jobs available to the person prior to injury. For example, if the number of jobs as represented by the number of people in the civilian labor force available after an injury (based on the RFC) is 2,546,811, and the number of jobs available prior to injury was 2,723,222, then 2,546,811 subtracted from 2,723,222 equals 176,411. 176,411 divided by 2,723,222 equals 6.48% which represents the personal loss of access to the employment market for jobs of which the worker has the capacity to perform. This analysis compares the client's pre and postinjury levels of functioning against people actually employed in a geographical area. These people, constituting the civilian labor force, are in jobs each of which can be analyzed according to the worker trait arrangement.

This approach is distinctly different from the AMA's *Guide to Evaluation of Permanent Impairments* approach which assigns a percentage of impairment to the person as a consequence of a loss of bodily part. The Labor Market Access approach identifies a percentage of loss to employment to a given economy based upon that person's level of vocational functioning as a result of injury. The determination of disability, then, is clearly a function of calculating a percentage loss of access to jobs (employability) within a given economy, as represented by the civilian labor force, as a result of the injured worker's level of vocational functioning (pre to postinjury).

The approach of assigning a percentage to a loss has been a long-standing method to the determination of a disability. In some cases, it has been utilized as a guide in determining lost earning or wages and future lost earning as a direct relationship to the percentage losses identified by the appropriate category. For instance, a loss of an arm will result in X% loss of functioning for the person. This has oftentimes been translated to a similar percent loss of employment opportunity for that worker for the remaining years of his or her work life. This is an erroneous assumption since it cannot be assumed that the loss of a bodily function by percentage is directly related to the loss of employment opportunities and/or functioning in the worker's future. Assume for a moment that a business executive, due to some accident, had to have several of his toes amputated from his left foot. According to the AMA Guide, this would result in a 15% loss of bodily functioning for this particular injury. On the other hand, the loss of three toes on the left foot has no direct bearing on the types and kinds of work that the business executive was performing either before this injury or following the injury. Although it can be argued that there is a percentage loss of bodily functioning due to the loss of the toes, it also true there is no direct relationship to the loss of functioning on the job.

On the other hand, a person who is employed as a dancer, whose job requires a great deal of balance and agility, might purport that there is a direct relationship between the loss of functioning in the left foot and potential loss of functioning on the job. The injury may result in a loss of job opportunities for the dancer. In other words, a determination has to be made of the level of functioning both pre and postinjury as it relates to jobs and future jobs of the worker. It is not adequate nor satisfactory to argue that a percentage loss of bodily function is a direct correlation to the loss of vocational functioning. The LMA approach emphasizes the necessity of both pre and postinjury functional assessment.

The RAPEL Method

The RAPEL method (Weed, 1998; Weed, 2000) is a comprehensive approach which includes all elements needed to determine loss of access (incorporating the LMA information), loss of earning capacity, future medical care, worklife expectancy, rehabilitation plan, placeability and employability factors. The word RAPEL is a mnemonic designed to assist the rehabilitation expert with collecting the data for a jury, lawyer, judge, economist and others in order to arrive at the economic impact of an injury. It may not be evident, but many of the articles on loss of earning are written by economists. Generally the economist will rely on the numbers provided to him or her by the rehabilitation expert. It is very important for the economist to receive the "right" information so a "bottom line" can be established. See Figure 1 on following page.

The Court or Jury Decides (Summary Judgment)

> *Summary judgment: This procedural device allows the speedy disposition of a controversy without the need for a trial. (Black's, 2000).*
>
> ***Jury Instruction:*** *A direction or guideline that a judge gives a jury concerning the law of the case. (Black's, 2000).*

It is not uncommon for state and federal courts to present all relative information through presentations (attorneys and experts) and then to charge the jury to decide the outcome on damages, including future lost earnings. This approach requires that the jury receive adequate information to presumably make an informed decision regarding damages. In cases involving a summary judgment, the same necessary information is needed by the court. Under the Virginia Model Jury Instructions (9.000), this instruction outlines the categories for damages which the jury can consider:

> *If you find for the plaintiff, then in determining the damages to which he is entitled, you may consider any of the following which you believe by the greater weight of the evidence was caused by the negligence of the defendant:*
>
> *(1) any bodily injuries he sustained and their effect on his health according to their degree and probable duration;*
>
> *(2) any physical pain and mental anguish he suffered in the past and any that he may be reasonably expected to suffer in the future;*
>
> *(3) any disfigurement or deformity and any associated humiliation or embarrassment;*
>
> *(4) any inconvenience caused in the past and any that probably will be caused in the future;*
>
> *(5) any medical expenses incurred in the past and any that may be reasonably expected to occur in the future;*
>
> *(6) any earnings he lost because he was unable to work at his calling;*
>
> *(7) any loss of earnings and lessening of earning capacity, or either, that he may reasonably be expected to sustain in the future;*
>
> *(8) any property damage he sustained.*
>
> *Your verdict should be for such sum as will fully and fairly compensate the plaintiff for the damages sustained as a result of the defendant's negligence.*

Figure 1. The RAPEL Method

Common Sense Approach

REHABILITATION PLAN

Determine the rehabilitation plan based on the client's vocational and functional limitations, vocational strengths, emotional functioning, and cognitive capabilities. This may include testing, counseling, training fees, rehab technology, job analysis, job coaching, placement, and other needs for increasing employment potential. Also consider reasonable accommodation. A life care plan may be needed for catastrophic injuries.

ACCESS TO THE LABOR MARKET

Determine the client's access to the labor market. Methods include the LMA99 computer program, transferability of skills (or worker trait) analysis, disability statistics, and experience. This may also represent the client's loss of choice and is particularly relevant if earnings potential is based on very few positions.

PLACEABILITY

This represents the likelihood that the client could be successfully placed in a job. This is where the "rubber meets the road". Consider the employment statistics for people with disabilities, employment data for the specific medical condition (if available), economic situation of the community (may include a labor market survey), availability (not just existence) of jobs in chosen occupations. Note that the client's attitude, personality, and other factors will influence the ultimate outcome.

EARNINGS CAPACITY

Based on the above, what is the pre-incident capacity to earn compared to the post-incident capacity to earn. Methods include analysis of the specific job titles or class of jobs that a person could have engaged in pre- vs. post-incident, the ability to be educated (sometimes useful for people with acquired brain injury), family history for pediatric injuries, and LMA99 computer analysis based on the individual's worker traits.

Special consideration applies to children, women with limited or no work history, people who choose to work below their capacity (e.g., highly educated who are farmers), and military trained.

LABOR FORCE PARTICIPATION

This represents the client's work life expectancy. Determine the amount of time that is lost, if any, from the labor force as a result of the disability. Issues include longer time to find employment, part-time vs. full-time employment, medical treatment or follow up, earlier retirement, etc. Display data using specific dates or percentages. For example, an average of four hours a day may represent a 50% loss.

In Aivaliotis v. S.S. Atlantic Glory (1963), Aivaliotis, the plaintiff, was ordered to remove water from below deck of an ocean-going transport vessel. Initially, the plaintiff was hauling buckets of water from below and then dumping the water overboard while two workers below filled the buckets. After a period of time, the plaintiff switched jobs with one of the workers below, and while moving to a forward position, fell through an open hatch and fractured his left leg, and suffered a compound fracture of his right ankle, with multiple contusions over his body. Nearly a year later, after multiple surgeries (7) and infections, and extensive pain, the left leg was amputated. A physician's report (over two years later) indicated the he had reached maximum improvement medically and could be discharged. The physician stated that "I do not feel that he is fit for work as a seaman aboard a ship, but I do feel that he is fit for sedentary or light work, or work that does not involve climbing ladders, lifting or stooping." Plaintiff received a rating of "permanent-partial disability."

The court concluded that plaintiff would not "sustain any actual loss of future earnings by reason of his impairment when his previous station in life is considered." The court learned that during the long period of hospitalization, the plaintiff married an American citizen, gradually learned to speak English, improved upon his educational level, and the potential to earn more in the United States than he could if he had continued on the vessel. The court observed that "there can be little doubt as to the impairment of his earning capacity." The court reached the final conclusion:

> *Taking into consideration the many elements of damage which must be weighed in an effort to reasonably compensate [plaintiff] for his pain, suffering, mental anguish, embarrassment, actual loss of wages to the point of attaining maximum improvement, impairment of future earning capacity, the expense of maintenance and replacement of the prosthesis in futuro, and considering life expectancy, discounted to the present value of one dollar where appropriate, the court is of the opinion that [plaintiff] is entitled to a decree against the vessel . . . in the sum of $115,000.00."*

In terms of how the court decided amount the settlement amount is not clear since all elements were considered together and under the single category of damages.

In the case of Exxon Corp. v. Fulgham (1982), the plaintiff was involved in an automobile accident which caused injury to his left hand and wrist, knee, neck and back. Following surgery and treatment (arm was in cast for six months), the physician opined that plaintiff "has approximately a 50 percent loss of use of his wrist and hand as a result of the accident...and would be restricted in his working ability because of restriction of motion in his wrist." The court, in instructing the jury, is required to be supported by the evidence. In this case, the jury was instructed to consider a loss of earning capacity which was supported by the opinion of the physician who indicated that there was a loss of 50 percent of functioning in the wrist. Exxon objected to the jury charge of a lessened earning capacity based on the fact that the plaintiff was earning $1000 per month after the injury versus only $700 per month prior to the injury. Relying of the previous case of Aivaliotis v. Steamship Atlantic Glory, the court ruled in that case that "one of the measures of his damage is based upon his earning capacity and not merely the amount actually earning." Consequently, the appeals court ruled that the evidence presented by the physician (50% loss of functioning, pain, loss of motion) "was sufficient for the jury to have found that by reason of the injury to the wrist, the plaintiff has sustained a lessening of earning capacity in the future." The finding was summarized:

> *The plaintiff is a man of limited education and earns his livelihood by physical effort and manual labor, specifically with the use of his arms and hands. At the time of the trial, he was an office-machine repairman. Although not a certified cabinetmaker, plaintiff is adept and skilled in the area of woodworking. There is credible evidence from which the jury could have concluded that because of his background, education, skills, and the work he performs, the type and character of the injury sustained by the plaintiff to his left wrist is such as will lessen his earning capacity and could diminish his opportunity to secure employment in the future. We find no error in the action of the trial court in permitting the jury to consider any lessening of plaintiff's future earnings capacity or his expectation of life in determining damages.*

Note that the court relied upon the client factors of the injury and its restrictions, background, education, skills, and the work performed as evidence presented to the jury.

In Scott v. Mid-Atlantic Cable (2006), the determination of damages was addressed by consideration for a summary judgment consistent with Rule 56 of the Federal Rules of Civil Procedure as summarized in this court case:

> *Summary judgment is appropriate when the moving party can show affidavits, depositions, admissions, answers to interrogatories, pleadings, or other evidence, that has no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law.*

Scott, following an accident resulting in injuries, filed a claim seeking damages for "medical care expenses, pain and suffering, mental anguish, lost earning capacity, and the lost future retirement benefits." The defendants filed a motion for partial summary judgment (lost earning capacity and lost future retirement benefits). As noted in the Exxon case, "Virginia law permits a claim for lost earning capacity where the plaintiff established that the type and character of the injury" which will reduce one's earning capacity and the opportunity to be employed. Further, a consideration of earning capacity includes such factors as background, education, skills, and experience. The court denied the motion for a partial summary judgment based on the fact that there was a material fact (estimating lost earning capacity of the plaintiff) did not rely on speculation or conjecture, and the issue could be adjudicated.

In all three cases noted above, a court (via summary judgment) or a jury could determine a proper conclusion (damages) on the issue of estimating lost earning capacity and/or future employment when the relevant facts of the case are presented in a sufficient manner. The relevant elements of such a determination would include background, the nature of the injury, education, skills and experience.

A "Practical" Approach

The estimation of earnings capacity would seem to be a very complicated task given all the information that is available. Much of the confusion for forensic rehabilitation professionals results from the various approaches that have been discussed, including the pros and cons of computer programs, various occupational databases, and identifying the most critical and salient variables necessary in the analysis. In fact, Shahnasarian (2001, 2004) has emphasized the necessity of organizing and synthesizing all relevant information in the development of a case, including the use of a worksheet that has been developed for such purposes.

This proposed basic and practical approach is perhaps a synthesis of the more useful (and least controversial) concepts that have evolved over the years. Personal preference for alternative resources and/or approaches is certainly within the realm of possibility. However, what is suggested below can serve as a "benchmark" for professionals to consider and then incorporate personal preferences and experiences into a individual and preferred model.

The following steps are suggested:

1. *Following a review of the case records, develop at preinjury assessment of earning capacity. Identify a preinjury base wage (not necessarily wage at time of injury) by identifying jobs and wages that best represent the claimant's functional capacity.*
2. *Identify a postinjury base wage by identifying jobs and wages that best represent the claimant's residual functional capacity.*
3. *Estimate the difference between the preinjury earnings capacity and the postinjury earnings capacity.*
4. *Estimate the remaining work life of the claimant.*
5. *Calculate a range of economic loss by multiplying the difference from pre to post earnings capacity by the work life remaining.*
6. *If not qualified, refer to an economist for adjustment to present value. The economist's general method can serve as a guide and blueprint for the rehabilitation professional. Resources to be used might include the following:*
   - *A computerized job matching program to expedite the job identification process. (optional – see website).*
   - *Either the DOT or the O*NET for describing occupations.*
   - *The on-line CareerInfoNET database for wages and numbers of jobs in a local economy, or the CPS data generated by BLS., or ACS (see website).*
   - *The BLS Worklife Tables*

Summary of Methods

The four methods cited above serve as guidelines for the professional to follow in the development of a case. Of course, there will be variations for each of the methods and much of the variation will depend upon the facts of a case. Reference to Table 3 displays some of these differences in how a case can be developed. The RAPEL method appears to be the most comprehensive of all the methods, although this method draws upon resources and strategies from a variety of sources. The LMA method, of course, is a computerized approach during 1980s and 1990s. The program is not available, although the rationale is one to consider (see websites for three computer programs which are currently available and may be used in earnings capacity assessment). As noted earlier, the Deutsch/Sawyer model is rather global and non-specific, while the Court/Jury model is interesting and may be employed in some states. The Practical method is just that: a rather straight-forward and common-sense method quite similar to the RAPEL. In terms of which method to use is really the prerogative of the practicing professional. All have been published in peer reviewed literature and all are generally accepted by the professional community.

Table 3
Methods of Earning Capacity Assessment Compared on Selected Factors

Factors	Deutsch	LMA+	RAPEL	Court/Jury	Practical
Func Assessment	Y	Y	Y	Maybe	Y
Career Goal	Y	N	Y	Maybe	N
Job Matching	N	Y	Y	Maybe	Maybe
Survey Data	Y	Y	Y	Maybe	Y
Worklife Tables	N	N	Y	Maybe	Y
Future Earnings	N	N	Y	Maybe	Y

A Case Illustration [3]

The following is an actual case that was prepared for a plaintiff's attorney involving a young child who was born with a totally flaccid right arm. The report includes a summary of the disabling condition and the VE's (Rodney Isom, Ph.D.) assessment of future lost earnings. This case illustrates how one rehabilitation professional addressed the issue of earnings capacity. The testimony of Dr. Isom following deposition was challenged by the defense, Minton & Minton v. Savage (2004). However, the testimony was allowed based on the court's ruling that Dr. Isom's "methodology meets the requirements of Daubert for testing, peer review and acceptance within the professional community."

Preliminary Rehabilitation Assessment

Re: Ryan Minton

Please accept this report as my initial, preliminary case report concerning Ryan Minton. In this report, you will see where I have noted that the report is preliminary because there remain certain aspects of Ryan's case for which I have not yet had the chance to review the pertinent records or visit with the treating physicians.

General Review:

I spoke with Ryan's mother, Dawn, on 10/1/03. She reported that he was born with a totally flaccid right arm; his date of birth is 9/21/99. He had his first surgery at age 6 months at Texas Children's Hospital in Houston, Texas. The surgery known as the primary surgery was performed in March of 2000. Ryan underwent a second surgery at age 18 months. The second surgery was performed in May of 2001 and is known as the "mod quad". There is some discussion about Ryan undergoing a possible 3rd surgery sometime in the future to assist with his wrist extension. The surgery, a wrist tendon transfer would not be scheduled for the immediate future.

Presently, Ryan is able to put his hand in a neutral position (reaching out to shake someone's hand), has a slight grip (he is able to pick up a pencil but not a glass of milk), uses his right arm to steady things he is using, can lift his hand above his head, extend his arm. He is going to Physical therapy 2 times per week and has done so since his first surgery. He is expected to continue his PT for the foreseeable future. She reports that he has right side balance problems.

Ryan is scheduled to return to Texas Children's Hospital for a follow-up visit with Dr. Nath in approximately one year. He will continue to see Nath on an annual basis.

Medical Documents Reviewed

1. *Pediatric Care of Austin/Caryn Krenke, M.D.*
2. *Starbright Pediatric Rehabilitation Institute of Healthsouth*
3. *Specially for Children/Drs. Berry, Ghodsi, McWilliams, Sanders & Sharp*
4. *Texas Children's Hospital-Houston/Baylor Pediatric Consultants/Brachial Plexus Clinic, Drs. Laurent, Lee, Nath, and Shenaq.*
5. *The Heart Therapy Services*
6. *Austin Pediatric Ophthalmology and Strabismus/F. Keith Busse, Jr., M.D.*
7. *Texas Children's Hospital- Houston 03/21/00 to 03/23/00*
8. *Texas Children's Hospital- Houston 05/21/01 to 05/23/01*
9. *Austin, Ear, Nose & Throat Associates/Peter Scholl, D.D.S., M.D.*
10. *Bee Caves Pediatrics/David Ruiz, M.D.*
11. *Deposition of Dawn Minton.*

In a report dated, January 26, 2000, Dr. Nelson, of Texas Children's Hospital indicates that Ryan was seen in 10/18/99 and ˝4/01. At the 10/18/99 visit Ryan had no motor activity of his right arm except 2/5 shoulder internal rotation, 2/5 finger flexion, and 3/5 wrist flexion. He indicates that Ryan is scheduled for surgery in March of 2001.

In a surgical report dated 3/21/01 Dr. Shenaq indicates that Ryan is diagnosed as suffering from "Severe deformity secondary to right obstetrical brachial plexus palsy". Ryan underwent the following procedures:

- *Excision of neuroma involving C5 and C6 and the upper trunk.*
- *Excision of neuroma involving the middle trunk.*
- *Nerve graft, upper right C5 nerve root to suprascapular division of the upper trunk.*
- *Nerve graft, right C5 nerve root to posterior division of the upper trunk.*
- *Nerve graft, right C6 nerve root to posterior division of the upper trunk.*
- *Nerve graft, C7 nerve root to middle nerve.*
- *Right sural nerve harvesting.*

In a surgical report dated 05/21/2001, Dr. Shenaq, indicates that Ryan was diagnosed with the following, "Secondary deformities of right brachial plexus injury, obstetric. Ryan underwent the following procedures:

1. *Transfer of right latissimus dorsi muscle.*
2. *Transfer of right teres major muscle.*
3. *Release of right subscapularis muscle.*
4. *Right triceps tendon partial release.*
5. *Right axillary nerve decompression and neurolysis*
6. *Right pectoralis major muscle release.*
7. *Right pectoralis minor muscle release.*

Family/Social:

Dawn is 38 years old. She is a working mother. She completed high school in 1983 and attended 2 years of college. She works as a purchasing director for the Blood & Tissue Center. She earns approximately $47,000 per year.

Roy, Ryan's father, is in sales for a medical software company. He completed high school and has BA from George Mason University, Washington D.C. He earns approximately 80,000 per year.

Both parents are very involved with Ryan's care. They have no other children and do not plan to have additional children. Both parents have had to deal with feelings associated with learning their child is disabled.

Psychological:

Independent of the educational and work issues, Ryan will likely experience a reduction in the quality and enjoyment of his life as a result of these injuries. His involvement in sports and recreational activities, especially beyond age 10, will be significant. The development of personality, self-esteem, and vocational identity will all be impacted by this injury. The occurrence of psychological adjustment issues as a result of his diminished participation and inclusion with age group peers is common for adolescents with disabilities. Supportive psychological counseling for Ryan during his school age years should be considered.

Projected Reduced Earning Capacity:

It is likely that Ryan's future earning capacity will also be impacted by this injury. Most persons with a disability earn less than their non-disabled counterparts. There are many reasons for this, including: inability to perform many of the low education / high paying blue collar jobs, inability to perform the demands of lower entry jobs that are the necessary "stepping stones" to supervisory of managerial jobs, lack of flexibility to acquire new job skills due to their limitations, and lack of appropriate rehabilitation services and/or resources for education.

Ryan will not be able to perform many "physical" occupations that pay relatively well with limited training or education. At this point in time it is difficult to predict if Ryan possesses the needed intelligence and learning capacities for occupations that are not unskilled or semi-skilled in nature. We do know that most children acquire slightly more education than their parents (Isom, R., Barton, T., & Holloway, L. (2001). Pediatric earning capacity: Developing a defensible estimate of pre-morbid earnings. Journal of Forensic Vocational Analysis. 4, 2 1-28.) I anticipate that Ryan will complete his high school education and will complete his college education, however, given his disability, his progress through school will be challenging and less certain as compared to children without disability.

We can predict earnings based upon the level of education attainment. According to the U.S. Census Bureau, Economics and Statistics Administration, Current Population Survey, Disability Work Experience and Mean Earnings in 2000-Work Disability Status of Civilians 16-74 Years old, by Educational Attainment and Sex: 2001, which can be found at http://www.census.gov/hhes/www/disables/cps/cps301.html a non-disabled male working full-time with a college education between the age of 16-74 years old would earn on average $78,523.00 per year, plus adding the value of the benefits at 27.4% of total compensation the annual value of Ryan's pre-morbid earning capacity equals $100,038.00 per year. The value of the benefits is according to the U.S. Department of Labor, Bureau of Labor Statistics, Bureau of Labor Statistics Data for 2001 and can be found at http://data.bls.gov/cgi-bin/surveymost (visited October 13, 2003).

Ryan's residual earning capacity will be diminished due to his physical disability, although, it is likely that he will be able to find and perform work, at least part-time, when he does work his earnings will be reduced (assuming he does complete his college education):

- *Perceived and real inabilities to perform job functions;*

- *Inability to obtain competitive wages and get promoted;*
- *Severely disabled persons tend to not work in higher paying jobs, like in the professions and science and technology jobs;*
- *Lower productivity due to decreased speed and stamina;*
- *More difficulty acquiring new skills and learning / using new technology.*

According to the U.S. Census Bureau, Economics and Statistics Administration, Current Population Survey, Disability Work Experience and Mean Earnings in 2000-Work Disability Status of Civilians 16-64 Years old, by Educational Attainment and Sex: 2001, which can be found at http://www.census.gov/hhes/www/disables/cps/cps301.html a full-time disabled worker with a college degree would earn $52,902.00 per year. A disabled worker with a college degree, who works less than full-time, earns $42,264.00 per year. Yet, the same data shows that someone classified as having a severe work disability' working less than full-time with a college degree would earn a meager $32,397.00 per year. Certainly, people with disabilities very often are not able to work full-time, due to on-going medical needs, decreased stamina and strength, etc. It is probable by the U.S. Census Bureau's definition that Ryan will be considered as having a severe work disability' during his adult working life.

I estimate that his residual earning capacity will be between $52,902.00 per year and $32,397.00 per year without calculating in the value of the benefits. The median of this range is $42,649.50. His residual earning capacity with benefits would equate to $54,335.46. Ryan's loss in earning capacity is estimated to be the difference between his pre-morbid and residual earning capacity, or $100,038.00 less $54,335.56, equating to a total of $45,702.54 annually.

Assuming that in the future Ryan can work at some level, his work life will likely be shortened considerably by this injury. It is estimated that his work life will be reduced by 40-60% (high school education). His work life will be shortened due to:

- *Greater difficulty finding a job that can accommodate him;*
- *Difficulties retaining jobs;*
- *Longer periods of unemployment between jobs;*
- *Difficulties acquiring new skills to remain employable;*
- *More work absence due to medical issues and medical treatment;*

As he ages, secondary disabilities are more easily acquired and, combined with his existing disabilities, become more disabling directly impacting the amount of time he is able to remain in the labor market. His reduction of work-life expectancy is farther supported by a National Health Interview Survey (NHIS) that showed that people with chronic health conditions or impairments remained at the same level for the period of 1990 through 1994. According to this study the labor force participation rate of those people defined above was 52%.

Using Ryan's annual earning capacity loss of $45,702.54, this equates to a lifetime loss of earnings of $1,712,470.00. Utilizing a work life expectancy of 37.47 years based upon James Ciecka's, Thomas Donley's, and Jerry Goldman's "A Markov Model of Work-Life Expectancies Based on Labor Market Activity in 1992-1993, " Journal of Legal Economics, Vol. 5, No. 3, Winter 1995.

Conclusions:

Ryan Minton has suffered a severe injury that results in life-long disability. His disability will affect his educational and vocational future. I suspect that without proper intervention the disability has the potential to affect his psychological well-being and complicate his social life once he gets older. He has suffered a large loss to his earning capacity, as shown above.

The attached Life Care Plan is an attempt to document those services and goods required to achieve for Ryan's future medical needs. In addition, I have included potential complications that are not uncommon for individuals who suffer from similar disabling conditions. The Plan is not complete because, as stated above, I have yet to receive and analyze records relating to certain aspects of Ryan's ongoing care and I expressly reserve the right to supplement this plan once I have a more complete picture of all of Ryan's needs.

Respectfully,
Rodney Isom, Ph.D., C.R.C., C.D.M.S., Rehabilitation Consultant

Economic Assessment

This section briefly describes the work of the vocational/economic consultant, or the economist. Issues that are addressed are really an extension of the foundation developed by the rehabilitation consultant. Namely, the rehabilitation consultant identifies the postinjury base wage of the injured worker (assuming partial disability). In all cases, however, both partial and total disability and/or death, the economist opines on the issue of the value of the settlement.

Total Offset Method

The total offset method or approach, also known as the Alaska Rule (Brody, 1982; Jensen, 1983) was first established by the Supreme Court of Alaska (Beaulieu vs. Elliott, 1967; Maxwell, 1984) in which the court "held that the market interest rate totally offset by price inflation and real wage inflation, therefore making it unnecessary to discount the victim's future earning to present value" (p. 392). The total offset method takes into account two factors that are pervasive in the U. S. economy: inflation and productivity. According to Grant (1982) it is assumed that "future inflation shall be equal to future interest rates (meaning future productivity rates) with these factors off-setting." Given this assumption, it is not necessary to take into account any factors other than the expected future earning of a worker and multiplying that figure out by remaining years of work life left. The case of Kaczkowski v. Bolubasz, (Maxwell, 1984) established that "the total offset method avoids the danger of speculating as to the future rate of inflation by making what we consider a very sensible accommodation: it assumes that in the long run the effects of future inflation and the discount rate will co-vary significantly with each other" (p. 395). While this appears to be a very over-simplified approach to establishing future lost earnings, and taking into account the issue of inflation, the U. S. Supreme Court, in the case of Jones & Laughlin Steel Corporation v. Pfeifer (1983) concluded that it would not select one method over the other in the establishment of awards for future lost earnings. However, the court appeared "to find the total offset method the most attractive means of incorporating inflation into a damage award for lost future earning" (Maxwell, 1984, p. 397). One problem with this rule is that medical expenses have a much higher inflation rate than other products and services. This rule, strictly followed, will likely assure that clients with a long life expectancy (e.g., injured at age 20) may not have enough funds for their medical and related expenses.

Inflation Discount/Real Interest Method

The inflation discount method (Maxwell, 1984; Shoot, 1983) "seeks to avoid under compensation of the victim by increasing his expected future earnings to account for inflation and then discounting to best present value by the market interest rate" (Maxwell, p. 387). The inflation discount method is really a similar approach to the one cited above with the exception that it is a simple, direct approach to determining the effects of inflation on the expected future earning of the claimant.

The real interest rate approach, which is very similar to the discount method, (Maxwell, 1984) is an attempt to take into account two components: "(a) the market's own estimate of anticipated rates of inflation over the life of the investment; and (b) the real rate of return a lender would demand if no inflation were anticipated." (p. 390). In order to calculate the "real" interest rate, one would subtract the average yearly inflation rate set out by the consumer price index of the Department of Labor from the annual interest rate to be derived from a prudent and non-sophisticated investment program. While the consumer price index is

fixed and somewhat more predictable, the "prudent and non-sophisticated investment program" can be quite variable. As a general rule, the interest rate on the latter figure is approximately 3 to 4% which is in line with a simple passbook savings account at any FDIC savings and loan association.

Inflation/Productivity Approach

Coyne (1982) has established an approach which seems to be "a sensible alternative" to the other methodologies referenced above. Dillman (2000) describes a similar methodology and refers to it as the "inflation forecast method" (p. 303). Coyne makes an attempt to provide a comprehensive statistical model that will address issues of inflation, productivity, as well as many of the demographic factors such as age, race, sex, geographical location, medical costs, and personal maintenance costs for the remaining years of a person's life. Coyne's approach addresses specifically the following issues (pp. 30-31):

1. Project the annual earnings of the worker through retirement age while using a compound growth rate of some specified percentage.
2. Convert these lifetime earnings to an equal average annual income.
3. Determine the present value of the worker's average annual income by adjusting by some specified annual rate of interest.
4. Determine the worker's maintenance expenses for the remainder of the worker's life (through the utilization of a Bureau of Census document titled "Present Value of Estimated Lifetime Earnings.").
5. Convert the gross maintenance figure to an average annual figure.
6. Determine the present value of lifetime average annual maintenance at specified figure for the remaining years of the worker's life.
7. Subtract the present value of the average annual maintenance from the present value of the average annual income.

The final dollar figure of this procedure will result in the amount of the award which should be endorsed by the court. This approach seems to take into account more of the wage loss factors which are deemed important. However, problems still exist in establishing adequate, satisfactory and/or fair rates of interest in determining present value.

Reducing to Present Value

All approaches need to account for the issue of "present value" in the determination of future lost earning (Formuzi & Pickersgill, 1985). Grant (1982) defines the present value rule "when future payments are to be anticipated and capitalized in a verdict, the plaintiff is entitled only to present worth. The present worth represents the amount of money at the verdict date that, when added to the amount earned on the investment of such money over the period covering the future payments, would equal the plaintiff's total estimated future yearly earning calculated at the verdict date" (p. 4). The issue of present worth is really trying to take into account the affect of inflation on the award for damages established at the trial date. Assume that a worker was making $15,000 per year and had 20 years of worklife left. When multiplied out, this figure comes to $300,000. However, $300,000 awarded today will not have the same value as each year progresses through the 20-year period. The present value question attempts to adjust the $300,000 award to take into account the loss of value in the dollar over the 20-year period.

In the case of Wendell vs. Davis (Grant, 1982), the court allowed a 6% interest rate to be used in establishing present worth. In a case at about the same time as Wendell (Grant, 1982), "the court scrapped the 6% rule in favor of allowing a jury to consider the current rate of return on a sound investment." The attempt here was to allow the jury to take into account a fair and reasonable estimate of interest on an investment as an approach to establishing present value. An alternate approach is to consider "prevailing rate of interest" as a guide in establishing present value. However, in either case, there can be considerable debate over what is the prevailing rate of interest or the current rate of return on a sound investment.

Another approach is to use the Present Value Tables such as established by insurance companies or brokerage firms. These tables are sometimes referred to as "annuity tables. "To complicate things even further, Coyne (1982) argues that calculations of present values should take into account such factors as race, age, sex, geographical location, and other demographic considerations which can be deemed important (see previous sections for definitions and issues related to some of these factors).

Summary and Conclusions [4]

Establishing a reasonable and defensible estimate of earning capacity in cases of partial, but permanent, disability may be a rather foreboding task for the rehabilitation professional. The process has been written about extensively for a period of 30 years or more. Knowing what to do and how to do it can be confusing especially when there is so much information and, in some areas, controversy. This paper provides an overview of the landscape on determining a reduction of capacity due to an injury and disability. This reduced earning capacity, if any, is the foundation for estimating future lost earnings – part of the damages that will be settled by the court unless agreed to by the parties beforehand. Estimating earning capacity may seem to be a formidable task. The first consideration is to remember that different venues will require a different approach or methodology. Utilization of different resources may be an issue, (i.e., which worklife table is used, and which social or demographic variables are addressed). Once a methodology is developed by the practitioner, such as was illustrated in the Isom case, potential problems will be minimized. Under the recent U.S. Supreme Court rulings, and consideration of the federal rules, developing a workable methodology, while critically important, should not be insurmountable.

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Footnotes:

[1] Portions of this paper on the topics of workers' compensation and forensic rehabilitation are adapted and revised from portions of Chapters 3 and 11 of Weed, R. & Field, T. (2001). *Rehabilitation Consultants Handbook*.

[2] A future issue of this journal will address the general topic of Worklife tables, including a description and comparison of the main resource tables.

[3] Case reprinted with permission of Rodney Isom, Ph.D.

[4] The following professionals provided a critical review of this manuscript. For their time and comments, appreciation is extended to Anthony Choppa, M.Ed., Rodney Isom, Ph.D., Cloie Johnson, M.Ed., Jack Sink, Ed.D. and Gene Van de Bittner, Ph.D.

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Estimating Earning Capacity 1(2), pp. 75-99, 2008

Estimating Worklife: BLS, Markov and Disability Adjustments

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Abstract: Estimating worklife of a person with an injury or disability often times involves the use of worklife tables. A review is presented of the development and progression of the worklife tables generated by the Bureau of Labor Statistics, and the Markov revisions. The tables are discussed particularly in light of the need to adjust worklife estimates by disability factors. Various problems and limitations become evident in using the tables in estimating the worklife of a person with a disability.

Background

In recent years there has been a significant amount of interest in quantifying the participation and transition rates of workers in the labor force. In the area of vocational and economic forensic consulting especially, attempts to quantify and estimate the remaining worklife of a person with a disabling condition has been particularly drawing the attention of various entities in the judicial process. Given the fact that the Daubert and Kumho rulings have emphasized the need for valid and reliable methods, considerable discussion and debate regarding the current available worklife tables has become very spirited and controversial. This paper will present and discuss the early tables by the Bureau of Labor Statistics and subsequent contributions by BLS, the Census Bureau, and others. Particular attention will be given to the presence or lack of information, data and/or descriptors of disability and disabling conditions related to participation in the labor force. In addition, and for purposes of this discussion, the early description of Alter and Becker's (1985) understanding of the expert witness's task in opining about earnings issues using the early BLS Tables is as follows:

> *Expert witnesses in wrongful death and injury litigation are interested primarily in using the increment and decrement worklife tables to find the expected number of years an individual would have been active in the work force had an injury or death not occurred. The expected worklife is then used to calculate the present value of expected earnings lost between the date of death or injury and the date of expected final separation from the work force. (p.39).*

The essential task has not changed much over the last two decades for the VE. One of the problems still occurring is the estimate of the worklife expectancy of an individual, unless one simply ignores the increment-decrement method and relies simply on a cut-off age like 65. A second major issue is estimating the worklife of a person who acquires a workplace injury or illness and seemingly to adjust the worklife estimate based on work functioning of the plaintiff as a result of the injury/illness.

The Development of the BLS Worklife Tables

According to Foster and Skoog (2004), "worklife expectancy is the average number of years that a person will spend either working or actively looking for work during the remainder of his or her life" (p. 167). Data generated by the federal government from the Census Bureau and the Bureau of Labor Statistics surveys generally provide the basis for providing estimates of worklife of individuals within the U.S. economy. Since 1950, BLS has produced worklife estimates on workers entering and exiting the labor force, and in 1982, the first worklife tables based on an increment-decrement model were developed (Smith, 1982). "A key feature of this model is that it rests on observed probabilities of movement into and out of the labor force – a flow variable, rather than a participation rate. Worklife expectancies summarize the length of time the average adult would spend in the labor force during his or her lifetime." (p. 16). Using data from then 1970's and 1980's, the revised tables (1986, Bulletin 2254) were released which took more detailed advantage of data collected through the Current Population Survey (CPS). The information presented in Table 1 identifies relevant factors and data for these surveys generated by the federal government. The Increment-Decrement Model simply refers to the "allowance of movement into and out of the job market" (Smith, 1983).

The Development of the Markov Tables

Markov (Increment-Decrement) Worklife Expectancy (WLE) tables have not been published by BLS since 1986. All Markov WLE tables since then have been privately constructed using CPS data from household surveys. Several sets have been published, the most well known are by Skoog and Ciecka (2001, 2004), and now Krueger, Skoog and Ciecka (2006). (see endnote).

The methodology for all WLE tables based on increment-decrement has been to use a probabilistic model of likelihood of transition from ACTIVE to INACTIVE status or vice versa over a given year. (Foster & Skoog, 2004). (See Endnote).

The Markov WLE tables are used to reduce earning capacity estimates based on counting only the number of anticipated ACTIVE years in labor force, and leaving out INACTIVE years, based on an initial ACTIVE or INACTIVE state – regardless of reason. The Markov assumption is that given the <u>current</u> state of the system, the future evaluation of the system is independent of its history.

WLE under the Markov model, measures the amount of time a person is expected to be **ACTIVE** in the labor force from age 18 to age 75 (by gender and education) given that they are initially either active or inactive. The tables include time active (YA) only (YA = year active), and exclude time expected to be inactive based on initial active or inactive status.

Markov WLE tables currently give either mean or median. The newer tables include 50%, inter-quartile, and 10%/90% probability intervals. The Markov-based WLE tables assume that the number of people who transition from one to the other (active/inactive) reflect the individual probability of making those transitions. (Foster & Skoog, 2004).

The Markov based WLE tables assume that the probabilities of transition observed <u>over only one year</u> will remain unchanged in the future. In other words, they assume that the transition probabilities observed for a 50 year old in 2008 will also apply to today's 30 year old twenty years from now, when he or she reaches age 50. (Foster & Skoog, 2004).

What does this assumption have to say about changes in technology, culture, marital status, health, gender, education effects, business cycles, environmental

changes, number of dependents, role changes, regime changes, and tax rates? Nothing. Markov assumptions are mute on this. Markov is also mute on the issues of disability.

Markov models have a "one period memory." They do not account for "past history". The transition probability from the state at time (t) to state at time (t + 1), depends only on state at (t + 1). It is the probability of transition from active to inactive, or from inactive to active between year t and year t + 1 based on one successive survey response.

In the Markov model we must assume that the probability of Client A, i.e., a given group, being active next year, depends only upon whether that group was active or not this year. (30 previous years of activity mean nothing). Markov tables would give the same probability if that Client A had been back and forth between active and inactive every year for the last 30 years.

Markov WLE tables treat voluntary and involuntary absences from the workforce the same. In the real world, active or inactive decisions are not a random coin toss. The Markov model assumes that individuals are like balls in an urn, completely passive as the balls are chosen at random to decide who works and who doesn't. The newer Markov WLE tables assume more balls in the "active" urn and fewer balls in the "inactive" urn.

Markov WLE tables may therefore not be appropriate for forecasting WLE of a particular individual given their individual characteristics, especially any characteristics relating to disability. "Inactive" is not a synonym for disabled. It simply means that the cohort (individual) is not active in the labor market. There are social, occupational, political, economic, physical and psychological factors that enter into the decision to be active or inactive. Consider voluntary absence. Consider the effects of vocational rehabilitation over one's remaining career.

The foundations of a Markov model of WLE assumes a random probability model of human behavior. To the extent that we are uncertain about individual human capacity, psychological/sociological intent, and decision making, the WLE model will be uncertain. Individual behavior is not random, nor are human beings in homogeneous classes. It is here that clinical judgment (Choppa et al., 2004) based on education and experience becomes important as part of the evaluator's skill set.

All table values for WLE, Markov or otherwise, are approximate based on probabilities. Specifically, in the Markov tables, WLE is treated as a random variable with no history. To the extent that any individual evaluee is different than the average survey response of active or inactive over one year, the table value will be wrong. Consequently, use of the tables should be used with caution when estimating worklife and especially so with cases involving disability issues.

Current Population Survey (CPS)

Available worklife tables (BLS, 1986; Gamboa, 2006; Kruger, Skoog & Ciecka, 2006) all suffer from the same limitations of government survey data on people with disabilities who might be active or inactive in the labor force. These limitations include such issues as definition of disability, survey questions which are asked, and the accuracy, reliability and validity of the data. Further, the "burden of proof on whether the survey questions, which are not defined to measure a specific disability, is on those who use data to infer labor force status of people with disabilities" (Hale, 2001, p.40).

Table 1: Descriptive information on occupational surveys provided by the Current Population Survey (CPS), the Survey of Income and Program Participation (SIPP), and the American Community Survey (ACS).

Data Years	Source	Published	Sample Size	Factors
1970-77	BLS/CPS	1982	40,000	sex, age
1978-80	BLS/CPS	1986	255,000	sex, age, race, education
March Suppl.	BLS/CPS	Annual	50,000 (1)	sex, age, race, education
2004	Markov Rev.	Bi-Annual	CPS data(2)	sex, age, race, education
1991-97	Census/SIPP	Annual	40,000 (3)	severe/not severe activities of daily living
2005	Census/ACS	Annual	3 million (4)	activities of daily living

(1) Same households sampled every 8 months over two years.

(2) Markov is the name of a mathematician whose early work led to the increment-decrement model; the data source is still the CPS. Recent development of the tables has been completed by Ciecka and colleagues.

(3) Same households sampled every four months (4 times total).

(4) Housing Units.

The following question from the CPS was meant to screen people with health or disability issues who then would be asked income questions, and even if disability is identified, this item "cannot fully measure the extent of the disability." (Hale, 2001).

> *Q59a: (Do you/Does anyone in this household) have a health problem or disability which prevents (you/them) from working or which limits the kind or amount of work (you/they) can do?*

The Census Bureau uses seven questions to identify people with disabilities in the U.S. population. If a person is identified by any one of the seven items, he or she is considered to have a work disability. In addition, the Census algorithm holds that a person who says "Yes" to items D3-D6 has a severe work disability.

> *D1. Identified by the supplement question - Does anyone in this household have a health problem or disability which prevents them from working or which limits the kind or amount of work they can do?*
>
> *D2. Identified by the supplement question - Is there anyone in this household who ever retired or left a job for health reasons?*
>
> *D3. Identified by the basic questionnaire as currently not in the labor force because of a disability (note: this condition has been in effect since 1994; prior to that, the condition required that "Unable to work" be marked as the individual's major activity during the reference week).*
>
> *D4. Identified by the supplement as a person who did not work at all in the previous year because of illness or disability.*
>
> *D5. Under 65 years old and covered by Medicare in previous year.*
>
> *D6. Under 65 years old and received Supplemental Security Income (SSI) in previous year.*

D7. Received VA disability income in previous year.

Survey of Income and Program Participation (SIPP)

The purpose of the SIPP survey is

> *"To collect source and amount of income, labor force information, program participation eligibility data, and general demographic characteristics to measure the effectiveness of existing federal, state and local programs; to estimate future costs and coverage for government programs, such as food stamps; and to provide improved statistics on the distribution of income and measures of economic well-being in the country" (2008).*

The following description is what the McNeil (2001) report used to determine disability from the Survey of Income and Program Participation (SIPP) data. The report used a variety of different angles to try to get at disability that is quite different from the disability determination used in the Current Population Survey and the Decennial Census 2000.

Under the SIPP program, disability is defined differently than those disability factors related to the CPS survey. Definitions of disability status, functional limitations, activities of daily living (ADLs), and instrumental activities of daily living (IADLs) are all descriptors relied upon for in survey research. Individuals 15 years old and over were identified as having a disability if they met any of the following criteria:

1. Used a wheelchair, a cane, crutches, or a walker
2. Had difficulty performing one or more functional activities (seeing, hearing, speaking, lifting/carrying, using stairs, walking, or grasping small objects)
3. Had difficulty with one or more activities of daily living. (The ADLs included getting around inside the home, getting in or out of bed or a chair, bathing, dressing, eating, and toileting.)
4. Had difficulty with one or more instrumental activities of daily living. (The IADLs included going outside the home, keeping track of money and bills, preparing meals, doing light housework, taking prescription medicines in the right amount at the right time, and using the telephone.)
5. Had one or more specified conditions (a learning disability, mental retardation or another developmental disability, Alzheimer disease, or some other type of mental or emotional condition)
6. Had any other mental or emotional condition that seriously interfered with everyday activities (frequently depressed or anxious, trouble getting along with others, trouble concentrating, or trouble coping with day-to-day stress)
7. Had a condition that limited the ability to work around the house
8. If age 16 to 67, had a condition that made it difficult to work at a job or business
9. Received federal benefits based on an inability to work

Individuals were considered to have a severe disability if they met criteria 1, 6, or 9; or had Alzheimer disease, or mental retardation or another developmental disability in criteria 5; or were unable to perform or needed help to perform one or more of the activities in criteria 2, 3, 4, 7, or 8.

American Community Survey (ACS)

The American Community Survey provides critical information on economic, social, demographic and housing information that is vital for use by local and state governments as a means to assist in planning for schools, roads, social programs, and related activities. The ACS does not count populations (even though it is conducted by the U.S. Census), but it does collect information that reflects the nature and activities of the population.

Disability Status: The Census Bureau defines disability as a long-lasting sensory, physical, mental, or emotional condition or conditions that make it difficult for a person to do functional or participatory activities such as seeing, hearing, walking, climbing stairs, learning, remembering, concentrating, dressing, bathing, going outside the home, or working at a job. People aged 5 to 15 were classified as having a disability if they reported any one of the four limitations: sensory disability, physical disability, mental disability, or self-care disability. People 65 and over were classified as having a disability if they reported any one of the five limitations: sensory disability, physical disability, mental disability, self-care disability, or going-outside-home disability. In the 2007 American Community Survey, the disability questions as described below.

Sensory and Physical Limitations: The data on sensory and physical limitations were derived from answers to Questions 15a and 15b, which were asked of people 5 years old and over. Questions 15a and 15b asked respondents if they had any of the following two long-lasting conditions: "Blindness, deafness, severe vision or hearing impairment," or "A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying." Respondents were instructed to mark "yes" or "no" for each long-lasting condition. Question 15a is labeled as "Sensory disability" and Question 15b as "Physical disability."

Limitations in Cognitive Functioning ("Mental Disability"): The data on cognitive functioning were derived from answers to Question 16a, which was asked of people 5 years old and over. The question asked respondents if they had a physical, mental, or emotional condition lasting six months or more that made it difficult for "learning, remembering, or concentrating."

Self-Care Limitations: The data on self-care limitations were derived from answers to Question 16b, which was asked of people five years and over. The question asked respondents if they had a physical, mental, or emotional condition lasting six months or more that made difficult "dressing, bathing, or getting around inside the home." Respondents were instructed to mark "yes" or "no." Question 16b is labeled as "Self-Care Disability."

Going-Outside-Home Limitations: The data on mobility limitations were derived from answers to Question 17a. Although Question 17a was asked of people 15 years and over, the data products only report this type of disability for people 16 years and over. The question asked respondents if they had a physical, mental, or emotional condition lasting 6 months or more that made it difficult "going outside the home alone to shop or visit a doctor's office."

Employment Limitations: The data on employment limitations were derived from answers to Question 17b. Although it was asked of people 15 years and over, the data products only report this type of disability for people aged 16 to 64. The question asked the respondents if they had a physical, mental, or emotional condition lasting 6 months or more that made it difficult "working at a job or business." Respondents were instructed to mark "yes" or "no." Question 17b is labeled as "Employment Disability."

The New Worklife Expectancy Tables

The New Worklife Tables were developed by Gamboa (2005, 2006) which incorporate the CPS and ACS. This resource is discussed in a separate manuscript in this journal issue, and the reader is encouraged to review these tables at: www.vocationaleconometrics.com (See also Gibson, 2001).

Critical Issues with Source Data on Disabilities in the Labor Force

Data Problems: A major problem with estimating a worklife expectancy of a person with a disability (injury or illness) is to obtain reliable and valid data on people with disabilities. Currently, vocational and economic professionals rely on data provided by the CPS, SIPP or ACS sources (see Table 1). According to Hale (2001, p. 38; 2008), "there are no questions in the Current Population Survey (CPS) that identify people with disabilities" and as a result, conclusions about disabilities within the workforce from this source tend to be either invalid or unreliable, at best." Part of the problem with understanding the data is the failure of the survey to rely on operational definitions of selected words or phrases, such as health, disability, work disability, or a severe work disability.

Health vs. Disability Definitions: A second problem (Hale, 2001) with this question (from ACS) is to determine the difference between the presence of a health problem ("the flu, a cold, broken legs, or some other temporary illnesses or conditions"), or the presence of a disability (such a defined as a limitation due to one of the major life activities of the ADA). Under the ADA, a disability or a disabling condition can certainly be modified through a workplace accommodation which may allow the person to be employable by that particular employer. Again, the issue here is to be able to estimate to what degree and/or at what level a person is employable with or without the accommodation.

Under Reporting of Disabilities: There is ample evidence that government survey data, including the CPS, underestimates (or undercounts) the frequency of people with workplace illnesses or injuries (Smith; 1983, Oleinick, Gluck & Guire, 1995; Leigh, et al., 1997; Leigh, Marcin & Miller, 2004; USDL 07-1562, 2007; Boden & Ozonoff, 2008; Ruser, 2008). Given the fact that the CPS data does not include specific items to measures workplace illnesses and injuries, or disabilities within the surveyed population, doubt is raised as a consideration in the validity and reliability of any conclusions drawn from these data.

Over-Reliance on Worklife Expectancy Tables: Since it is generally accepted that the factors related to disability in the various surveys (BLS/CPS, SIPP, & ACS), professional should move with caution in over-relying on these factors as reliable and valid correlates in cases involving individuals with disabilities. With the fact that disability estimates are probably under reported in most surveys, worklife estimates should always be qualified shaped and tempered with professional clinical judgment by the vocational/economic expert.

Estimating Worklife for an Individual

The BLS tables on worklife (Bulletins 2135 & 2254,) released respectively in 1982 and 1986, were designed to provide estimates of worklife of people in the U.S. workforce. With the release of these two tables, BLS addressed the issue of people entering and leaving (transitioning) the workforce by levels of sex and age, and then the added factors of race and education. The intent of the tables was not to supply demographic information on issues of health or disability.

Estimating Worklife for an Individual with a Disability

Statistics on disabilities in the U.S. population are available from a variety of sources. For purposes of a review related to the worklife tables, discussion has been limited to the following surveys: CPS data, SIPP data, and ACS data. The primary problem with these data sets is that the surveys were not designed to assess the prevalence of people with disabilities within the U.S. labor force. All of the results from the data sets miss the mark in providing valid and reliable information on disabilities. Furthermore, as Rodgers (2001) has pointed out, "it is nearly impossible to construct with any existing data meaningful statistical worklife expectancies for persons with disabilities" (p. 1). Some of the specific concerns include:

1. With the early CPS data, the "active" and "inactive" divisions refer to whether or not a person is or is not in the labor force. Not being in the labor force should not suggest nor imply disability; it could mean that there is a presence of a disability, or it could be a number of other reasons for a person not being in the workforce, ie, attending school, illness, extended vacation, etc.). The Markov tables (2004) are predicated on the BLS data also should be viewed with the same caution.
2. Again, with the SIPP data, being "severely" disabled or "not severely" disabled, are designations that are too dichotomous and global. Disabling conditions are not an either/or situation; there are gradients of disability. In the *Uses and limitations of CPS* data (no date), there is an acknowledgment that questions 59a and D1-7 "might fall short of having the desirable reliability and validity properties" (p.1). For researchers and practitioners interested more in the statistical issues related to accuracy, reliability and validity of the CPS, both Richards (2000), and Skoog and Ciecka (2004) present a discussion of these concerns.
3. The categories of "activities in daily living", as utilized by the SIPP and ACS data more accurately present as description of a person's condition rather than an assessment of vocational functioning. Because a person cannot see or hear should not suggest that the person with the disability is not able to work at some level. Any of the ADLs may be accommodated within the workplace as evidenced by the regulations under the Americans with Disabilities Act.
4. SIPP questions related to the disability categories were designed to gather information regarding the respondents' suitability and potential eligibility for government support programs (such as food stamps), and to evaluate the effectiveness of related government programs. The questions were not designed to identify people with disabilities "Overview of the SIPP, 2008, p. 1).
5. Finally, none of the disability factors across the three data sets identify a level of functioning with respect to work. One of the great traditions of the country's rehabilitation programs is that people *with disabilities* may be able to return to work. Possessing a disability does not necessarily mean that there is a vocational handicap, and if there is, the people may be able to work at a reduced level. Disability is not an either/or situation when it comes to being able to work or having a productive life. Related to this problem, in 1997 President Clinton signed an executive order (13078) mandating that BLS "develop an accurate and reliable measure of the employment of adults with disabilities" (Hale, 2008, p. 101). The primary purpose of the order was to develop an "accuracy of a question to

elicit responses from individuals envisioned to fit the definition of disability" (Hale, 2008, p. 103).

Estimating Worklife for an Individual with a Disability: A Functional Capacity and Practical Model

With respect to the use of the BLS tables, Smith (1983) and Alter and Becker (1985) identify the need to make worklife estimates specific to the labor force status of the individual.

One of the problems associated with estimating worklife is the understanding and proper use of the BLS Tables. Nelson (1983) argues that the concepts of "activity" and "inactivity" refers to the worker's absence from the labor force where the "courts have generally assumed that the estimate of loss be based on the worker's earning capacity [or the] potential earnings if [the claimant] were to have been employed on an ongoing basis until retirement" (p. 30). Concurrence to this notion is supported by Smith (1983): "[A] court-imposed viewpoint is that compensation, when warranted, must be awarded for the entire period of earnings capacity, whether or not the claimant would have been continuously employed" (p.31). Therefore, if one was to assume a "earnings capacity" model for estimating earnings loss, especially during periods of voluntary separation from the labor force (or inactivity), then an estimate of earnings loss should be calculated on the capacity to work and earn money, and not for period of low or no earnings. Inactivity means the separation from the workforce; it does not mean a lack of earnings due to extended vacations, a depressed labor market, or disability related factors.

Earnings capacity is the ability to perform work (Havranek, et al., 2005; Field, 1983), and represents a method that can be utilized to estimate the knowledge, skills and abilities of an individual to perform work within a given labor market. Thus, an assessment of earnings potential (pre and post) becomes an important component in displaying the level of preinjury earnings versus postinjury earnings. For a discussion of a practical approach to the assessment of pre and post earning capacity, review procedural steps proposed by Field (2008).

Conclusion

The review of the various data sets of the CPS, SIPP, and ACS indicate that the CPS data are the primary source for the development of the BLS and Markov tables. The main issue for rehabilitation professionals is the delineation of the disability factor in estimating worklife expectancy. The BLS and later Markov tables incorporate demographic data such as sex, age, race and education, and also include such constructs as active vs. inactive transition probabilities. It has been shown that the tables and the data sets that reference disability factors were not intended to identify the degree and nature of people with disabilities as this factor relates to employment and the world of work. Forcing a conclusion regarding worklife expectancies where disability factors are included may result in meaningless and erroneous conclusions. When using the tables it may be more appropriate to consider disability issues through a process of clinical judgment, including a proper assessment, based on a medical foundation, of the individual's functional capacities and the impact the disability (probable reduced functioning) will have on the person's ability to work and earn money. The worklife expectancy tables might more appropriately be used to estimate a worklife expectancy, but then be adjusted to estimate the consequence of a disabling condition through professional clinical judgment (Choppa, et al. 2004).

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Author Note

We rely significantly on the work of Foster and Skoog (2004) in the summary of the Markov tables and apologize for any errors in interpretation.

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Estimating Earning Capacity: A Historical Review

Timothy F. Field

Estimating the earning capacity of a person with an injury or disability is an essential part of a forensic rehabilitation consultant's role in litigated personal injury or compensation cases. Since the early 1980's, the literature has addressed various notions and methods regarding the estimation of earning capacity, including collateral issues such as work life expectancies, partial and total disabilities, and a variety of personal demographic variables of the person with an injury or disability. A review of various approaches is offered that have appeared in the vocational rehabilitation literature over the last three decades.

Keywords: earning capacity, wage loss, comparison of methods

Wage Loss and Earnings Capacity Analysis

Wage loss analysis refers to a procedure that addresses the amount of wages lost by a worker as a result of injury. For instance, if a worker was being paid $12,000 a year at a rate of $1,000 a month or approximately $250 per week, what would be the total amount of wages lost taking into account number of days, weeks, or months the worker was unable to return to his or her job as a result of the injury? If the injury were of such a nature that it prevented the worker from returning to work for a period of one year or more, a simple tabulation of all of the months and/or years of lost time would be added to determine the amount of lost wages as a result of the injury. The calculation of lost wages is a rather simple and straightforward process and really does not take into account many of the other factors related to the issue in question of lost earnings capacity.

Earnings capacity (Horner & Slesnick, 1999) is related to the notion of lost future earnings to be expected from the client's reasonable vocational potential. In some cases, the loss of earnings capacity is straightforward. For example, a man who was 55 years old and who had been driving a truck for a living since he was 19, was injured in a motor vehicle accident leaving him tetraplegic. His loss of earnings was based on the amount of money he was making at the time of injury and projected over his remaining work life expectancy. In this case the individual probably also had achieved his realistic earnings capacity.

In other cases, this may be less clear. For example, the man in the above case also had his 18-year-old nephew in the car with him. The boy suffered extensive head injuries, which rendered him incapable of gainful employment for the rest of his life. Since he had very little work history (paper boy), the task for estimating loss of future earnings or earnings capacity is more complicated.

One method is to opine about which specific jobs or job categories the individual might have been able to engage in (Deutsch & Sawyer, 1999). A second is based on the LPE method, which is an estimation of the life expectancy (L), work force participation (P), and probability of being employed (E) as supported by government statistics (Brookshire & Smith, 1990; Lees-Haley, 1987). Another is to estimate the educational level the person was capable of and turn to research data on the median income a person with the those traits could be expected to earn over his or her lifetime. For clarification, the loss of earnings would generally be based on past history whereas earnings capacity would be based in prognostication or estimation based on selected factors that are inherent in each approach or method.

The first method seems somewhat flawed in that the expert's opinion may be criticized as pure speculation depending on how the opinion was reached (Ryals v. Home Insurance Company, 1982). The second and third methods are not specific to the injured party and rely on global data for a just award. This has its own problems for both the plaintiff and defense attorneys (Field, Weed, & Grimes, 1986; Lees-Haley, 1987; Weed, 1987; Weed & Field, 1994). For example, an 18 year old was a high school graduate but his I.Q. was 85 (average is 100), and he graduated 988 in a class of 988. Clearly the defense attorney would argue that the government statistics would overestimate the earnings as they apply to the individual. On the other hand, say the 18 year old was class president, consid-

ered well above average in intelligence and graduated in the upper third of his class. In this case, even if the parties agreed that the plaintiff had not planned to continue with his education, the plaintiff's attorney would likely argue that the government data are too conservative.

In any event, most cases do not fit neatly into various categories. It is not unusual for a plaintiff to be in their late 20s with a lower level job history but active plans to complete college "starting the next term after the injury", or a 35 year old who had just started her own business last year but has sustained an injury so severe that she can not continue in the business venture but can work at some other job, or a housewife who has a college degree and was planning to return to work after the kids were old enough to take care of themselves. In yet other cases, a person may have been severely injured but able to return to a modified job with his old employer where he earned the same income; in this case, the worker clearly has lost the opportunity to work in the occupation of his choice and has lost access to a wide variety of occupations or been prevented from advancement within his chosen profession.

Everyone's earnings capacity is not achieved at the same life stage. One author offers an age-earning cycle concept, which indicates that the average individual may not hit their peak earnings until about the age of 40 (Dillman, 1989). For children, adolescents, and young adults, the accuracy of loss is dependent a number of individual factors and the ability of the rehabilitation expert to take these factors and translate them into defensible figures. Earnings capacity analysis, rather than reliance on earnings history, generally seems more defensible for persons under the age of forty, although independent professional judgment makes the final determination.

Depending on the individual, one would expect the reliance of actual wage history for determining earnings capacity would increase as the age increased. After the peak earning years, previously suggested at about the age of 40, actual earnings would likely be the base from which the economist would project losses if the person were totally disabled (Dillman, 1987). If the individual were unable to return to work at their usual occupation, then the expert would compare actual pre-injury earnings with expected post-injury earnings. It is recommended that a similar approach, i.e., identify classes of jobs based on post-injury worker trait information rather than specific jobs, be used as the basis for the opinion. For adult clients, this can be supplemented by a labor market survey conducted in the local labor market about the availability of these suggested job titles and their wages. In many cases, the survey will fail to identify a job. On the other hand, this can be misleading since the vocational rehabilitation counselor can cultivate an occupation for most "motivated" clients with a physical disability.

At the other end of the spectrum, opinions about younger persons who have not yet settled into a career need to be approached somewhat differently, i.e., loss of earnings capacity, and a limited earnings history. For children, work and earnings capacity can rely on worker traits that can be identified from school records, standardized testing, work history to date, family background, including aunts, uncles, and grandparents, and other factors (Isom, 2001; Weed, 2000). Worker traits include the physical demands and working conditions of the job, general educational level, vocational preparation time generally required to learn the occupation, and the aptitudes, interests, and temperaments needed to perform the occupation.

For the forensic rehabilitation expert, the task of estimating earning capacity is sometimes both confusing and difficult. The work of the rehabilitation consultant may be clouded, controversial, and muddied, to say the least, especially when trying to understand the world of estimating capacity and providing a dollar value to individual cases involving injury and disability. In addition to the concept of earnings capacity, collateral issues also come into play (e.g., current and future earnings, estimating lost earnings, and estimating future lost earnings). What appears to be most confusing relates to the issue of methodology; namely, how does a professional go about making determinations on any of the issues related to earnings. In particular, what method or methods would meet the requirements as set forth by the Daubert (1993) and Kumho (1999) rulings of the U.S. Supreme court and also the expectations as identified by the Federal Rules of Evidence (2002, i.e., FRE 403 and 702; see also Field, 2011).

Legal and Program Definitions

This section reviews the legal definitions of many of the more critical constructs related to earning capacity. A review of the significant program areas, including civil settings, addresses the various program approaches for understanding the similarities and differences that exist relative to earning capacity.

A reasonable starting point in this discussion is to provide adequate definitions of the major constructs related to earning capacity. All of the following definitions are taken from *Black's Law Dictionary* (2000) and the U.S. Department of Labor *Occupational Employment Statistics* (2011).

> *Capacity: The role in which one performs an act (Black's, p. 163).*
>
> *Damages: Money claimed by, or ordered to be paid to, a person as compensation for loss or injury (Black's, p. 320).*

Diminution: The act or process of decreasing, lessening, or taking away (Black's, p. 369).

Earnings: Revenue gained from labor or services. (Black's, p. 414).

Earnings: Remuneration (pay, wages) of a worker or group of workers for services performed during a specific period of time. The term usually carries a defining word or phrase, such as straight-time average hourly earnings. Because a statistical concept is usually involved in the term and its variations, the producers and users of earnings data should define them clearly. In the absence of such definitions, the following may serve as rough guidelines:

Hourly, daily, weekly, annual: period of time to which earnings figures, as stated or computed, relate. The context in which annual earnings (sometimes weekly earnings) are used may indicate whether the reference includes earnings from one employer only or from all employment plus other sources of income.

Average: usually refers to the arithmetic mean; that is, total earnings (as defined) of a group of workers (as identified) divided by the number of workers in the group.

Gross: usually refers to total earnings, before any deductions (such as tax withholding) including, where applicable, overtime payments, shift differentials, production bonuses, cost-of-living allowances, commissions, etc.

Straight-time: usually refers to gross earnings excluding overtime payments and (with variations at this point) shift differentials and other monetary payments. (OES).

Future Damages: Money awarded to an injured party for an injury's residual or projected effects that reduce the person s ability to function (Black's, p. 321).

Lost earnings: Wages, salary, or other income that a person could have earned if he or she had not lost a job, suffered a disabling injury, or died. There can be past lost earnings and future lost earnings (Black's, p. 414).

Future Lost Earnings: See lost earnings (Black's, p. 414).

Income: The money or other form of payment that one receives, usually periodically, from employment, business, investments, royalties, gifts, and the like (Black's, p. 611).

Income: The receipt by an individual of any property or service which he can apply to meeting basic needs. (CFR 416.120).

Wage: Payment for labor or services, usually based on time worked or quantity produced (Black's, p. 1275).

Mean wage: An average wage; an occupational mean wage estimate is calculated by summing the wages of all the employees in a given occupation and then dividing the total wages by the number of employees. (OES).

Median days away from work (Safety and Health Statistics): The measure used to summarize the varying lengths of absences from work among the cases with days away from work. The median is the point at which half of the cases involved more days away from work and half involved fewer days away from work. (OES)

Median wage: An occupational median wage estimate is the boundary between the highest paid 50 percent and the lowest paid 50 percent of workers in that occupation. Half of the workers in a given occupation earn more than the median wage, and half the workers earn less than the median wage. (OES)

Wages and salaries: Hourly straight-time wage rate or, for workers not paid on an hourly basis, straight-time earnings divided by the corresponding hours. Straight-time wage and salary rates are total earnings before payroll deductions, excluding premium pay for overtime and for work on weekends and holidays, shift differentials, and nonproduction bonuses such as lump-sum payments provided in lieu of wage increases. (OES)

Worklife estimates: Estimates of the number of years individuals would spend in the labor force based on mortality conditions, labor force entry and exit rates, and demographic characteristics. BLS has not produced worklife estimates since February 1986. Last publication: Worklife Estimates: Effects of Race and Education PDF 1.32 MB

Methods for Evaluating Lost Earning Capacity

There are several different approaches or methods of estimating the loss of earning capacity in cases of partial but permanent disability. The following methods are often referenced by practitioners, but are not all-inclusive regarding methods that might be used. These methods have all had an impact on the development and progression of methods used today by most professionals. While each of the methods discussed emphasizes the use of data and information, each method requires a significant degree of clinical judgment and decision-making on the part of the professional (see Choppa et al., 2004, for a discussion of the efficacy on professional clinical judgment; for a discussion of opinion development and validity, see Barros-Bailey & Neulicht, 2005).

Labor Market Access/Wage Loss

The LMA approach emphasizes the necessity to analyze lost wages with respect to labor market conditions. The advantage of the labor market approach developed by Field and colleagues during the 1980s (Field & Field 1999; Field, 1987, 1993; Field, Choppa, & Shafer, 1984; Field & Weed, 1988; Vander Vegt, Summit, & Field, 1981; Weed, 1986, 1987, 1988) is that it establishes a "reasonable approximation" of a beginning wage base at the time of the injury, which then can be compared with estimated earning based upon a reduced level of functioning post-injury. The alternative to this approach is to use the actual wages that were earned by the worker at the time of injury, and then to estimate what the worker might be able to do in particular jobs post-injury. The LMA approach has the added advantage of taking into account the issue and question of lost opportunity to be employed post-injury by comparing an individual's pre and post-injury level of functioning to a particular labor market. In this sense, the LMA approach takes into account specifically the questions of geography and labor market conditions within geographical areas. The other aspect of the LMA approach is that it provides approximations of potential wages for an injured worker, pre- and post-injury, which can be provided to the economist who then can make projections of lost earnings or lost future earnings. However, as with any computerized approach, the professional must understand the data that is generated as well as how the computer processes the data with an explanation to the satisfaction of the court (*Perez v. IBP, Inc., 1991, & Hughes v. Inland Container Corp.*, 1990).

The approach of assigning a percentage to a loss has been a long-standing method to the determination of a disability. In some cases, it has been utilized as a guide in determining lost earnings or wages and future lost earnings as a direct relationship to the percentage losses identified by the appropriate category. For instance, a loss of an arm will result in x% loss of functioning for the person (in the insurance industry this is referred to as "scheduling"). This has oftentimes been translated to a similar percent loss of employment opportunity for that worker for the remaining years of his or her work life. This is an erroneous assumption since it cannot be assumed that the loss of a bodily function by percentage is directly related to the loss of employment opportunities and/or functioning in the worker's future. Assume for a moment that a business executive, due to some accident, had to have several of his toes amputated from his left foot. According to the *AMA Guide to the Evaluation of Permanent impairment* (2000), this would result in a 15% loss of bodily functioning for this particular injury. However, the loss of three toes on the left foot has no direct bearing on the types and kinds of work that the business executive was performing either before this injury or following the injury. Although it can be argued that there is a percentage loss of bodily functioning due to the loss of the toes, it also true there is not necessarily a direct relationship to the loss of functioning on the job. Sometimes the loss of a body part, or a reduction in functioning, are not relevant to the skill set of a worker.

On the other hand, for example, a person who is employed as a dancer, whose job requires a great deal of balance and agility, might purport that there is a direct relationship between the loss of functioning in the left foot and potential loss of functioning on the job. The injury will probably result in a loss of job opportunities for the dancer. In other words, a determination has to be made of the level of functioning both pre- and post-injury as it relates to jobs and future jobs of the worker. It is not adequate, nor satisfactory, to argue that a percentage loss of bodily function is a direct correlation to the loss of vocational functioning. The LMA approach emphasizes the necessity of both pre- and post-injury functional capacity assessment.

The Deutsch/Sawyer Model

Deutsch and Sawyer (1986) have suggested that pre-injury earnings and post-injury earnings really do not reflect an accurate picture of the person's ability to earn money. More importantly, "the client's post-accident earning capacity, or the potential to earn" (p. 8-2) is really the target of an assessment of diminished earnings. An assessment of earnings capacity would include

1. Whether the client has a relatively well-established work identity or vocational goal;
2. The degree to which the client is established in this vocational goal;
3. To what degree the individual has developed the necessary skills and abilities required to show proficiency in the chosen vocational goal;
4. The number of years of experience the individual has in the vocational goal; and
5. The degree to which a difference exists between the individual's earned wages and the average earnings for most workers in the chosen vocational goal (p. 8-3).

In addition to the obvious emphasis on a career goal, the model suggests that "pre-accident earnings do not accurately and consistently reflect the actual capacity to earn or develop earnings in cases involving individuals under the age of 30" (p. 8-3). This emphasis on vocational goals and age is somewhat of a departure from the LMA model, which emphasizes the pre- and post-injury functional capacity evaluations, and suggests a relationship between functional capacity and selected jobs and wages. The Deutsch and Sawyer model does include other factors for earning capacity

assessment including education, intellectual development, academic development, work history, and transferable skills. In establishing a wage earning capacity it is also necessary to choose a representative sample of jobs that reflect an individual's maximum capacity for developing vocational and earning potential (p. 8-5).

The model then proceeds to suggest that a referral to an economist is appropriate to calculate an estimate of the diminution of lifetime earnings. This model, while suggesting a number of variables to consider, does not provide any guidelines on procedurally what to do; a great deal of judgment and experience is required in the decision-making process for capacity assessment.

L-P-E and The New Worklife Tables

Brookshire and Cobb (1983), Brookshire, Cobb, and Gamboa (1987), and Brookshire and Smith (1990) proposed an innovative approach in assessing damages following an injury. Relying upon federal government data (Bureau of Labor Statistics), The L-P-E method (Life-Participation-Employment) This approach essentially is designed to provide an estimate of a person's worklife and earnings by age. Earnings are adjusted by calculating the joint probabilities of Living (L) through the various ages, Participating (P) in the labor force, and being Employed (E).

Gamboa (1987) introduced the notion of assessing earnings capacity, disability, and future earnings by utilizing US government statistics to estimate the impact of sex and level of education for persons who were identified (globally) as either disabled or not disabled.. A "global" estimate usually involves the use of large data sets that are not specific to the individual. In subsequent research and writings, Gamboa and his colleagues have continued to develop the approach of using government to evaluate the capacity to work and earn money by persons who have been disabled (Gamboa, 2006; Gamboa & Gibson, 2006; Gamboa, Holland, Tierny, & Gibson, 2006; Gamboa et al., 2009; Gibson, 2000).

While these approaches justifiably take into account such factors as age, education, gender, living and employment participation, including the level of disability (if any), there are two distinct disadvantages of utilizing government statistics. First, the Gamboa approach is often cited for using global estimates of the present and level of a disability. "Global" estimates of the presence of a disability with a worker can be somewhat inaccurate and certainly is not worker specific in terms of the worker's specific functional capacities and potential for working and earning money. Secondly, the reliance on government data is generally not current as government employment data and demographic statistics are often times dated by one to three years.

Compensation Programs

Workers' compensation, both federal and state programs, include objectives for returning injured workers to their same job, a similar job, or a new job (following training and work adjustment) and are generally referred to as "return-to-work" programs. Given the wide ranging efforts at both the state and federal levels, there are many times considerable differences in both the objectives of the programs and how these programs manage financials issues such as loss of wages, disability ratings, earnings capacity, and future earnings. Over the last three decades, state programs have often reduced or eliminated funding for rehabilitation programs as a means to improve the probability that injured workers would return to work. Oftentimes, state legislatures have viewed these programs as too costly for the state budget. Prior to the 1980's, most state workers' compensation program included a section of their law "mandating" rehabilitation services for injured workers. The mandatory rehabilitation law was a major area of support for private sector rehabilitation programs as insurance companies with hire rehabilitation consultants to address this requirement for rehabilitation services. In the late 1980s, state governments began to cut or eliminate the mandatory requirement as a cost saving measure. While rehabilitation programming has taken on several forms, such as a lump sum payment for the injury, or severe restrictions on services offered, states continue to search for ways to address issues of compensation for injured workers while maintaining the central focus of returning injured workers employment.

In terms of assessing disability and evaluating work capacity have relied on basic approaches to address the issue. Several state programs have relied upon a "schedule of impairments" that assign a disability rating by body part; for example, a loss of a thumb and four fingers might be rated as a nine percent loss of total body functioning. The percentage loss would become the basis for a percentage loss of earnings for future work and income. Related to this approach is the use of the *AMA Guides to the Evaluation of Permanent Impairment* (2000) for evaluating injury. California, as a result of the *Ogilvie* (2009a; 2009b) rulings, is attempting to draft a workable "formula" approach to address the issue of earnings capacity (see the following articles for a review of *Ogilvie* ruling and the response to *Ogilvie*. As a result of the flux with the California Workers' Compensation Board on how to best determine "diminished earning capacity," Van de Bittner (2003, 2006) proposes a methodology and approach involving pre and post functional capacity assessment and evaluating related socioeconomic factors before calculating future earnings. Van de Bittner also discussed in detail over 50 factors than might have some bearing in determining diminished earning capacity for the injured worker.

The RAPEL Method

The RAPEL method (Weed, 1995, 2000;) is a comprehensive approach which includes all elements needed to determine loss of access (incorporating the LMA information), loss of earnings capacity, future medical care, worklife expectancy, rehabilitation plan, as well as placeability and employability factors. The word RAPEL is a mnemonic designed to assist the rehabilitation expert with collecting the data for a jury, lawyer, judge, economist and others in order to arrive at damages. It may not be evident, but many of the articles on loss of earnings are written by economists. Generally the economist will rely on the numbers provided to him or her by the rehabilitation expert. It is very important for the economist to receive the "right" information so a "bottom line" figure can be determined.

In litigation, the rehabilitation expert retained by the defense may not have access to the evaluee. Although a personal interview is preferred, the expert may utilize other information/data to offer a reliable opinion with regard to each of the below categories. Examples include, but are not limited to:

1. When not permitted access to the evaluee, the expert may help the attorney develop deposition or interrogatory questions that mimic the interview process.
2. Request all related depositions (regarding the evaluee, family members and healthcare providers.
3. Obtain all available related work history/employment records.
4. Obtain tax records.
5. Comprehensively review records (including medical) that might address any of the topics below.
6. With regard to the rehabilitation plan, the rehabilitation consultant may work with other defense retained experts (such as physicians and neuropsychologists) to develop opinions about future care.
7. Review Day-in-the-Life video if available.

The authors suggest that an organized report summarizing the opinions be attached as a separate document to the narrative. This facilitates the economist's role, offers a well organized easy to read document, and is ready to be made into a trial exhibit.

R = Rehabilitation Plan. The client's vocational and functional limitations, strengths, emotional functioning, and cognitive capabilities are assessed utilizing information gathered from the professionals listed earlier in this chapter. This may include additional future testing, counseling, training fees, rehabilitation technology, job analysis, job coaching, placement, and other needs for improving the client's potential for employment. If there is a Life Care Plan (usually for catastrophic injuries and complex healthcare needs), it should be noted in this section and refer the reader to that document for future medical and related care.

A = Access to Labor Market (Employability). In many of these cases, an individual may very well be able to return to a job that is custom-designed around their disability or with an employer who is interested in helping an employee with mild to moderate cognitive deficits. However, the client/evaluee may not have access to the same level of vocational choices as he or she did prior to the injury. In essence, it may be that the person would appear to have no particular loss of earnings capacity but at the same time be at high risk for losing a job and then having a significant problem locating suitable employment. The access to labor market can be determined through a variety of means. One option is to utilize a computer program like Skill*TRAN*tm to assess the effects of the disability on the person's access to the labor market (LMA) (Field & Field, 1999), based on worker traits, and the client's ability to choose in the labor market. For example, one client/evaluee may have a 50% personal loss of access to the labor market and another individual may have a personal loss of access to 95% of the labor market. Obviously, an individual who has access to 5% of the labor market should be employable or placeable, however, the difficulty factor for obtaining suitable employment has increased significantly. By placing a loss of access percentage to labor market, one can sensitize the reader to the potential difficulty for placement. Generally, this is described in a particular percentage loss of access to the client's personal labor market rather than to the national labor market. Few unimpaired people have access to 100% of the total labor market.

P = Placeability. This represents the likelihood that the client will be successfully placed in a job with or without rehabilitation or rehabilitation consultant assistance. One may need to conduct labor market surveys, job analyses, or, in pediatric cases, rely upon statistical data to opine about ultimate placeability (Weed, 2000). In some situations, the economic condition of the community may also be a factor. It is important that the rehabilitation consultant recognize that the client's personality, cognitive limitations, and other factors certainly influence the ultimate outcome. For adults, it is generally useful to include an opinion about jobs that are available (actual openings) in addition to jobs that exist but are not currently available to the client.

It is likely that the client will have worker traits which match to various job titles. Matching to a job title does not suggest that the person can indeed be placed in a particular occupation. Other factors, such as location, experience, education, personality, etc. can adversely impact placement. Also, many jobs

which may be appropriate for the client/evaluee are difficult to obtain. The vocational opportunity may be highly competitive or there may be very few positions available.

For example, one administrative law judge (ALJ) for a Social Security hearing was frustrated with the consistent opinion by the vocational expert that an injured employee, particularly in the poultry industry, could return to work as a "chick sexer." The ALJ was heard to tell a vocational expert that "if you ever provide me with another opinion that a person can return to work as a chick sexer, you will no longer work as a vocational expert"!

E = Earnings Capacity. Based on the rehabilitation plan, access to the labor market, and placeability factors, the client may or may not be employable in the labor market. If employment is likely, an estimate of the earnings potential is important. It is assumed that the reader is familiar with the difference between wage loss and earnings capacity analysis; however, if not, refer to topic earlier in this chapter. In general, the earnings capacity for an individual is that which they can reasonably attain and hold. For example, consider a 17-year-old who delivers papers for an income when he is catastrophically impaired and is never able to work again. Certainly, the earnings history from the paper delivery does not represent the individual's capacity. On the other hand, a 55-year-old union truck driver may exhibit earnings history that is consistent with his capacity. The considerations include whether the individual is a child or an adult and, if an adult, the industry for which they are best suited. For an example, a drywall hanger of marginal intelligence may have very well reached their earnings potential by the time they reach their 20's or early 30's. On the other hand, an attorney may not reach their potential until very late in their career.

L = Labor Force Participation. This category represents an opinion about the client's expected length of time expected to be in the labor force (also known as work life expectancy). Usually an individual who has a reduced life expectancy will also be expected to have a reduced work life expectancy. At the other end of the spectrum, the client's participation in the labor force may be unchanged. An individual may also be expected to work six hours per day rather than eight hours per day, which represents a 25% loss of normal work life expectancy. Some clients have demonstrated consistent extra income by working overtime hours and this situation can be considered in this arena as well. Generally speaking the counselor will express the opinion of loss by percentage or perhaps a number of years. Generally the economist will make the actual projections. This particular area is quite complicated and most vocational counselors are not prepared to address the subtleties and the complexities of economic projections. However, the counselor can review work life estimates in the aging Worklife Estimates: Effects of Race and Education (Bulletin # 2254, USDOL, 1986). Author's note: Although some more currently privately produced worklife data are available, the data may or may not be valid. Until more peer review is available on these data, government publications are recommended.

Computer Programs

Following the early development of the Labor Market Access program (Field, J. & Field, T., 1985-1999), other vocational estimating programs were developed and have contributed significantly to the assessment of work capacity, earnings capacity, and employment opportunities. The programs all suffer from the obsolete occupational data base of the *Dictionary of Occupation Titles* (1991) and related data sets, although developers of each of the programs have attempted to adjust the data to accommodate this deficiency as much as possible. The programs that are currently available to the forensic rehabilitation community are the *Skilltran* program (Jeff Truthan), *OASYS* (*Occupational Analysis System*, now of Skilltran, formerly by Gale Gibson), *SEER* (Software for Employment, Education and Rehabilitation by Robert Hall), and the *MVQS* (McCroskey Vocational Quotient System by Billy McCroskey). Additional information can be obtained by reviewing each program's respective website.

SkillTran	www.skilltran.com
Oasys	www.vertekinc.com
SEER	www.seersoftware.net
MVQS	www.vocationalogy.com

While these programs can be very useful in obtaining employment and earnings information that matches to a specific client, consultants should always consider computer generated output as tentative conclusions for any client analysis, and should be further tempered by clinical judgment (Choppa et al., 2004) in reaching final estimates of employment and earnings (The same holds of the L-P-E and New Worklife Tables).

The Court or Jury Decides (Summary Judgment)

Summary judgment: This procedural device allows the speedy disposition of a controversy without the need for a trial. (Black's, 2000).

Jury Instruction: A direction or guideline that a judge gives a jury concerning the law of the case. (Black's, 2000).

It is not uncommon for state and federal courts to present all relative information through presentations (attorneys and experts) and then to charge the jury to decide the outcome on damages, including fu-

ture lost earnings. This approach requires that the jury receive adequate information to presumably make an informed decision regarding damages. In cases involving a summary judgment, the same necessary information is needed by the court. Under the Virginia Model Jury Instructions (9.000), this instruction outlines the categories for damages that the jury can consider:

> *If you find for the plaintiff, then in determining the damages to which he is entitled, you may consider any of the following which you believe by the greater weight of the evidence was caused by the negligence of the defendant:*
>
> *any bodily injuries he sustained and their effect on his health according to their degree and probable duration;*
>
> *any physical pain and mental anguish he suffered in the past and any that he may be reasonably expected to suffer in the future;*
>
> *any disfigurement or deformity and any associated humiliation or embarrassment;*
>
> *any inconvenience caused in the past and any that probably will be caused in the future;*
>
> *any medical expenses incurred in the past and any that may be reasonably expected to occur in the future;*
>
> *(1) any earnings he lost because he was unable to work at his calling;*
>
> *(2) any loss of earnings and lessening of earning capacity, or either, that he may reasonably be expected to sustain in the future; any property damage he sustained.*
>
> *Your verdict should be for such sum as will fully and fairly compensate the plaintiff for the damages sustained as a result of the defendant's negligence.*

In *Aivaliotis v. S.S. Atlantic Glory* (1963), Aivaliotis, the plaintiff, was ordered to remove water from below deck of an ocean-going transport vessel. Initially, the plaintiff was hauling buckets of water from below and then dumping the water overboard while two workers below filled the buckets. After a period of time, the plaintiff switched jobs with one of the workers below, and while moving to a forward position, fell through an open hatch, fractured his left leg, and suffered a compound fracture of his right ankle, with multiple contusions over his body. Nearly a year later, after seven surgeries and infections and extensive pain, the left leg was amputated. A physician's report (over two years later) indicated the he had reached maximum improvement medically and could be discharged. The physician stated that "I do not feel that he is fit for work as a seaman aboard a ship, but I do feel that he is fit for sedentary or light work, or work that does not involve climbing ladders, lifting or stooping." Plaintiff received a rating of "permanent-partial disability."

The court concluded that plaintiff would not "sustain any actual loss of future earnings by reason of his impairment when his previous station in life is considered." The court learned that during the long period of hospitalization, the plaintiff married an American citizen, gradually learned to speak English, improved upon his educational level, and the potential to earn more in the United States than he could if he had continued on the vessel. The court observed that ""there can be little doubt as to the impairment of his earning capacity." The court reached the final conclusion:

> *Taking into consideration the many elements of damage which must be weighed in an effort to reasonably compensate [plaintiff] for his pain, suffering, mental anguish, embarrassment, actual loss of wages to the point of attaining maximum improvement, impairment of future earning capacity, the expense of maintenance and replacement of the prosthesis in futuro, and considering life expectancy, discounted to the present value of one dollar where appropriate, the court is of the opinion that [plaintiff] is entitled to a decree against the vessel....in the sum of $115,000.00."*

Table 1
Methods of Earning Capacity Assessment Compared on Selected Factors

Factors	LMA+	Deutsch	LPE	Computer	RAPEL	Court/Jury	Practical
Func Assessment	Y	Y	N	Y	Y	M	Y
Career Goal	N	Y	N	M	Y	M	Y
Job Matching	Y	N	N	Y	Y	M	Y
Survey Data	Y	Y	Y	Y	Y	M	Y
Worklife Tables	N	N	Y	N	Y	M	Y
Future Earnings	N	N	Y	Y	Y	M	Y

Note. Y=Yes; N=No; M=Maybe.

In terms of how the court decided the settlement amount is not clear since all elements were considered together and under the single category of damages.

In the case of *Exxon Corp. v. Fulgham* (1982), the plaintiff was involved in an automobile accident, which caused injury to his left hand and wrist, knee, neck, and back. Following surgery and treatment (arm was in cast for six months), the physician opined that the plaintiff "has approximately a 50 percent loss of use of his wrist and hand as a result of the accident . . . and would be restricted in his working ability because of restriction of motion in his wrist." The court, in instructing the jury, is required to be supported by the evidence. In this case, the jury was instructed to consider a loss of earning capacity that was supported by the opinion of the physician who indicated that there was a loss of 50 percent of functioning in the wrist. Exxon objected to the jury charge of a lessened earning capacity based on the fact that the plaintiff was earning $1000 per month after the injury versus only $700 per month prior to the injury. Relying on the previous case of *Aivaliotis v. Steamship Atlantic Glory*, the court ruled in the case that "one of the measures of his damage is based upon his earning capacity and not merely the amount actually earning." Consequently, the appeals court ruled that the evidence presented by the physician (50% loss of functioning, pain, loss of motion) "was sufficient for the jury to have found that by reason of the injury to the wrist, the plaintiff has sustained a lessening of earning capacity in the future." The finding was summarized:

> *The plaintiff is a man of limited education and earns his livelihood by physical effort and manual labor, specifically with the use of his arms and hands. At the time of the trial, he was an office-machine repairman. Although not a certified cabinetmaker, plaintiff is adept and skilled in the area of woodworking. There is credible evidence from which the jury could have concluded that because of his background, education, skills, and the work he performs, the type and character of the injury sustained by the plaintiff to his left wrist is such as will lessen his earning capacity and could diminish his opportunity to secure employment in the future. We find no error in the action of the trial court in permitting the jury to consider any lessening of plaintiff's future earnings capacity or his expectation of life in determining damages.*

Note that the court relied upon the client factors of the injury and its restrictions, background, education, skills, and the work performed as evidence presented to the jury. In *Scott v. Mid-Atlantic Cable* (2006), the determination of damages was addressed by consideration for a summary judgment consistent with Rule 56 of the Federal Rules of Civil Procedure as summarized in this court case:

> *Summary judgment is appropriate when the moving party can show affidavits, depositions, admissions, answers to interrogatories, pleadings, or other evidence, that has no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law.*

Scott, following an accident resulting in injuries, filed a claim seeking damages for "medical care expenses, pain and suffering, mental anguish, lost earning capacity, and the lost future retirement benefits." The defendants filed a motion for partial summary judgment (lost earning capacity and lost future retirement benefits). As noted in the *Exxon* case, "Virginia law permits a claim for lost earning capacity where the plaintiff established that the type and character of the injury" will reduce one's earning capacity and the opportunity to be employed. Further, a consideration of earning capacity includes such factors as background, education, skills, and experience. The court denied the motion for a partial summary judgment based on the fact that there was a material fact (estimating lost earning capacity of the plaintiff) did not rely on speculation or conjecture, and the issue could be adjudicated.

In all three cases noted above, a court (via summary judgment) or a jury could determine a proper conclusion (damages) on the issue of estimating lost earning capacity and/or future employment when the relevant facts of the case are presented in a sufficient manner. The relevant elements of such a determination would include background, the nature of the injury, education, skills, and experience.

A "Practical" Approach

The estimation of earnings capacity would seem to be a very complicated task given all the information that is available. Much of the confusion for forensic rehabilitation professionals results from the various approaches that have been discussed, including the pros and cons of computer programs, various occupational databases, and the identification of the most critical and salient variables necessary in the analysis. In fact, Shahnasarian (2001, 2004) has emphasized the necessity of organizing and synthesizing all relevant information in the development of a case, including the use of a worksheet that has been developed for such purposes.

This proposed basic and practical approach (Weed & Field, 2012) is perhaps a synthesis of the more useful (and least controversial) concepts that have evolved over the years. Personal preference for alternative resources and/or approaches is certainly within the realm of possibility. However, what is suggested below can serve as a "benchmark" for professionals to consider and then incorporate personal preferences and experiences into an individual and preferred model.

The following steps are suggested:

Following a review of the case records, develop a pre-injury assessment of earning capacity.

1. Identify a pre-injury base wage (not necessarily wage at time of injury) by identifying jobs and wages that best represent the claimant's functional capacity.
2. Identify a post-injury base wage by identifying jobs and wages that best represent the claimant's residual functional capacity.
3. Estimate the difference between the pre-injury earnings capacity and the post-injury earnings capacity.
4. Estimate the remaining work life of the claimant.
5. Calculate a range of economic loss by multiplying the difference from pre-to-post-earnings capacity by the work life remaining.
6. If not qualified, refer to an economist for adjustment to present value. The economist's general method can serve as a guide and blueprint for the rehabilitation professional. Resources to be used might include the following:
   - A computerized job matching program to expedite the job identification process.
   - Either the DOT or the O*NET for describing occupations.
   - The on-line CareerInfo.NET database for wages and numbers of jobs in a local economy, or the CPS data generated by the Bureau of Labor Statistics (BLS).
   - The BLS Worklife Tables (1986)
   - The New Worklife Tables (Gamboa, 2006)

The various methods cited above serve as guidelines for the professional to follow in the development of a case. Of course, there will be variations for each of the methods and much of the variation will depends upon the facts of a case. Table 1 displays some of these differences in how a case can be developed. The RAPEL method appears to be the most comprehensive of all the methods, although this method draws upon resources and strategies from a variety of sources. The LMA method, of course, is a computerized approach developed during 1980s and 1990s, and the results may be used for a portion of the RAPEL report. The original program is no longer available, although the rationale is one to consider (see website listing at the end of the chapter for three computer programs which are currently available and may be used in earnings capacity assessment). As noted earlier, the Deutsch/Sawyer model is rather global and non-specific, while the Court/Jury model is interesting and may be employed in some states. The Practical method is just that: a rather straightforward and common-sense method quite similar to the RAPEL. In terms of which method to use, the choice is really the prerogative of the practicing professional. All have been published in peer-reviewed literature, and all are generally accepted by the professional community.

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Daubert & ADA Decisions: Will Functional Capacity Evaluations Hold Up In Court?

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Abstract. This article addresses the likelihood that testimony about a functional capacity examination will be admissible in court under the restrictive standards established by the United States Supreme Court in Daubert v. Merrell Dow Pharmaceuticals. The article first explains the principles of Daubert and its progeny. Then, the article examines the legal framework of the ADA, and how it lends itself to expert vocational testimony. Next, it evaluates reported cases that have addressed the admissibility of testimony regarding vocational issues, pointing out those areas where the case law provides instruction for bolstering the admissibility of a particular FCE opinion. Finally, the article offers advice to the would-be FCE expert on issues to consider in performing functional capacity evaluations, to assure that expert testimony concerning the FCE will be deemed reliable and relevant, and thus admissible.

Introduction

The advent of the Americans with Disabilities Act (1994) produced a new wave of litigation across America. In many respects the legal system began dealing with issues that judges and juries had never before faced. The ADA requires courts to determine such things as: (1) what is a qualified individual; (2) what is a disability; (3) how can you determine if a person has a disability; (4) does the individual's ability to perform with accommodations play a role in determining disability; and (5) are mitigating measures such as adaptive aids, medication and assistive devices considered in evaluating the level of disability? All of these questions, and more, were foreign territory to the court system prior to the passage of the ADA. Before ADA, Congress passed the Rehabilitation Act of 1973 – 29U.S.C. section 791. However, its application to the employment setting was limited and, thus, the types of litigation that this act spawned was narrow. Many courts had never considered the scope an definitions of the Rehabilitation Act prior to passage of the ADA.

Courts thus were required to become adept at making determinations on issues requiring specialized medical and vocational expertise. As with many other areas of the law, the use of expert testimony in ADA cases thus became prominent. For example, expert testimony is fairly common in product liability cases where the issue of defects in a particular product is at issue. In addition, in personal injury cases, medical testimony concerning the extent of injury, the prognosis for recovery and the economic loss attributable to such injury is fairly common.

Litigators increasingly warmed to the idea that they could use an expert to "educate" the court on these disability related issues, and thus prevail on their theory of the case. However, as with many other types of litigation where experts are prominent, the desire to prevail on a particular theory leads to the temptation to secure expert testimony that is both unreliable and invalid.

The functional capacity evaluation (FCE), while a useful tool, may become a target for challenges under the fabled *Daubert*, a United States Supreme Court ruling which established the basic standards for the admissibility of expert testimony. This article will first explain the principles of *Daubert* and its progeny. Then, the article will examine how the legal framework of the ADA lends itself to expert testimony. Next, it will evaluate reported cases that have addressed the admissibility of testimony regarding vocational issues, with a particular emphasis on functional capacity evaluations. Finally, the article will offer advice to the would-be expert on issues to consider in performing functional capacity evaluations, to assure that expert testimony concern-

ing the FCE will be deemed reliable and relevant, and thus admissible.

Daubert, Kumho Tire and The United States' Supreme Court's Establishment of Standards of Relevance and Reliability for Expert Testimony

The American court system has long struggled with the question of how the admissibility of expert witness testimony should be assessed. Our system of justice allows those with personal knowledge to testify to anything they observed, within the bounds of accepted rules of evidence. However, many times experts testify about things that are not otherwise admissible, or that are not within their personal knowledge. For example, an expert may be allowed to testify about what caused an automobile accident, even though the expert was not present at the time. An expert may be able to testify that there was a defect in a product even though the expert did not witness the failure of the product. Because experts testify to things that may be outside the realm of what other witnesses are allowed to do, the courts generally desire some sort of control over what testimony an expert can offer. The court must be assured that the evidence is reliable. Thus the courts have established rules requiring that the expert must be qualified to testify about the subject matter. The courts have also imposed rules requiring that the testimony actually relate to an issue in the case, and that it be something that will assist the trier of fact in reaching a decision. Finally, the courts have required that the subject matter of the testimony be evidence that is reliable.

Prior to *Daubert*, the courts used a test of reliability that was broad and general. Under the so-called Frye test, the evidence would be deemed admissible if there was a showing that the methods used had received general acceptance in the scientific community which dealt with the topic.

Under *Daubert*, the United States Supreme Court changed the test of admissibility. The court held that in order for expert testimony to be admissible, the person seeking to introduce the evidence must show that the evidence is both relevant and reliable. Reliability could be shown, in the case of scientific evidence, by demonstrating that a number of factors were present. The *Daubert* factors included:

1. the theory proposed by the expert is a theory that can be tested;
2. the theory has been subjected to peer review within the relevant scientific community
3. the theory has a known or potential rate of error that can be assessed
4. the theory is subject to the existence and maintenance of standards which control scientific operations; and
5. the reasoning behind the theory has gained general acceptance in the relevant scientific community.

Daubert involved a case where true scientific method was involved, since it concerned the causal relationship between the drug Bendectin and birth defects in children. The Supreme Court then decided in *Kumho Tire* that the *Daubert* test would apply to all expert testimony, even that which was not specifically scientific in nature. After these cases, in order for expert testimony to be admissible, a court must consider reasonable measures of reliability. The expert opinion must have been reached only after employing the same level of intellectual rigor that characterizes the practice in the field. Thus, in other cases, the Supreme Court assessed expert testimony admissibility based upon the number of peer review articles analyzing the techniques used, whether there were objectively reliable measures of validity used, whether the expert had performed a thorough factual examination, whether the expert could point to an objective method of reaching a particular conclusion that could be duplicated by others, etc. (*General Electric Co v. Joiner*, 1997). As the Court stated in one case, if the expert simply pulls the analysis out of the air, the testimony will not be deemed reliable and thus will be inadmissible.

But nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the ipse dixit of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered (*General Electric Co v. Joiner*, 1997).

The Supreme Court has also approved a federal rule of evidence, Rule 702, (recently amended in 2000) which is used by all federal courts. Many state courts have adopted a similar rule. Rule 702 incorporates the

concepts on *Daubert* into a specific rule. Three requirements are contained in Rule 702. First the expert must be able to demonstrate that the testimony is based upon sufficient facts or data. Second, the expert must demonstrate that the testimony is the product of reliable principles and methods. Finally, the expert must be able to demonstrate that the witness has applied the principles and methods reliably to the facts of the case. For this last factor, commentary to Rule 702 explains: "when an expert purports to apply principles and methods in accordance with professional standards, and yet reaches a conclusion that other experts in the field would not reach, the trial court may fairly suspect that the principles and methods have not been faithfully applied." (Notes, Federal Rules)

Thus, a trial court, in analyzing the admissibility of expert testimony, will first assess the reliability of the facts used, then assess the reliability of the methods used to reach a conclusion, and finally test the application of the methods to the facts in the case. As one court states "any step that renders the analysis unreliable. . . renders the expert's testimony inadmissible" (*Paoli Railroad Yard*, 1994). Most courts seem to have focused on the methodology used to assure its reliability. At least one court (Paoli, 742 n. 8) has expanded the *Daubert* factors to make a more comprehensive list for assessing reliability of the methodology, using these criteria:

1. whether a method consists of a testable hypothesis;
2. whether the method has been subject to peer review;
3. the known or potential rate of error;
4. the existence and maintenance of standards controlling the technique's operation;
5. whether the method is generally accepted; the relationship of the technique to methods that have been established to be reliable;
6. the qualifications of the expert witness testifying based on the methodology; and
7. the non-judicial uses to which the method has been put.
8. This provides a good checklist for experts seeking to assess their own methods.

In order for the opinion to be admissible, the expert must demonstrate both that a reliable methodology was used, and that there was a reliable application of that methodology. The expert must be able to explain why and how the opinion was reached. The trial court will act as a "gatekeeper" for expert opinion testimony and will not admit any testimony that does not meet the tests of reliability noted above.

Increasingly common in federal courts is the use of a pretrial hearing process to test the reliability of expert opinion evidence. Known as a *Daubert* hearing, this process is generally initiated by the party opposing the expert testimony. A court may require the expert to testify under oath in open court, without the presence of the jury, so that the full basis of the expert opinion may be tested. For example, in one case the court held a two day evidentiary hearing on whether the plaintiff's expert could testify concerning a quantitative electroencephalogram (QEEG) test measuring the extent of injury from a use of excessive force. (*Nadell v Kaiser Permanente*, 1999). This has become a contentious process, and one that the vocational expert must be fully prepared for. Analyzing an expert opinion against the standards set forth in this article will help the expert prepare for such a process.

The court will look for objective rules and standards that exist outside the courtroom. In other words, opinions created solely for purposes of litigation may not stand up to the withering gaze of the court and the opposing attorney. The expert must be able to demonstrate knowledge of sufficient facts, a testable theory, an objective criteria, consistent with real world application of the principles, and relevant to the issues in the case.

The Americans With Disabilities Act and The Necessity or Advisability of Expert Testimony

The Americans with Disabilities Act prohibits employers covered by the Act from discriminating against a "qualified" person with a "disability" in offering employment or retaining employees. For those who are qualified, and have a disability, the employer must also offer "reasonable accommodation" to individuals needing such assistance to perform the "essential functions" of their position. The ADA applies to all aspects of the employment relationship, from hiring to termination. In order to show that a person has a dis-

ability, one must demonstrate that he or she has a physical or mental impairment that substantially limits that person in a major life activity. Thus, if a functional capacity evaluation is used to demonstrate a significant limitation in the physical abilities of an individual, that would be important evidence for a plaintiff to offer, and it could be offered through the expert testimony of the person performing the FCE.

There are also opportunities to prove disability discrimination by proving that an employer treated the employee differently because of a record of a disability, or because of a perception that the person was disabled when they were not. Those elements of the prima facie case are beyond the scope of this article, because they would rarely be the subject of proof through use of an FCE.

In addition, the regulations developed to implement the ADA require a plaintiff to prove that he or she has a substantially limiting impairment. Required elements of this showing include demonstrating the nature and severity of the impairment; the duration of the impairment; and the permanent or long term impact of the impairment. Important to note is that temporarily limiting conditions, such as injuries that heal within a matter of months, are not considered impairments, and thus not subject to protection under the ADA. Thus, in analyzing the appropriateness of expert testimony, it is also helpful to determine whether the testimony assesses the permanent nature of the injury, and expected recovery from it.

With increasing frequency, litigants seek to offer expert testimony on the nature of an impairment, and whether it rises to the level of a disability. Experts can be offered to testify as to how the plaintiff's condition affects the person's ability to work and the efficacy of any identified workplace accommodations.

The Court System's Reaction to Expert Testimony Concerning Disability and Related Questions

Increasingly, the courts are being asked to consider the reliability of expert testimony on vocational issues in ADA cases. While not all of the reported cases that have considered expert testimony have involved true functional capacity evaluations, the court's treatment of the vocational expert in these cases provides clues to guide the use of vocational testimony in such cases to assure its admissibility, or to attack its credibility and reliability. Not all of the cases involving expert testimony, or functional capacity evaluations are reported in the national reporter system, or in Internet databases. Thus, there may be many more cases where such testimony has been challenged, but there is not a way to track those cases nationally for purposes of analyzing how the courts will treat these experts. When courts are ruling on admissibility, however, they will rely upon reported cases, so these reported cases are a good barometer of how the courts will review these issues.

In *Jenkins v. Sonat Offshore U.S.A., Inc.* (1997) the court considered the admissibility of expert testimony concerning an FCE. The defense in that case argued that the FCE should have been inadmissible, because there was insufficient evidence of the reliability of the results. The expert had used an ERGOS machine to conduct the FCE. The defense argued that there was no showing that the machine produced an accurate result. The court rejected the argument, and allowed the testimony, stating that there was ample testimony that the methodology used was appropriate. Thus, the lesson of this case is that an expert must be able to adequately explain the reliability and validity of machines used in conducting an FCE.

In *Greene v. Xerox Corporation*, (1997) the court considered a challenge to introduction of evidence of an FCE. The challenge was based on the fact that the FCE was performed by a physical therapist. The plaintiff argued that the physical therapist was not qualified to draw the medical conclusions required in completing the FCE. The court said the FCE was admissible, but relied upon the fact that the physical therapist was supervised by a medical doctor in performing the tests. The court looked at the doctor's qualifications as an expert in industrial injury rehabilitation and functional capacity evaluations. Thus, the lesson from this case is that the vocational expert must be prepared to answer challenges to qualification based upon the medical conclusions that may be inherent in a functional capacity evaluation.

In *Elcock v. K Mart Corporation*, (2000) the court considered vocational expert testimony, but the testimony did not involve a true functional capacity evaluation. The vocational "experts" opinions revolved around the plaintiff's ability to perform her job, and the extent of her disability. However, the expert had not performed any physical testing of the plaintiff's capacity to perform any jobs. The "expert" was a psycholo-

gist, and had performed several psychological tests on the plaintiff, then had used several methods to determine the extent of the plaintiff's disability. The court's opinion is instructive on several issues, including: (1) what are the minimum qualifications for a person to appear as a vocational expert and still have a reliable and admissible opinion; and (2) what methods must a vocational expert use in order to reach a reliable and admissible opinion?

On the first issue, the expert was a psychologist, but his experience in evaluating the level of disability was remote in time and limited. He had no formal education in the specific field of vocational rehabilitation. He also did not have what the court termed the "standard" credentials for an expert in the area. However, despite expressing misgivings concerning the qualifications of the expert to testify, the court was compelled to affirm the trial court's actions in allowing the testimony. The court later, however, used the "thin" qualifications in its analysis of the reliability of the testimony. The lesson of this case is that the courts may look at very specific qualification issues. They may look at whether the expert has educational background in the specific assessment tools used. They will also look at whether the expert has practical experience sufficient to draw the conclusions drawn. The *Elcock* court stated that this expert, because of the "thin" qualifications, may have been marginally qualified to testify about a specific individual's ability to perform a specific job, but would not be qualified to talk about a broad range of jobs locally or nationally that the individual might be able to perform. Keep in mind that the nature of the qualifications of the expert may affect the reliability and thus the admissibility of the opinion.

On the second issue, the *Elcock* court raised even more concerns. The expert in this case tested the plaintiff for intelligence level, gave achievement and aptitude tests, took a school and work history, and then did a search in the Dictionary of Occupational Titles, and compared that to jobs available in the local job market. His conclusion was to rate the plaintiff's capacity at "somewhere between 50 and 60 percent." As the court later stated, the expert could not explain the precise method used to reach this percentage figure. The court noted that the defense made "several attempts to have [the expert] explain how he arrived at the 50 to 60 percent figure other than his *ipse dixit* statement that the consideration of these factors produced these numbers." The court then noted that, prior to trial, the expert's opinion had been that the disability level was 50-75%, but there was no explanation for why the numbers had changed. The court truly could not see how the expert had reached his conclusion other than to draw numbers out of a hat. In applying the factors and criteria mandated by *Daubert*, the court noted that another expert, looking at what this expert had done, could not possibly re-create the work and reach the same conclusion. Although the expert testified that he used a procedure recommended by Fields and a procedure recommended by Anthony Gamboa, the expert then combined these two procedures with no explanation of why he did so, or whether experts in the field would normally use a combination analysis. In short, the court was not able to follow the methodology used by the expert. The lesson from this case is that vocational expert must be able to recreate for the court the method used, and the reliability of the result. In other words, if two experts doing the same analysis could reach wildly different conclusions, then the evidence may not be admissible because it is missing an essential component of reliability demanded by Daubert.

United States Equal Employment Opportunity Commission v. Mann (1999) involved vocational expert testimony in an ADA case, but did not involve a functional capacity evaluation. In that case the vocational expert had conducted a job survey to reach the conclusion that the plaintiff was excluded from a broad range of jobs. The court excluded the vocational testimony, saying that the expert "failed to employ the same level of intellectual rigor that characterizes the practice of an expert in his field." The court also noted that the expert "had allowed plaintiff's attorney. . .to influence what to include in his report and the manner in which he reached his opinions." Given these two factors, the court stated that it had "no confidence that any portion of [the opinions] are based on methods normally used by experts in the field." The court noted that, for example, some of the polling done was admittedly statistically insignificant, and based on data from years other than those at issue. The lesson from this case is twofold: (1) opinions should truly be those of the expert, and not the attorney for one party or another; and (2) the expert must be able to demonstrate that the methods used are those commonly used by experts in the field, are subject to testing and verification, and are consistent with the actual facts of the case.

In *Paulus v. Kaiser Permanente Medical Group. Inc.*,(1999) the plaintiff sought to prove her disability by introducing vocational testimony that she was limited in the types of jobs that she could do. Using standard ADA requirements that there be proof that the plaintiff is limited in a broad range of jobs, rather than one particular skill or job, the court considered whether a vocational expert's testimony that plaintiff was disabled should be admitted. However, the court was critical of the expert report, noting that it relied on an outdated version of the Dictionary of Occupational Titles, and presented the issue in "sweeping and conclusory terms that fail to state their basis." Thus, the lesson from this case is that if an expert seeks to draw conclusions on ADA issues from an FCE, such as a conclusion that the plaintiff is indeed disabled, the expert must be able to show that he or she relied upon current research tools and methods, and that the conclusions reached were based upon stated methodology.

In *Ammons v. Aramark Uniform Services, Inc.*, (2002) a vocational expert examined the plaintiff in connection with an ADA claim, and offered opinions with respect plaintiff's work restrictions. She opined that plaintiff was not capable of returning to his previous position. However, when she visited the worksite, she changed her opinion and concluded that the plaintiff could perform the vast majority of jobs at the plant where he worked. However, when deposed, she expressed unfamiliarity with several critical pieces of equipment that the plaintiff would be involved with. The court indicated that because of these inconsistencies, the expert's conclusions were "not based on any specific methodology applied to the facts but is only unsupported speculation. Such speculation renders her opinion unreliable." The lesson to be learned from this case is that an expert's opinion cannot be subject to whim or fancy, and cannot change randomly without adequate explanation of the reason for such changes. A vocational expert must also be careful to have access to all of the critical facts, knowledge of all critical elements of the opinion, and use a consistent methodology that is not subject to whim or fancy, or who is paying the bill.

In *Union Carbide v. Mayfield*, (2001) a vocational rehabilitation counselor was allowed to testify in an ADA case despite a challenge to the reliability of his opinion. He offered an opinion as to whether medical restrictions placed on the employee by the employer constituted a disability excluding the employee from a broad range of jobs. The expert provided detailed testimony of his methodology and the basis for his opinions, and provided evidence of his expertise in the field. Given that testimony, the court ruled that the evidence was admissible.

What Vocational Experts Should Do To Assure That Their Testimony Well Be Admissable In Court In ADA Cases

In ADA cases, the functional capacity evaluation will most often be used to establish a level of disability, or to conduct a job task matching to determine the ability to perform the essential functions of the particular job plaintiff holds. A vocational expert seeking to testify concerning the results of an FCE will need to demonstrate familiarity with the intricacies of the various testing models, the measurements used, and the equipment available, in order to survive a *Daubert* challenge. If the expert can demonstrate why a particular type of measurement tool was used, as compared to other available tools, the court will likely deem the testimony more reliable and thus more likely admissible, because of the level of sophistication shown. If the expert demonstrates that he or she has been specifically trained in the use of the equipment, that will add to the credibility of the testimony. Here are some specific ideas for creating stability for the FCE opinion, or some areas to question if critiquing another expert's opinion:

(1) **Measurement theories**: The expert must understand the various theories of measurement and the scales used for measurement. An expert who seeks to interpret performance, but who does not understand the difference between ordinal, interval or ratio scales, and who seeks to compare performance scores on conflicting scales will not be as credible as the expert who can clearly explain the available scales of measurement, and the appropriate comparisons to use in measuring performance. (*Elcock v. K Mart Corporation*, 2000)

(2) **Reliability**: The expert must be able to demonstrate that both the testing equipment used and the testing methods produce results that are similar, or the same, regardless of the identity of the tester, or the specifics of time and location of the testing. A conclusion reached must be similar without regard to the person conducting the test. To the extent subjectivity is

involved, it must be minimized, so that the expert can demonstrate that consistent results would be achieved. This is the only way to demonstrate reliability, a key element of admissibility of this expert testimony. (*Jenkins*) Thus, the expert must have knowledge of the testing equipment, its function, and calibration protocols. The expert must be able to testify with authority that the testing equipment will produce identical or nearly identical results under identical conditions. In addition, the expert must account for factors that may influence reliability, such as the testing methods to be used, and the consistent application of those methods. The expert must also be able to demonstrate that the reliability is not threatened by factors relating to the individual being tested, such as if the subject held back on performance because of a desire to control the outcome of the test, or to avoid pain that might be caused by the physical movements associated with a specific test. The expert must be able to testify authoritatively that the testing method accounted for these factors. This is the point made by the Paoli court cited above, where the court required a demonstration of the existence and maintenance of standards controlling the technique.

If the expert can demonstrate that more than one test of a particular biomechanical function was performed, with similar results on each kind of test, the inter-test comparability provides a sort of reliability. Thus, the expert must be able to demonstrate knowledge of intra-test and inter-test reliability measures, and be able to demonstrate how those measures were used in the testing done.

(3) **Validity**: The expert must also be able to demonstrate knowledge of issues relating to the validity of the test in accurately predicting on the job performance. Other articles in this issue of the journal assist in understanding the issue of the validity of FCEs. This demonstration was required by the *Paoli* court cited above in mandating that there be evidence of the rates of error in using the method.

(4) **Test selection**: The expert must be able to demonstrate that the tests selected for the person being evaluated are appropriate for those circumstances. Tests selected because of their applicability to the facts at issue are more likely to be deemed appropriate and therefore relevant. The more relevant the testimony, the more reliable it will be, and the more likely it is to be deemed admissible.

(5) **Testing methods**: An expert who can testify that only standard testing protocols were used is more likely to be found authoritative and reliable. The expert should be able to testify that the equipment used has been tested and deemed reliable, that the test protocol itself is not tainted and has been demonstrated to be reliable, and that intra-and inter-test confirmation has been accomplished. The testing methods must demonstrate that another expert, using the same test protocols and the same test methods, would reach the same or very similar conclusions. This was stressed in the *Paoli* factors cited above, using the factors of "whether a method consists of a testable hypothesis" and "whether the method has been subjected to peer review."

(6) **Understand the vulnerabilities**: The expert must be familiar with the vulnerabilities of the FCE process, including areas where the testing and conclusions drawn from it could be deemed to be subjective or at the whim of the tester. This relates to the *Paoli* factor of being familiar with the known or potential rates of error.

(7) **Outside entity standards**: To the extent the vocational expert can show reliance on protocols or testing methodology developed by an outside regulatory body, such as a functional capacity protocol developed by a government disability entity, or a protocol developed by a professional organization, the more reliable the opinion will be. As the *Paoli* court required, the method used should be subject to peer review in order to demonstrate validity and reliability. In addition, since many of the outside entity standards established for FCEs were created for guiding the test in a non-litigation setting, demonstrating that these standards exist, and that the testing done conforms to them increases the reliability of the testimony. As the *Paoli* court noted, judges will want to know if the methods used have a utility and recognized validity for non-litigation uses. Presence of such other uses for the testing reduces the likelihood that an opinion was produced simply for purposes of litigation, paid for by the litigant.

Conclusion

Using the tips contained within this article will assure that the FCE will be admissible under *Daubert* and its progeny. Experts who carefully examine the

methods used, the equipment used, the testing procedures, their own training and background, and the facts of the particular case will not be excluded by even the most discriminating court.

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Vocational Expert Testimony: What We Have Learned During the Post-Daubert Era

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Abstract: This review revisits the critical paper by Feldbaum (1997) in light of a decade of developments related to the admissibility issue of vocational expert testimony. In addition to discussing critical issues inherent to *Daubert, Kumho* and the *Federal Rules of Evidence*, over forty cases involving forensic rehabilitation consultants in federal courts are reviewed for purposes of identifying how the courts are treating rehabilitation (soft science) testimony. Conclusions are made regarding the evolution of testimony from *Daubert* to the present.

Background

Daubert v. Merrell Dow Pharmaceuticals (1993) was a Supreme Court case which addressed the general issue of admissible scientific testimony in federal courts. The ruling, which seemed to tighten the criteria for an expert's testimony, caused some concern in the forensic rehabilitation community as it apparently signaled the beginning of a new era on what was to be allowed. Since most professionals are quite familiar with the *Daubert* Ruling, and with several of the subsequent rulings and guidelines (*Frye*; *GE v. Joiner*; *Kumho v. Carmichael*; the *Federal Rules of Evidence*), this paper will not address this body of information. A summary of the rulings and rules can be reviewed in the Feldbaum (1997) article or from several other sources (Field & Choppa, 2005; Choppa, Field & Johnson, 2006; Blackwell, et al. 2005, or Stein, 2006).

Feldbaum's Article

Feldbaum (1997) published what is considered by many to be a landmark paper on the *Daubert* decision and the implications for the forensic rehabilitation consulting sector. Following an excellent review of the decision and its interaction with the federal rules, Feldbaum went on to discuss the general issue of admissible testimony with respect to the work of the vocational expert by suggesting that "it is predictable that the reasoning and methodology underlying our expert testimony will be subject to more strict scrutiny than in the past" (p. 57). Anticipating that vocational testimony could become burdensome, Feldbaum even suggested that "the impact of repeated rejection as a forensic expert can be damaging precedents both economically and emotionally" (p. 57). To substantiate his argument that the *Daubert* decision would have a significant impact on future testimony, Feldbaum cited twenty-one specific legal cases whereby the experts in these cases were subjected to the *Daubert* factors on admissibility. Only five of the 21 cases were allowed; the remaining 16 cases were disallowed for one or more factors related to the *Daubert* decision. All of the cases were non-rehabilitation cases and most of them were related to causation (scientific) issues. Of the soft science cases, four were in the area of economics (three excluded), two in the area of hedonics (both disallowed), and one ergonomic expert (also disallowed). The disadvantage Feldbaum had was in being able to find rehabilitation cases that were being challenged on the *Daubert* ruling, a situation also found to be the case in a similar review of cases (Field, et al. 2000). Since there was a lack of "soft science" cases related to admissibility, it was implied that perhaps the *Daubert* decision would, in fact, apply to such fields as rehabilitation as well. Feldbaum concluded that as a result of the *Daubert* standard "judges [were permitted] to render responsible rulings as to admissibility of vocational and rehabilitation expert testimony" (1997 p. 67). Finally, Feldbaum correctly argues that there was an interaction between the *Daubert* decision and the *Federal Rules of Evidence (FRE)*, especially *FRE 702*. As will be discussed, *FRE 702* addresses testimony related to scientific, technical, and other specialized knowledge; Feldbaum did not distinguish any real

Since the original *Daubert* decision in 1993, there have been subsequent decisions and several court cases which have modified and clarified the meaning and intent of *Daubert*. Rulings and cases are presented and discussed to provide clarification regarding the issue of admissible testimony of the forensic rehabilitation consultant.

difference between these three areas. Instead, Feldbaum argued that

> it is incumbent upon the vocational expert to understand thoroughly and articulate persuasively the scientific, technical, and other specialized knowledge that serve as an appropriate court-defensible foundation for their expert testimony....all of us are compelled to move with greater urgency in that direction. (p. 70)

Corresponding Views

Several other authors have also trumpeted the same general theme as articulated by Feldbaum. Mayer (1998) called for research as "a step toward substantiating a scientific base for vocational expert testimony" (p.15). Caragonne (2002, p.76) has suggested that "standards of evidentiary reliability are equally applied to scientific knowledge and technical and specialized knowledge offered by non-scientific experts," and emphasizes that all testimony will be evaluated by the four factors of the *Daubert* decision. Referencing a variety of activities performed by the VE in forensic settings (including labor market access, wage earning capacity, loss of earning capacity, transferability, job placement, and many more),Stein (2002) has taken the position that

> the methodology used must meet the primary criteria laid out by the US Supreme Court in *Daubert*(1993), *Joiner* (1996) and *Kumho Tire* (1999), A simple way of evaluating whether or not your method measures up to the established criteria is to ask yourself four basic *Daubert* questions: (1) Has your method been independently tested and is it scientifically reliable? (2) Has your method been subjected to peer review and published in a peer-reviewed journal? (3) What is the known error rate of your method and what standards does it use? and (4) Is your method commonly used and generally accepted in the field? (p. 9)

Stein again states his case more strongly with the conclusion: "To consider going to court with any methodology that does not meet at least the basic *Daubert* criteria could be ruinous to a VE's career" (p. 10). This point-of-view was echoed by Johnston (2003) who observes that "*Daubert* remains relatively new and as courts grasp how to handle witnesses, attorneys will respond accordingly with new challenges to block expert testimony" (p. 56).

Similarly, Bast, Williams and Dunn (2005) also have addressed the issue of scientific reliability and validity. "Because of recent court decisions [referring to the *Daubert* and *Kumho* decisions], understanding differences in methodology has become critical in forensic rehabilitation. [The decisions] place greater requirements on expert witnesses to demonstrate the scientific acceptability of the methods upon which opinions are based" (p. 11).

Daubert Moderated by Joiner and Kumho

A phenomenon which occurs rather frequently in the domain of judicial, political or legal decisions is change. Take for an example the Constitution of the United States; this great document was changed on occasion through amendments to the original. The federal laws enacted in the field of rehabilitation have changed dramatically from the early Federal Employee Worker's Compensation Act (1908) to the Ticket to Work Act (1999) (see the Summary of Vocational Rehabilitation Laws in Weed and Field, 2001, pp. 3-4). Likewise, it should come as no surprise that the *Daubert* ruling, a form of case law, would be amended, clarified and moderated over subsequent years through like-kind legal cases. Such as been the case with the *GE v. Joiner*—a case which defined more precisely the role of the judge as a "gatekeeper" with considerable discretion on testimony allowed or declined in court. *Kumho Tire v. Carmichael* also moderated the *Daubert* decision by allowing the trial judge more *leeway* in deciding which factors *may* apply in deciding the admissibility of testimony. With respect to the role of forensic rehabilitation testimony, certain factors become clearer in terms of credentials, preparation, issues of validity and reliability, methodology, and opinion development. Based on the cases now available on admissibility of expert testimony by the vocational or rehabilitation expert, it has become apparent that the *Daubert* decision was interpreted as too far-reaching with respect to cases involving non-science and non-causation issues. The *Daubert* decision, and the related rulings, will be discussed with consideration given to the evolving and moderating climate of the courts.

Daubert in Light of the Revised Federal Rules of Evidence - 702

Contrary to the previous section whereby selected authors placed more credence of the *Daubert* decision, it seems that the correct order of understanding appropriately developed and admissible testimony is predicated on the *FRE*, and most notably, *FRE 702* and *403*, which respectively read as follows:

> If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.
>
> Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence. (pp. 1-2)

Drawing from Field and Choppa (2005):

> This federal rule [*FRE 702*] is a very important rule for the rehabilitation counselor, case manager or other related professional. This rule clearly identifies areas of scientific, techni-

cal and specialized knowledge as legitimate domains for testimony that do not necessarily conflict with the *Daubert* factors. Noting that the expert can be qualified on the basis of knowledge, skill, experience, training and education, testimony must still address the salient facts of the case within the framework of a reliable methodology when applied to the facts of the case. It is this application of reliable facts and data to the case that requires the clinical judgment of the expert utilizing their specialized knowledge. (Weed & Field, 2001, p. 3)

With respect to *FRE 403*, an expert may be charged with wasting the court's time with needless information since information is often times already contained in the medical reports of the case (see *Hanford Nuclear*, 2005).

As noted in the *Kumho* ruling, "the *Daubert* gatekeeping obligation applies not only to scientific testimony, but to all expert testimony." The key word in *Rule 702* is the word "knowledge", not scientific, or technical, or specialized. Some knowledge is scientific, and in those cases the *Daubert* rule would more appropriately apply. In *Kumho*, the decision noted that "a trial judge determining the admissibility of.... testimony *may* (italicized in the written opinion for emphasis) consider one or more of the specific *Daubert* factors. The emphasis on the word "may" reflects *Daubert's* description of the *Rule 702* as a flexible one... the *Daubert* factors do not constitute a definite checklist or test. Some of those factors may be helpful in evaluating the reliability even of experienced-based expert testimony." It is only partially true that the *Daubert* factors must be applied in all cases (science or non-science):

> The [US Supreme Court] recognized the difficulty in applying specific criteria outlined in *Daubert* to all types of testimony. It held the four-part test outlined in *Daubert* was non-exclusive and a "flexible" approach to the assessment of reliability should be applied using factors appropriate to the particular case. In certain cases, virtually none of the specific criteria outlined in the *Daubert* case would be applicable. In those cases, the trial judge would be given broad discretion in considering other factors which might establish reliability for the specific type of expert testimony at issue. (Burnette, 2000, p. 10)

In *USA v. Cordoba* (1997) the court "observed that *Daubert* applies only to the admission of scientific testimony... in order to qualify as scientific knowledge, an inference or assertion must be derived from the scientific method." In this case the witness testified on the basis of specialized knowledge and not scientific knowledge. The court ruled that *Daubert* did not apply.

In *McCullock v. H.B. Fuller Company* (1994) an expert on fumes and glue was disallowed due to a "lack of necessary qualifications." On re-trial the same expert's testimony was allowed based on his "extensive experience... and knowledge gained through experience, training and education." In the same case, a second expert, a medical doctor, challenged on his opinion which was considered to be unscientific, was allowed to testify. The court ruled that the range of factors (care and treatment, diagnosis and etiology, medical history, pathological studies, and the expert's training and experience, (a) "go to the weight of the opinion" and (b) was considered useful to the trier of fact.

The foregoing seems to support the premise that *FRE 702* is an important and prevailing guideline in the development of expert opinion. Being held to the strict interpretation of the four *Daubert* factors is relevant in cases requiring the scientific method, and much more latitude is given in cases involving non-science issues. It would appear that *Daubert* is an important ruling regarding the admissibility of evidence, but the *Daubert* factors are not mutually exclusive to any other factors (science, technical, or specialized knowledge) which may assist the trier of fact in determining an outcome. The reliance on reliable and relevant principles and methods are critical to the work of the qualified expert who will be distinguished by such credentialing factors as knowledge, skill, experience, training, or education. Equally important is to develop opinion predicated on valid, reliable and relevant information which will be consistent with the facts of the case. The application of relevant information may require clinical judgment.

Defining Clinical Judgment

For purposes of this discussion, clinical judgment is defined as follows: According to the New American Dictionary (1953) *clinical* is defined as... "involving direct observation of the patient, diagnosable by, or based on clinical observation, coolly dispassionate, analytical...." *Judgment* is an... "authoritative opinion, the process of forming an opinion or evaluation by discerning and comparing: the capacity for judging, a proposition stating something believed or asserted...." Consider that the following expands upon the dual concept with relevant language drawn primarily from *FRE 702*.

> Clinical judgment requires that the final opinion be predicated on valid, reliable and relevant foundation information and data that are scientifically established through theory and technique building which has been tested, peer reviewed, and published, with known error rates, and is generally accepted within the professional community. In cases where any of the above factors do not apply, but other factors have greater relevance, the expert will rely on these other factors within a methodological approach, based on the expert's knowledge, skill, experience, training, or education in order to assist the trier of fact to reach a conclusion. Therefore, clinical judgment, which is the extension of the credentialing factors of the expert, encompasses all relevant factors germane to the weight of the case while discarding those factors which are not relevant, and which are allowed by the court. (Choppa, et al., 2004, p. 135)

Clinical judgment may incorporate

such activities as direct observation, diagnosis (vocational evaluation and assessment), dispassionate (objective) and analytical observations, discerning and comparing (evaluating and synthesizing varieties of information), in order to assert a proposition (opinion) about the client. This model is really not unlike a medical model, which requires much of the same experience, and knowledge based activities requiring judgment, albeit based on as many objective findings as reasonable.

Formulating an opinion about a client is basically a three-part process: (1) understand the client (background information, previous medical history, employment history, etc.), (2) understand the client's current situation (the client's current medical or employment status, restrictions due to disabling conditions, and relevant evaluations), and (3) forming an opinion regarding the client's potential future needs (in the areas of medical, psychosocial care, and/or employment). In effect, this is not too dissimilar from the medical model's diagnostic—treatment—prognosis approach; decision-making in either the medical area or the rehabilitation area require both a review of valid, reliable and relevant objective findings, utilizing "clinical judgment" to understand the relevance and weight of the information and data in forming an opinion about the client's future. This is not to purport *how* our daily work with clients should be done, but rather, describes how our daily work *is* done. This approach is not unique, created for, nor isolated to the forensic setting, but is the methodology of our clinical practice with clients. "Clinical judgment is experience understood" (Moses, 1996, p. 3).

Science, and the scientific method, is not relevant in all cases—particularly in the social science domain. In the areas of client services (clinical practice) and forensic rehabilitation consulting, clinical judgment on the part of the professional combined with technical data is an equally appropriate application in the forensic arena as in the practitioner's daily clinical work with clients. A knowledge oriented, not just task oriented approach (Downie & MacNaughton, 2000).

In the field of forensic rehabilitation consulting, clinical judgment on the part of the expert would seem to be the more appropriate course. On the other hand, professional clinical judgment should always be predicated on evidence-based science whenever reasonable. The proposition of clinical judgment is not necessarily in opposition to science, or the scientific method. Quite the contrary, professionals should be encouraged to rely on science based information and data, and apply "any other factors" to the case as is deemed necessary through clinical judgment.

The Interplay of Science and Clinical Judgment

The *Daubert* ruling was clearly a landmark decision by the US Supreme Court. It has been shown that the *Daubert* factors are relevant in cases pertaining to science and causation (Field & Stein, 2000). On the other hand, it has also been shown that other factors may prevail at the discretion of the court when the *Daubert* factors are not relevant to the facts of the case. *Kumho Tire v. Carmichael* established once again the importance of a reliable and relevant methodology in performing evaluations and developing testimony. While *Kumho* provided *leeway* in the factors that *may* be permitted by the court, testimony needs to be within the bounds of a reliable and relevant methodology. Since not all testimony is bound or required by the *Daubert* factors, there is leeway for opinion that is the product of a qualified expert who relies upon these salient factors under *Kumho* within the domain of technical and specialized knowledge (i.e., professional clinical judgment). The forensic rehabilitation consultant learns how to address information, data, and resources in a variety of ways that will incorporate both scientific conclusions as well as clinical impressions of a more subjective, but relevant nature (Barros-Baily & Neulicht, 2005; Countiss & Deutsch, 2002).

The Software Program Issue

In recent years there has been considerable debate on the issue of vocational software programs with regard to validity and reliability (Special Issue in *JFVA, 5*(1), 2002; Dennis & Dennis, 1998; McCroskey, 2003; & Stein, 2002). As already noted, logically speaking all the programs can easily demonstrate reliability (Field & Choppa, 2005, p. 24). The proponents of software validity propose that only software which has been statistically validated, including measures of standard error, are appropriate for use in vocational assessment. If, as suggested by Field and Choppa (2005), the software is used as a predictor of outcome, it makes sense to validate the resource. If, on the other hand, vocational software is used as a resource, as a means to process information, and is governed by clinical experience and judgment, then the software is just that: a resource to assist in the development of a vocational opinion.

In consideration of software use, two factors need consideration. Part of the validity of any resource is to examine the strengths and weaknesses of the data inherent to the process. In the case of current vocational software programs, each is predicated on an obviously obsolete database (the *Dictionary of Occupational Titles*, 1991). This database, which was developed by the US Department of Labor, was essentially abandoned following the 1991 edition and replaced soon after with the all new *O*NET*. To rehabilitation professionals, it became readily apparent that the *O*NET* was not suitable for forensics purposes (Field & Field, 2004; Stein, 2002; Truthan & Karman, 2003). Consequently, the aging *DOT* was basically the only alternative. The Social Security Disability Insurance program under Social Security issued a Policy Interpretation (00-4p) which authorized the continued use of the *DOT* with the Bureau of Hearings and Appeals (Field & Field, 2004). In the meantime, McCroskey, Hahn and Dennis (2000) claim to have singlehandedly revised the *DOT* for use with the MVQS system. This valiant effort

and other related attempts have not been recognized by either the US DOL or SSA and, in fact, the SSA has developed a RFP proposal which would address the task of revising and updating the *DOT* (pending funding).

The controversy and debate over the software programs may be largely irrelevant, however. In a recent article on transferability, Kontosh and Wheaton (2003) report on a survey of vocational experts (members of the Forensic Section of the International Association of Rehabilitation Professionals) involving 13,164 forensic cases of which 8,484 of the cases involved a transferable skills analysis (TSA). Of those cases, only 3,727 (or 44%) cases used a software program in the TSA analysis. Conversely, 56% of all the cases did not use a software program with practitioners completing the "TSA manually using any of several methods, such as the VDARE (Sink & Field, 1981; Weed, 1996; see also Havranek, Field & Grimes, 2005; Weed, 2004; and also PEEDS-RAPEL, Neulicht & Berens, 2005), or using their own system based on 'experience and training'" (p. 43). The case of *Kinnaman v. Ford Motor Company* involved the use of a computer program which was disallowed for failure to "meet a proper standard of reliability." In an earlier case involving a computer program (*Perez v. IBP, Inc.*, 1991), it was the court's opinion "that a much more specific foundation, regarding the acceptance of this computer program within the field of vocational rehabilitation, must be provided before the court will consider the program's output to have probative value." Such cases brought some concern to the forensic rehabilitation consultants who considered using computer output as the basis of their testimony. Obviously there is a clear trend by professionals away from software use and dependence toward an approach based on education, training, experience, and clinical judgment (Field & Choppa, 2005).

Methodology

The *Daubert* decision emphasized the requirement for a sound methodology in the development of expert opinion. The four *Daubert* factors stand tall as the basic guideline in establishing a valid and reliable methodology as a means of arriving at an acceptable conclusion. The traditional notion of the scientific method is central to this process in understanding, with validity and reliability, the issue at hand. In *Daubert,* the main issue was reliably linking a known substance (Bendectin) with the causes of a known outcome (deformity). The *Kumho* decision also emphasized the requirement for sound methodology, although the decision noted that other factors *may* apply by the trial judge who possesses considerable *leeway* in evaluating testimony given the facts of the case. The *Paoli* decision (1994) also suggested a list of factors, in addition to the *Daubert* factors, that a trial judge could consider in determining admissibility. The *Paoli* suggestions included the relationship of the technique to methods which have already been established to be reliable, the qualifications of experts relative to the methodology, and the non-judicial use of the method in question.

With respect to methodology and relevant factors for the expert in the social sciences, Isom (2001) has offered the following observation:

> The VE must understand the method of evaluation, and the principles used in their assessment. The VE must have an awareness of a method's validity and reliability, and whether the method or theory have been published and subjected to peer review. Lastly the VE should have experience in the utilization of the principle and method utilized. (p. 23)

Validity, Reliability and Relevance

The constructs of validity, reliability and relevance are contained in the *Daubert* decision as important and essential ingredients related to scientific testimony, although Feldbaum (1997) noted that the "threshold standard for admissibility is much less clear when one addresses social science evidence" (p. 58). Several writers (Caragonne, 2002; Dennis & Dennis, 1998; Mayer, 1998; McCroskey, et al., 2003; & Stein, 2002) have emphasized the importance of the validity component as if all testimony, including the social sciences, is subject to scientific validity. McCroskey, et al. (2003, p. 57) has suggested that "expert testimony has been challenged under *Daubert* and must now have a reliable basis founded in the scientific method. Research on the reliability and validity of our tools and methodologies is necessary to establish a reliable basis for testimony." Continuing the argument for the importance of validity, Mayer (1998) writes that [validity] "is a salient concept representing the degree to which a method, procedure, or instrument accurately accomplishes what it purports to do. If validity is not established, a test for reliability has no meaning or significance" (p. 4).

As discussed by both McCroskey et al. (2003) and Saxon, Alston and Holbert (1994), there are several different forms of validity, a few of which are not statistical or given to the scientific method. To the contrary, two such approaches to validity are referred to as content or face validity (employing recognized experts to evaluate a procedure or method and agreement to its efficacy by consensus). Not all tests, measures, procedures or methodologies have to reach to level of predictive or construct validity as measured by statistics. Such is the case in the social sciences and in the field of forensic rehabilitation, in particular (Field & Choppa, 2005).

To the contrary, Field, Johnson, Schmidt and Van de Bittner (2006) compiled a summary of 61 methods and protocols all taken from recently published rehabilitation literature. The selection of such items had to meet the two *Daubert* standards of general acceptance and peer review for inclusion in the publication. As suggested by Staller (2002)

> It is hard to imagine that any vocational expert's opinion could, given the 'soft' nature of the science of vocational analysis, yield an objective, reproducible test of an injured person's future employment capa-

bilities—there are simply too many unpredictable variables involved. Maybe the best test of admissibility would be to ascertain how heavily the testimony is based on unsupported conjecture, rather than trying to judge non-scientific analysis by the standards of scientific analysis. The only *Daubert* factors that reasonably relate to economic and vocational testimony are peer review and general acceptability. (p. 2)

A review of these selections revealed a large number of methods, procedures, protocols, worksheets and checklists which are widely available to the forensic rehabilitation community. Nearly all of the items lacked any statistical analysis related to validity; on the other hand, all of the items are within the realm of general acceptance, peer review, and publication. Resources of this nature for the soft science area of forensic rehabilitation are not standardized instruments (tests and measures), but rather, are generally recognized by the profession which involve a time-honored approach to organizing, synthesizing, and interpreting information from a variety of sources (i.e., a clinical judgment approach). As Feldbaum (1997) so correctly pointed out in referencing *Cantrell v. GAF Corp* (1993) "the appellate court noted that the [medical] expert's testimony was appropriately admitted at trial, stating that nothing in *Rule 702* or *703* or in *Daubert* prohibits an expert from testifying to confirmatory data gained through his own clinical experience" (p. 6).

Reliability reflects the consistency with which information is addressed. A good example of reliability is displayed through the use of any of the commercial software programs designed for transferable skills analysis and job matching. Since the software programs are basically an algorithm, it is very easy to illustrate the 100% reliability of any of the programs by simply typing in, over and over, the very same data; the results will always be the same—every time. Within the experience of clinical judgment, a professional can reliably approach each and every case with a certain degree of reliability. To be sure, there are different ways and approaches to achieve a particular task and it is obvious and generally accepted that different experts will approach a case differently with different results. The special issue (Weed, Guest Ed., *JFVA*, 5(1), 2002) on "transferable skills" demonstrated the different approaches to the task, each with their own degree of validity, reliability and relevance. Different expert opinions are then addressed though depositions, presentations at trial, and through the final decision by the jury, depending on the facts of the case.

The last consideration is that of relevance. Whatever an expert does in developing a case must be related to the facts of the case. Methods and/or protocols which are selected, including any tests or measures of behavior, should be reliably conducted to address the facts as understood. Finally, Choppa, et al. (2004) discusses the clinical context in which testimony and opinion is developed. With the proper foundations derived from a variety of sources, including medical reports, vocational testing and assessment reports, methods and procedures, and all relevant data and information, the professional formulates an opinion based upon all of these factors as they relate to the facts of the case. Taking into account all of the relevant parameters set forth by the court decisions, the *Federal Rules of Evidence*, foundation data and information, any client specific evaluations and assessments, and within the realm of professional clinical judgment, the expert arrives at conclusions on a case.

Tests and Measures

The broad field of the social sciences has yielded scores of tests and measures for the social and behavioral disciplines. Standardized testing and evaluation is a time-honored approach to assessing levels of intelligence, academic and educational achievement, personality factors, and psychological and vocational functioning. The traditional measures in these areas have been validated through multiple studies including the use of statistics to establish validity, reliability and error rates in order to insure credibility of the instruments. When professionals use tests and measures for purposes of evaluation and prediction, reliable assessment procedures should be used if at all possible. Feldbaum called for more research in resource validation of measures in the rehabilitation assessment area which is, without doubt, a worthy and necessary objective. Validity, however, does not always have to be established by statistics. "Testifying experts may also show the validity of their theory by explaining precisely how [the experts] went about reaching conclusions and pointing to some objective source—a learned treatise, the policy statement of a professional association, a published article in a reputable scientific journal or the like – to show that they have followed the scientific method as it is practiced by (at least) a recognized minority of scientists in their field" (*Domingo v. T.K.*, 2002, as cited in Field, 2002, p. 24).

Dominick (2004) has suggested that vocational experts be familiar with such characteristics as measurement theories (being able to explain the test theory), issues of validity and reliability of the test, and the appropriate use of the test. When using non-validated items, such as many of the methods and protocols available to the rehabilitation profession (Field, Johnson, Schmidt & Van de Bittner, 2006), it is prudent for the vocational expert to be aware of the literature surrounding each procedure, including peer reviewed publications. For a related discussion on the general topic of functional capacity evaluations as they relate to admissibility issues, review the special issue on the topic (Gibson, 2004).

Relevant Court Cases

Field and Choppa (2005) completed a review of as many vocational cases that could be found as of 2005 (there probably were many more cases within the legal system, but these cases were reported on legal search sites and related professional literature). This re-

view indicated that there was no one case where a federal court disallowed the testimony of a forensic rehabilitation consultant on the combined four factors under *Daubert* with the possible exception of the *Kinnaman v. Ford Motor* case. The courts seemingly, and maybe purposefully, have recognized that the work of the rehabilitation consultant does not always fall under the rubric of the *Daubert* factors (an observation made also by Feldbaum, 1997, p. 58), but more appropriately fall under the purview of the *Kumho* ruling which allows for other factors to be considered that may be more relevant to the facts of the case. It may be argued that some of the disallowed testimony cited in the following cases was the result of an evaluation under *Daubert.* An alternate view might suggest that the testimony disallowed was simply due to errors on the part of the consultant, and in some cases, this was true.

No cases were found where testimony was disallowed due to the rehabilitation consultant's failure to provide information on either the scientific method or an error rate. A review of several of these cases will illustrate areas of strength and weakness on the part of the rehabilitation consultant. Overall it would appear that the courts have been rather lenient with rehabilitation consultants in areas of credentials and methodology. In some instances, however, the courts have been somewhat forceful when consultants have failed to adequately prepare and define their opinion. None of these cases directly involved the four factors under *Daubert.*

Cases Involving Credentials

The credentials of a vocational expert are usually the first area of concern. Proper credentials are essential in order to be qualified as an expert, especially as defined by *FRE 702* – a person possessing scientific, technical or other specialized knowledge. Rehabilitation consultants are not empirical scientists and generally have not been called upon to provide scientific findings in their testimony (Janikowski & Riggar, 1999). On the other hand, Kontosh and Wheaton (2003) propose the need for further research in the transferability area which would yield a "standard of practice" (p. 46) for the profession of forensic rehabilitation consulting.

Waldorf v. Shuta (1997) was one of the first cases post-*Daubert* to challenge the credentials of a rehabilitation expert. Rizzo, who had a master's degree in sociology, but no formal education in the field of rehabilitation, was allowed to testify even though his credentials were described by the court as "a little thin." In *Duncan v. WMATA* (Washington Metropolitan Area Transit Authority, 2002) the appeals court vacated a jury verdict because there was a need for a vocational expert to provide specific information about jobs in the plaintiff's geographical area. In *Davis & Duke v. USA Truck, Inc.* (1999) the vocational expert was challenged on credentials since her "opinion was not based on any scientifically valid reason." The court allowed a well qualified (a strong background in education, experience, and professional activity) expert to testify. In *Fairchild v. USA* (1991), an expert was not allowed to testify in a case involving a life care plan. The court determined that the expert "possessed minimal credentials, including attendance at two seminars and the author of only 25 other life care plans." One of the expert's recommendations was for 2,496 sessions of recreational therapy for the plaintiff—an opinion that was refuted as detrimental by a medical expert. In *Goodenow v. Siemens Information and Communications Networks, Inc.* (2001) an expert's credentials were challenged purporting the expert had insufficient knowledge to adequately make conclusions. The defendant's *in limine* motion was denied. In *Elliott v. United States* (1992), the plaintiff's life care plan was selected over the defense's expert because the plaintiff's expert had personally visited both the doctor and the client and had also completed many life care plans, including the implementation of plans in the past. On the other hand, the defense's expert had only been a rehabilitation consultant for a short period of time, had completed only five life care plans, and had never implemented a plan.

In a more recent case (*Taylor v. American Fabritech, Inc.,* 2004), four different experts, a construction safety expert, a psychologist, an economist, and a life care planner were all allowed to testify following an objection to experts' testimonies because of the unreliability, that is, failure to rely on "specific scientific research and studies but on their on experience, education, and review of the literature in their fields." In the testimony of the life care planner, the court ruled that the expert's testimony "was reliable as based on his training and experience in the field." Testimony of the other three experts was allowed as well with similar rationale. Specifically, the court ruled that the scientific "factors will not always be relevant to the inquiry, particularly when the proffered testimony is based not on scientific research or theories but on the expert's experience and knowledge in his or her field."

Finally, Choppa, a vocational expert in *Hanford Nuclear* (2004), with a trial date in late 2005, was identified as nothing more than "an information coordinator and scrivener" along with several other complaints about his testimony being "unreliable, opinion and not expert testimony, and the offering personal observations as a guise for expert testimony." All of these complaints and objections were over-ruled by the court and Choppa was allowed to testify (Choppa, Field & Johnson, 2005).

Cases Addressing Foundation Information and Data

A growing list of cases point out the importance of utilizing relevant and reliable background information and/or data. In *Phillips v. Industrial Machine* (1999) the vocational expert offered opinion based upon the *New Work Life Tables* (Gamboa, 1998) regarding reduced work life expectancy. The court ruled that the expert by using these tables failed to provide the necessary and proper foundation for opinion. Testimony was disallowed.

An economist's testimony, in *Joy v. Bell Helicopter Textron, Inc.,* (1993) was denied as too speculative. The court ruled that testimony must be based on "knowledge and that knowledge connotes more than subjective belief and unsupported conclusions." In *Archer v. Warren and Warren,* (2001) the defense objected to a rehabilitation nurse testifying about a life care plan that the nurse had personally developed. The defense contended that the nurse "was not qualified about the necessity for certain medical care." The nurse based her work and opinion on medical records, including the condition and needs of the plaintiff, and itemized the cost of future medical care that would be needed. The nurse was permitted to testify. In *Frick v. KMart Corp.,* (1997) the life care planner's testimony was disallowed because the expert's opinion was based solely on judgmental skills and did not use medical foundation information for the opinion, and furthermore, that the expert did not appear to use established and published procedures which were subjected to peer review, or a method which was used by other professionals in the field. *In Hough-Scoma v. Wal-Mart,* (1999) the vocational expert used the *New Work Life Tables* (Gamboa, 1998) with global estimates of disability, which the court considered "inappropriate." As a result, a motion was granted to reduce the amount of the jury award to the plaintiff. To re-emphasize, use of relevant, reliable, and appropriate foundation information is essential to testimony.

Finally, in *Boucher v. US Suzuki Motor Corp.* (1996) the vocational expert assumed that the plaintiff would be able to work full time at competitive wages and benefits following a very broken and erratic history of employment. Testimony was disallowed due to a lack of sufficient factual foundation. In the same case, the court allowed the expert to testify on the work- life expectancy of the plaintiff by using the published worklife tables by the US Department of Labor. Given the variety of data and information which are available to forensic consultants, no cases were disallowed when an expert relied on government produced resources. The court in *Phillips v. Industrial Machine* (1999) addressed "the reliance of expert witnesses on worklife tables that are published by Bureau of Labor Statistics, and have stated that such tables are generally considered to be reliable." The same conclusion on the same data was reached in *Boucher v. U.S. Suzuki* and in *Schieber v. City of Philadelphia* (2000).

Cases Involving Methodology

Sometimes vocational experts are not allowed to testify because of lack of proper preparation, not completing work carefully, or simply not being able to provide answers regarding questions about their opinion. In *Fashauer v. New Jersey Transit Rail Corporation* (1995), the vocational expert testified about future employment based upon one phone call the day before the trial. The court observed that the expert's "testimony was so ludicrous that it is just inconceivable to me that the jury got anything out of it." The testimony was disallowed. In *Elcock v. Kmart Corporation,* (2000) the expert attempted to explain a hybrid methodology consisting of two "valid non-scientific methods." The court ruled that the expert failed to adequately explain the hybrid method, and the testimony was discarded. In *Kinnaman v. Ford Motor Company* (2000) the court was not obligated to accept the *Daubert* criteria, but found it important to do so in this case since the testimony of the vocational expert was considered to be unreliable. The expert, who used a website computer program in developing testimony, was "unaware of any literature in the field that supported this methodology... including any evidence of peer review, publications, or known error rate." Defendant's motion to strike the testimony was granted. In *Frick v. Kmart Corporation,* (1997) the expert's testimony was not admissible since the expert "was unable to cite any scientific studies that would justify the conclusions." The expert testified that his opinion was "based on his knowledge, training, and experience... and not on any scientific principles." In *Huey v. United Parcel Services, Inc.* (2000), an expert predicated his testimony on one conversation with the plaintiff and the reading of a few documents. The court ruled that the expert failed to exhibit any expertise in the scientific, technical or other specialized knowledge as set forth in *FRE 702.* Testimony was rejected. In *EEOC v. Rockwell,* (1999) the vocational expert listed only jobs by title from the *Dictionary of Occupational Titles* (1991), and did not provide any job information from the plaintiff's geographical labor market. Testimony was inadmissible and dismissed. For cases involving issues related to methodology and reliability, *Archer v. Warren* is an instructive case whereby the expert was allowed to offer testimony following a protracted attempt to discredit the expert's testimony (see also Countiss, 2000). In the case of *T.H. et al. v. Asarco Inc. et al.* (2003) the defense attempted to preclude the testimony of a vocational expert because the expert failed to follow standard methodology in assessing the future earnings capacity of a child. Testimony was allowed.

Finally, in *Zarzycki v. United Technologies,* (1998) the vocational expert did not consider a specific labor market, but rather, simply listed some jobs from the *Dictionary of Occupational Titles* (1991) which were not actual jobs existing in the local labor market. This testimony was excluded. The basic themes of the cases cited above involving a vocational expert centered on issues related to appropriate credentials, the proper use of foundation information, and in the adequate preparation and delivery of testimony. None of the cases involved a determination of the *Daubert* factors except for the *Kinnaman v. Ford Motor Company* (2000). In this case, the court ruled that there was no choice since there was no other relevant criteria by which to judge. The cases involving related background information and data, and some of the obvious mistakes were more directly to a lack of proper attention to *Federal Rule 702*; a strict interpretation of *Daubert* appears to not relate significantly to the work of the rehabilitation

consultant. In fact, if the rehabilitation experts in all of these cases applied sound clinical judgment, as defined previously, there probably would have been little opportunity for a reasonable challenge, requiring the court to deny vocational testimony. The application of professional clinical judgment in these cases would surely have prevented some, if not all, of the mistakes.

Suggested Guidelines for Rehabilitation Consultants Serving as Experts in Forensic Cases

Following the *Daubert* decision, and the subsequent decisions of *Paoli*, *Joiner* and *Kumho*, and taking into consideration the *Federal Rules of Evidence*, especially, *Rules 702* and *403*, and from a review of several court cases involving a rehabilitation consultant, it is possible to have a greater sense of what is expected and required regarding soft science testimony. For the forensic rehabilitation consultant there are some obvious considerations when developing an opinion for testimony at either deposition or trial. Based upon this earlier discussion of many factors, the following items are adapted and revised from Choppa, et al. (2004):

1. Know the law: Be familiar with the original US Supreme Court rulings, the *Federal Rules of Evidence*, federal and state regulations and guidelines germane to your area(s) of work, and relevant case law and rulings, all of which contribute to defining the proper role for the forensic expert. Simply put, understand the meaning and intent of these resources, and especially how rules and decisions are generally modified over time. Understand how the courts are interpreting the decisions and rules across specific cases which are adjudicated. Learn to take a "long look" at all the evidence for a more accurate understanding of the courts' direction.

2. Achieve appropriate credentials. Relevant academic degrees, training, skills and experience are all important as a means to establish one's credentials. Relevant certifications and certification maintenance are also important, as well as being active in one or more professional associations.

3. Stay Current: Through membership in professional associations, an expert can have access to relevant literature and peer reviewed publications. Attendance at regional and national conferences is an excellent way to stay current with the thinking and activities within the profession. Such documents as "Standards of Practice", "Scope of Practice", and "Ethics Statements", usually developed by professional associations, are resources which help to define an area of expertise and the role of the consultant. Through exposure to reading and networking, learning from past mistakes, and attempting to understand "what has worked" by evaluating your work and the work of others, all are useful activities. In development of opinion for testimony, be knowledgeable about the sources of procedures and methods used, such as journal articles, learned treatises, and/or textbooks.

4. Develop and use reliable methodologies: Be reminded that the dichotomy between science and clinical practice may be more imagined than real. Being mindful of the *Daubert* decision, the expert must rely on relevant scientific evidence and foundation information, including peer reviewed approaches and methods which are generally accepted by the professional community. When the *Daubert* factors do not appear to apply, other factors may be considered which would include activities and considerations relative to professional clinical judgment involving specialized knowledge. The two *Daubert* factors that are most relevant to the work of the forensic rehabilitation consultant are (a) methods and approaches that have been generally accepted, and (b) peer reviewed and published. Utilizing "mainstream" approaches, methods, procedures, resources, foundation data and information makes sense and certainly will be more defensible.

5. Rely on reliable, relevant and well established foundation information: Foundation information is important in the development of opinion and testimony and includes such items as medical, psychological and vocational reports, lab and other specialized reports, government and privately developed survey data and information, and any other source which could contribute to the efficacy of opinion. Important to this suggestion is to rely on evidence-based information, and to apply other factors related to the facts of the case through professional clinical judgment. Rely on data and information from federal and state resources which are generally accepted in the courts.

6. Know your area of expertise: Testifying or developing testimony outside one's area of expertise (usually defined by one's credentials and professional affiliations) is putting the testimony at risk. Know your area of expertise and stick to it.

7. Relate testimony to the facts of the case: Understand and follow the fact pattern of the case. Accurately understanding the facts and testifying thereto is important.

8. Testimony should relate to routine clinical practice. Finally, develop testimony and plans of action which are consistent with your clinical practice, especially in how you routinely work with clients in or outside of litigation. Be advised not to develop a method or an approach just for a particular court case.

Conclusion

Referencing Feldbaum's landmark article, Feldbaum poses an interesting question:

> A key question remains, and upon which the *Daubert* Court was particularly silent, is whether expert testimony of a technical nature or testimony based on other specialized knowledge will be held to the same threshold for admissibility as the sciences under *Daubert*?" (1997, p.60)

It seems that the answer, after a decade of writing, court cases, and much debate, is "No", the technical expert with specialized knowledge is not held to the same threshold of admissibility as may be required of an expert in

a science case. Based on four distinct developments, the answer has been adequately answered—until things and events change within the legal and forensic client climate. As Weed (2004) has correctly observed, "the days are numbered for rehabilitation experts who simply attempt to justify opinions based on 'my education and experience' without having supporting documentation or substantial clinical experience" (p. 78). On the other hand, Bernstein (1998) observed that "to apply the four *Daubert* factors to non-scientific testimony would mean excluding all non-scientific expert testimony" (p. 14). But what exactly does this all mean to the forensic rehabilitation consultant; it seems that a few items should be clear to the profession following a decade or more of the *Daubert* decision.

First, the *Daubert* decision has clearly been moderated by subsequent decisions, and revision of the rules and procedures. *Paoli* clarified *Daubert,* and *Joiner* and *Kumho* further moderated the *Daubert* decision. *Daubert* was intended to address issues involving science and causation; the other rulings helped to clarify the criteria for admission of soft science testimony.

Secondly, even with the *Daubert* decision being considered, and well it should be, the two criteria which are most directly related to the soft sciences, and to forensic rehabilitation in particular, have to do with the general acceptance of a method or approach, and whether that method or approach has been peer reviewed and published.

Third, a review of approximately 40 cases involving the forensic vocational expert reveals that the four *Daubert* criteria have not really been an issue. More germane to the admissibility of testimony by rehabilitation experts have to do more with credentials, generally accepted and peer reviewed methodology, the proper use of foundation data and information, and the proper use of resources in the formulation of opinion related to the facts of the case.

Finally, testimony of a forensic rehabilitation consultant is a process involving professional clinical judgment. As shown by the *Hanford* case, the role of the vocational expert is far more than just gathering and coordinating information. The role of the vocational expert involves the gathering of information, organizing and synthesizing the information toward a plan which includes decisions regarding the future treatment course of the rehabilitation client. The process includes an understanding of residual functioning and work capacity of the client, an understanding of future potential to work and earn money, and an awareness of how to arrive at decision points by employing professional clinical judgment. In terms of the *Daubert* decision and the subsequent rulings, there has been a moderating and clarifying process which directly influences how soft science cases should be addressed by forensic rehabilitation professionals.

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The Rehabilitation Professional 18(1), pp. 11–18

ADA Amendments Act of 2008: A Pocket Guide for Rehabilitation Professionals

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In 2008 the U.S. Congress enacted major amendments to the 1990 Americans with Disabilities Act. The reasons for these amendments, provisions which favor individuals with disabilities, provisions which favor employers, observations of the legislative process, and the net effects are outlined in this article. Rehabilitation professionals can reasonably expect an up tick in EEOC and litigation activity. Their expertise in training implementation, mediation, and expert witness roles is likely to increase.

This is intended as an educational primer in the history and significant specifics of the ADA Amendments Act of 2008 (ADAA, P.L. 110-325). It is prudent to begin with a review of Title I of the Americans with Disabilities Act of 1990 (ADA, P.L. 101-336) which was enacted in 1990:

1. All personnel actions must be unrelated to the existence or consequence of disability.
2. In your human resources manual, every policy and procedure may be subject to reasonable accommodation when applied to a qualified individual with a disability.
3. ADA is an anti-discrimination law and not an affirmative action law with goals, objectives or timetables. As such, its original intent is to reduce and eventually eliminate discrimination in employment and public access.

To be sure this is an oversimplification of the ADA which is comprised of the statute itself, regulations for each of the five titles, interpretive guidelines, and a technical assistance manual (all are available for download at http://www.adata.org). The ADA was the most ambitious civil rights law in U.S. history since the 1964 Civil Rights Act. The ADA passed both the House and Senate by large bipartisan majorities. Whereas the ADAA is also important, it addresses mostly Title I (Employment Provisions) of the Act which suggests that the remaining four titles (mostly public access provisions) were working rather well. This is worth noting to correct any misconception that the ADA was somehow "broken."

How and Why the ADAA Came About

Since 1990, the courts were struggling with a consistent interpretation of the basic definition of "disability." Nine years after passage, a series of Supreme Court decisions narrowed the definition, and by extension the number of people protected, in ways that Congress never intended. In 1999, the Court ruled that mitigating measures—medication, prosthetics, hearing aids, other auxiliary devices, diet and exercise, or any other treatment—must be considered in determining whether an individual has a disability under the ADA. This meant people with serious health conditions who were fortunate enough to find a treatment that makes them more capable and independent—and more able to work—often found that they were not protected by the ADA at all. These three court cases— Sutton v. United Airlines, Inc., 527 U.S. 471 (1999); Murphy v. United Parcel Service, 527 U.S. 516 (1999); Albertsons v. Kirkingburg, 527 U.S. 555 (1999) —became know as the "Sutton Trilogy." The knockout punch arrived in 2002 when the Supreme Court stated that courts should interpret the definition of "disability" strictly in order to create a demanding standard for qualifying as disabled. This was the case of Toyota Motor Manufacturing v. Williams, 534 U.S. 184, 197 (2002).

The net effect of these restrictive rulings was obvious. The very people whom Congress intended to protect – those with epilepsy, diabetes, cancer, HIV, mental illness – were suddenly denied protection from disability discrimination. In a "post-Sutton" society, the person is impaired but not impaired enough to

substantially limit a major life activity (like walking or working), or the impairment substantially limits something — like liver function - - that does not qualify as a "major life activity." In brief, far fewer people could meet the new definition of "disability" even when they were clearly discriminated against because of it. The result was a Catch-22 situation in which an employer may say a person is "too disabled" to do the job but not "disabled enough" to be protected by the law. This is not what Congress intended (Blanck, Hill, Siegal and Waterstone, 2004). The scope of the ADA suddenly narrowed such that both litigation and formal complaint activity with the Equal Employment Opportunity Commission (EEOC) began to plummet.

Is there a real life example that would illustrate the Catch-22? There are many, some of which were presented in Congressional hearings regarding the ADAA, such as Littleton v. Walmart Stores, 231 Fed.Appx. 874 (11th cir. 2007) or McClure v. General Motors 75 Fed.Appx 983 (5th cir. 2003). The case of Stephen Orr provides perhaps the best illustration — Orr v. Wal-Mart Stores, Inc., 297 F.3d 720, 722 (8th Cir. 2002):

Stephen Orr was a pharmacist at Wal-Mart in Chandron, Nebraska, a town of 6,000 nestled in the rural northwestern part of the state. Stephen was hired in early 1998. During his interview, he told his soon-to-be boss that he had diabetes and needed to take regular, uninterrupted lunch breaks. Stephen was authorized to take a 30-minute lunch break during his ten-hour work shift.

Doctors diagnosed Stephen with diabetes in 1986. He requires multiple injections of insulin daily and uses a device called a glucometer to monitor his blood sugar levels. In order to keep his blood sugar stable, Stephen follows a regimented diet, monitoring what and when he eats in coordination with his medication regimen. If he does not, he experiences episodes of either hypoglycemia (low blood sugar) or hyperglycemia (high blood sugar).

When his blood sugar levels are not in his target range, Stephen experiences:

- seizures;
- deteriorated vision;
- trouble talking;
- the need to urinate frequently;
- loss of consciousness;
- lack of physical strength and energy;
- coordination problems;
- difficulty reading or typing; and
- impaired concentration and memory.

Complications caused by fluctuating blood sugar levels can, and have, resulted in hospitalization.

After he started working, Stephen took lunch breaks as agreed, closing the pharmacy to eat without being interrupted. During this time, Stephen did not experience severe hypoglycemia and performed his job well. No one complained about the pharmacy being closed for the half hour that Stephen was taking lunch. When a new district manager took over, he told Stephen to stop closing the pharmacy, and to eat lunch whenever possible during down times in the pharmacy.

Stephen obeyed this order, but started having problems with low blood sugar because he was no longer able to control the times that he ate. Stephen told his new boss that, because of the no-lunch-break order, he had experienced several hypoglycemic incidents and that he needed to resume his noon lunch breaks to control his blood sugar. Stephen's boss continued to deny the request for a lunch break and ultimately fired him. Stephen decided to challenge his firing and filed a claim against Wal-Mart under the ADA.

Wal-Mart responded that Stephen did not have a "disability" because Stephen was able to manage his diabetes with insulin and diet. The courts agreed. Because the Supreme Court directed courts to consider "mitigating measures" in deciding whether an individual has a disability, the Court of Appeals for the 8th Circuit found that Stephen did so well managing his condition that he was not disabled enough to be protected by the ADA.

Wal-Mart's refusal to allow Stephen to take a lunch break was never questioned.

Although Wal-Mart vigorously defended its refusal to allow Stephen a lunch break, Wal-Mart voluntarily changed company policy in 2000 to allow one-pharmacist pharmacies to close for 30 minutes at lunch because of "retention" problems.

ADAA Provisions which Favor the Individual with a Disability.

Although "disability" continues to be defined as a physical or mental impairment that substantially limits a major life activity, the following constitute significant changes (McGowan & Lenard, 2008):

1. Broad interpretation of "disability." The Equal Opportunity Commission is the enforcement agency for Title I. The ADAA clearly directs the EEOC to relax the regulations defining the term "substantially limits" in a way that is inclusive, stating it should be read as " . . . impairment that prevents or severely restricts a major life activity." The idea is that a demanding standard for meeting the criteria for disability is to be disallowed. As such, Congress rejected the standards stated in Toyota v. Williams: "The question of whether an individual's impairment is a disability under the ADA should not demand extensive analysis (by the courts)."

2. Specification of "major life activities." The ADAA expands the notion of "major life activity" by creating two non-exhaustive lists as follows:
   a. caring for oneself; performing manual tasks; everyday activities such as breathing, seeing, hearing, speaking, eating, sleeping, and walking; standing, lifting, and bending; learning, reading, concentrating, thinking, and communicating; and working.
   b. major bodily functions such as those of the immune system, normal cell growth, digestive, bowel, bladder, neurological, brain, respiratory, circulatory, endocrine, and reproductive functions.

   ADA also clarifies that one need be substantially limited in a single major life activity to meet the definition. To simplify the process it is generally recommended that the life activity of "working" be considered only when no other major life activity applies. To do so obviates confusion with the social security and worker compensation depictions of "working," which are not ADA-consistent. ADA disability is not tantamount to "work disability".
3. Clarification of impairments while inactive. The ADAA clarifies that an "impairment" that is episodic or in remission (such as multiple sclerosis, diabetes, epilepsy, HIV, or cancer) is a disability if the impairment would be substantially limited to a major life activity when active.
4. Disallowing "mitigating circumstances." Most important, the ADAA explicitly states that mitigating measures other than "ordinary eyeglasses or contact lenses" shall not be considered in assessing whether an individual has a disability. A mitigating measure is anything that can reduce a substantial limitation and it includes every conceivable product and service that rehabilitation professionals provide such as medications, prosthetics, orthotics, counseling or assistive technology. Considered the most powerful of all ADAA changes, by disallowing consideration of mitigating measures the determination of disability status involves evaluating the individual in his/her "naked state." Clearly this will broaden the umbrella of ADA protections.

The ADAA and the Alternative Prongs of the Definition of Disability.

The ADA protects not only those people who are disabled in real time, but also those who have a record of disability, who are regarded (mistakenly) as disabled, and who are known associates (typically family members) of a person with disability. In the early stages, business interests had hoped that the Amendments would strike all of the alternative prongs. Disability advocates, however, provided compelling statistics that there was substantial allegation activity in the alternative prongs and that they were competitive in terms of merit outcomes (actual discrimination). Some of these data derived from the National EEOC ADA Research Project.

In the end, all the prongs were maintained. However, there were adjustments to the "regarded as" prong which favored both sides in the debate. Favoring the individual, while it must be demonstrated that the employer regarded him/her as disabled, the standard of proof is that he/she be subjected to an adverse personnel action based on a perceived impairment that is not transitory or minor. A transitory impairment has an expected duration of six months or less. There is no need to demonstrate substantial limitation of a major life activity. Favoring the employer, there is no duty to accommodate those who meet only the definition of disability only under an alternative prongs.

ADAA Provisions which Favor the Employer

First, employers were able to retain the stipulation that individuals with disabilities must be "qualified to perform the essential functions of the job" in order to receive Title I protections. This was no small victory because no other protected class in civil rights law must assume the burden to of proving him/herself qualified. There is no such language pertaining to a "qualified" woman, African American, religious minority, or older worker. It is entirely likely that employer defenses will shift from establishing one's disability to demonstrating one's qualifications, or the reasonableness of requested accommodations. However, the Amendments did affirm that being a recipient of Social Security Disability Income or worker compensation (even given a rating permanent or total disability status) is not relevant in deciding whether or not an individual has a disability under the ADA.

Second, the ADAA does not provide a basis for a reverse discrimination (known as "no disability") claim. If a federal agency must meet affirmative action quotas or any employer chooses to reassign a worker with disability to a vacant position, other non-disabled workers could not claim discrimination under ADA.

Third, it is still true that employers who wish to use reassignment to a vacant position as a reasonable accommodation solution are not required to breach well established seniority systems or interfere with the seniority provisions of a collective bargaining agreement.

The Net Effect of ADAA

In simple terms, these fundamental clarifications to the definition of disability will dramatically expand the range of people protected by the ADA as the Congress originally intended. It is no longer difficulty to prove that one has the right to bring an ADA Title I claim. In the absence of greater compliance efforts by employers, more civil law suits and EEOC activity are entirely possible.

Furthermore, the ADAA directs the focus of the Courts and the EEOC away from the question of "Is the charging party a person with a disability?" and toward the question of "Did a discriminatory event occur?" The latter focus is more consistent with the "anti-discrimination" nature of the ADA, which is a remedial statute intended to "remedy" past decades of willful discrimination.

Characterizing the Legislative Process of the ADAA

What may be construed as battle lines around passage of the ADAA began to be drawn in 2007. Representing business interests were the Chamber of Commerce, the Society of Human Resources Management, the Equal Employment Advisory Council, and the Heritage Foundation. The initial impetus for the ADAA was spurred by a 200 report to Congress by the National council on Disability. The advocates' torch was carried by the American Association of People with Disabilities in concert with virtually every national disability-related organization. Advocates were organized, prepared with the facts, persistent, and diplomatic - - clearly establishing themselves as a powerful constituency. However, the U.S. Congress was supportive in a bi-partisan matter almost from the outset due its concern over "judicial activism." There was much discussion and compromise, numerous hearings and negotiations. Indeed the face to face engagement of business and disability principals was unprecedented. At the time of passage, even Congressional decision makers had minimal opposition. The House of Representatives passed the bill 402-17. The Senate passed the bill by unanimous consent which is remarkable in this era of extreme partisanship. President G.W. Bush signed the ADAA on October 19, 2008, in partial consideration to the legislative legacy of his father, President George H. Bush, the signatory in 1990. The ADAA became effective on January 1, 2009.

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Author Notes

The information presented in this article is intended solely as informal guidance, and is neither a determination of legal rights or responsibilities under the ADA or the ADAA, nor is it binding on any agency with enforcement responsibilities under the ADA. The opinions and observations of the author, who is not an attorney, are entirely his own. Readers are referred to the ADA Document Portal for free downloads of original source material at http://www/adata.org/adaportal. The entire text of the ADA Amendments is reprinted following the references.

ADA Amendments Act of 2008 PUBLIC LAW 110–325 SEPTEMBER 25, 2008

An Act.

To restore the intent and protections of the Americans with Disabilities Act of 1990. Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "ADA Amendments Act of 2008".

SEC. 2. FINDINGS AND PURPOSES.

(a) Findings.—Congress finds that—

(1) in enacting the Americans with Disabilities Act of 1990 (ADA), Congress intended that the Act "provide a clear and comprehensive national mandate for the elimination of discrimination against individuals with disabilities" and provide broad coverage;

(2) in enacting the ADA, Congress recognized that physical and mental disabilities in no way diminish a person's right to fully participate in all aspects of society, but that people with physical or mental disabilities are frequently precluded from doing so because of prejudice, antiquated attitudes, or the failure to remove societal and institutional barriers;

(3) while Congress expected that the definition of disability under the ADA would be interpreted consistently with how courts had applied the definition of a handicapped individual under the Rehabilitation Act of 1973, that expectation has not been fulfilled;

(4) the holdings of the Supreme Court in Sutton v. United Air Lines, Inc., 527 U.S. 471 (1999) and its companion cases have narrowed the broad scope of

protection intended to be afforded by the ADA, thus eliminating protection for many individuals whom Congress intended to protect;

(5) the holding of the Supreme Court in Toyota Motor Manufacturing, Kentucky, Inc. v. Williams, 534 U.S. 184 (2002) further narrowed the broad scope of protection intended to be afforded by the ADA;

(6) as a result of these Supreme Court cases, lower courts have incorrectly found in individual cases that people with a range of substantially limiting impairments are not people with disabilities;

(7) in particular, the Supreme Court, in the case of Toyota Motor Manufacturing, Kentucky, Inc. v. Williams, 534 U.S. 184 (2002), interpreted the term "substantially limits" to require a greater degree of limitation than was intended by Congress; and

(8) Congress finds that the current Equal Employment Opportunity Commission ADA regulations defining the term "substantially limits" as "significantly restricted" are inconsistent with congressional intent, by expressing too high a standard.

(b) Purposes.—The purposes of this Act are—

(1) to carry out the ADA's objectives of providing "a clear and comprehensive national mandate for the elimination of discrimination" and "clear, strong, consistent, enforceable standards addressing discrimination" by reinstating a broad scope of protection to be available under the ADA;

(2) to reject the requirement enunciated by the Supreme Court in Sutton v. United Air Lines, Inc., 527 U.S. 471 (1999) and its companion cases that whether an impairment substantially limits a major life activity is to be determined with reference to the ameliorative effects of mitigating measures;

(3) to reject the Supreme Court's reasoning in Sutton v. United Air Lines, Inc., 527 U.S. 471 (1999) with regard to coverage under the third prong of the definition of disability and to reinstate the reasoning of the Supreme Court in School Board of Nassau County v. Arline, 480 U.S. 273 (1987) which set forth a broad view of the third prong of the definition of handicap under the Rehabilitation Act of 1973;

(4) to reject the standards enunciated by the Supreme Court in Toyota Motor Manufacturing, Kentucky, Inc. v. Williams, 534 U.S. 184 (2002), that the terms "substantially" and "major" in the definition of disability under the ADA "need to be interpreted strictly to create a demanding standard for qualifying as disabled," and that to be substantially limited in performing a major life activity under the ADA "an individual must have an impairment that prevents or severely restricts the individual from doing activities that are of central importance to most people's daily lives";

(5) to convey congressional intent that the standard created by the Supreme Court in the case of Toyota Motor Manufacturing, Kentucky, Inc. v. Williams, 534 U.S. 184 (2002) for "substantially limits", and applied by lower courts in numerous decisions, has created an inappropriately high level of limitation necessary to obtain coverage under the ADA, to convey that it is the intent of Congress that the primary object of attention in cases brought under the ADA should be whether entities covered under the ADA have complied with their obligations, and to convey that the question of whether an individual's impairment is a disability under the ADA should not demand extensive analysis; and

(6) to express Congress' expectation that the Equal Employment Opportunity Commission will revise that portion of its current regulations that defines the term "substantially limits" as "significantly restricted" to be consistent with this Act, including the amendments made by this Act.

SEC. 3. CODIFIED FINDINGS.

Section 2(a) of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101) is amended—

(1) by amending paragraph (1) to read as follows:

"(1) physical or mental disabilities in no way diminish a person's right to fully participate in all aspects of society, yet many people with physical or mental disabilities have been precluded from doing so because of discrimination; others who have a record of a disability or are regarded as having a disability also have been subjected to discrimination;";

(2) by striking paragraph (7); and

(3) by redesignating paragraphs (8) and (9) as paragraphs (7) and (8), respectively.

SEC. 4. DISABILITY DEFINED AND RULES OF CONSTRUCTION.

(a) Definition of Disability.—Section 3 of the Americans with Disabilities Act of 1990 (42 U.S.C. 12102) is amended to read as follows:

"SEC. 3. DEFINITION OF DISABILITY. "As used in this Act:

"(1) Disability.—The term `disability' means, with respect to an individual—

"(A) a physical or mental impairment that substantially limits one or more major life activities of such individual;

"(B) a record of such an impairment; or

"(C) being regarded as having such an impairment (as described in paragraph (3)).

"(2) Major life activities.—

"(A) In general.—For purposes of paragraph (1), major life activities include, but are not limited to, caring for oneself, performing manual tasks, seeing, hearing, eating, sleeping, walking, standing, lifting, bending,

speaking, breathing, learning, reading, concentrating, thinking, communicating, and working.

"(B) Major bodily functions.—For purposes of paragraph (1), a major life activity also includes the operation of a major bodily function, including but not limited to, functions of the immune system, normal cell growth, digestive, bowel, bladder, neurological, brain, respiratory, circulatory, endocrine, and reproductive functions.

"(3) Regarded as having such an impairment.—For purposes of paragraph (1)(C):

"(A) An individual meets the requirement of `being regarded as having such an impairment' if the individual establishes that he or she has been subjected to an action prohibited under this Act because of an actual or perceived physical or mental impairment whether or not the impairment limits or is perceived to limit a major life activity.

"(B) Paragraph (1)(C) shall not apply to impairments that are transitory and minor. A transitory impairment is an impairment with an actual or expected duration of 6 months or less.

"(4) Rules of construction regarding the definition of disability.—The definition of `disability' in paragraph (1) shall be construed in accordance with the following:

"(A) The definition of disability in this Act shall be construed in favor of broad coverage of individuals under this Act, to the maximum extent permitted by the terms of this Act.

"(B) The term `substantially limits' shall be interpreted consistently with the findings and purposes of the ADA Amendments Act of 2008.

"(C) An impairment that substantially limits one major life activity need not limit other major life activities in order to be considered a disability.

"(D) An impairment that is episodic or in remission is a disability if it would substantially limit a major life activity when active.

"(E)(i) The determination of whether an impairment substantially limits a major life activity shall be made without regard to the ameliorative effects of mitigating measures such as—

"(I) medication, medical supplies, equipment, or appliances, low-vision devices (which do not include ordinary eyeglasses or contact lenses), prosthetics including limbs and devices, hearing aids and cochlear implants or other implantable hearing devices, mobility devices, or oxygen therapy equipment and supplies;

"(II) use of assistive technology;

"(III) reasonable accommodations or auxiliary aids or services; or

"(IV) learned behavioral or adaptive neurological modifications.

"(ii) The ameliorative effects of the mitigating measures of ordinary eyeglasses or contact lenses shall be considered in determining whether an impairment substantially limits a major life activity.

"(iii) As used in this subparagraph—

"(I) the term `ordinary eyeglasses or contact lenses' means lenses that are intended to fully correct visual acuity or eliminate refractive error; and

"(II) the term `low-vision devices' means devices that magnify, enhance, or otherwise augment a visual image.".

(b) Conforming Amendment.—The Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) is further amended by adding after section 3 the following:

"SEC. 4. ADDITIONAL DEFINITIONS. "As used in this Act:

"(1) Auxiliary aids and services.—The term `auxiliary aids and services' includes—

"(A) qualified interpreters or other effective methods of making aurally delivered materials available to individuals with hearing impairments;

"(B) qualified readers, taped texts, or other effective methods of making visually delivered materials available to individuals with visual impairments;

"(C) acquisition or modification of equipment or devices; and

"(D) other similar services and actions.

"(2) State.—The term `State' means each of the several States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the Virgin Islands of the United States, the Trust Territory of the Pacific Islands, and the Commonwealth of the Northern Mariana Islands.".

(c) Amendment to the Table of Contents.—The table of contents contained in section 1(b) of the Americans with Disabilities Act of 1990 is amended by striking the item relating to section 3 and inserting the following items:

"Sec. 3. Definition of disability.

"Sec. 4. Additional definitions.".

SEC. 5. DISCRIMINATION ON THE BASIS OF DISABILITY.

(a) On the Basis of Disability.—Section 102 of the Americans with Disabilities Act of 1990 (42 U.S.C. 12112) is amended—

(1) in subsection (a), by striking "with a disability because of the disability of such individual" and inserting "on the basis of disability"; and

(2) in subsection (b) in the matter preceding paragraph (1), by striking "discriminate" and inserting

"discriminate against a qualified individual on the basis of disability".

(b) Qualification Standards and Tests Related to Uncorrected Vision.—Section 103 of the Americans with Disabilities Act of 1990 (42 U.S.C. 12113) is amended by redesignating subsections (c) and (d) as subsections (d) and (e), respectively, and inserting after subsection (b) the following new subsection:

"(c) Qualification Standards and Tests Related to Uncorrected Vision.—Notwithstanding section 3(4)(E)(ii), a covered entity shall not use qualification standards, employment tests, or other selection criteria based on an individual's uncorrected vision unless the standard, test, or other selection criteria, as used by the covered entity, is shown to be job-related for the position in question and consistent with business necessity.".

(c) Conforming Amendments.—

(1) Section 101(8) of the Americans with Disabilities Act of 1990 (42 U.S.C. 12111(8)) is amended—

(A) in the paragraph heading, by striking "with a disability"; and

(B) by striking "with a disability" after "individual" both places it appears.

(2) Section 104(a) of the Americans with Disabilities Act of 1990 (42 U.S.C. 12114(a)) is amended by striking "the term `qualified individual with a disability' shall" and inserting "a qualified individual with a disability shall".

SEC. 6. RULES OF CONSTRUCTION.

(a) Title V of the Americans with Disabilities Act of 1990 (42 U.S.C. 12201 et seq.) is amended—

(1) by adding at the end of section 501 the following:

"(e) Benefits Under State Worker's Compensation Laws.—Nothing in this Act alters the standards for determining eligibility for benefits under State worker's compensation laws or under State and Federal disability benefit programs.

"(f) Fundamental Alteration.—Nothing in this Act alters the provision of section 302(b)(2)(A)(ii), specifying that reasonable modifications in policies, practices, or procedures shall be required, unless an entity can demonstrate that making such modifications in policies, practices, or procedures, including academic requirements in postsecondary education, would fundamentally alter the nature of the goods, services, facilities, privileges, advantages, or accommodations involved.

"(g) Claims of No Disability.—Nothing in this Act shall provide the basis for a claim by an individual without a disability that the individual was subject to discrimination because of the individual's lack of disability.

"(h) Reasonable Accommodations and Modifications.—A covered entity under title I, a public entity under title II, and any person who owns, leases (or leases to), or operates a place of public accommodation under title III, need not provide a reasonable accommodation or a reasonable modification to policies, practices, or procedures to an individual who meets the definition of disability in section 3(1) solely under subparagraph (C) of such section.";

(2) by redesignating section 506 through 514 as sections 507 through 515, respectively, and adding after section 505 the following:

"SEC. 506. RULE OF CONSTRUCTION REGARDING REGULATORY AUTHORITY. "The authority to issue regulations granted to the Equal Employment Opportunity Commission, the Attorney General, and the Secretary of Transportation under this Act includes the authority to issue regulations implementing the definitions of disability in section 3 (including rules of construction) and the definitions in section 4, consistent with the ADA Amendments Act of 2008."; and

(3) in section 511 (as redesignated by paragraph (2)) (42 U.S.C. 12211), in subsection (c), by striking "511(b)(3)" and inserting "512(b)(3)".

(b) The table of contents contained in section 1(b) of the Americans with Disabilities Act of 1990 is amended by redesignating the items relating to sections 506 through 514 as the items relating to sections 507 through 515, respectively, and by inserting after the item relating to section 505 the following new item:

"Sec. 506. Rule of construction regarding regulatory authority.".

SEC. 7. CONFORMING AMENDMENTS.

Section 7 of the Rehabilitation Act of 1973 (29 U.S.C. 705) is amended—

(1) in paragraph (9)(B), by striking "a physical" and all that follows through "major life activities", and inserting "the meaning given it in section 3 of the Americans with Disabilities Act of 1990 (42 U.S.C. 12102)"; and

(2) in paragraph (20)(B), by striking "any person who" and all that follows through the period at the end, and inserting "any person who has a disability as defined in section 3 of the Americans with Disabilities Act of 1990 (42 U.S.C. 12102).". SEC. 8. EFFECTIVE DATE. This Act and the amendments made by this Act shall become effective on January 1, 2009.

Author Note

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The Rehabilitation Professional 18(1), pp. 31–34

A Fifty-State Survey Concerning the Admissibility of Expert Testimony

Kari Sutherland

With its opinion in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), the United States Supreme Court sought to provide guidance to trial judges with respect to whether and under what circumstances scientific evidence should be deemed admissible. In the fifteen years since *Daubert*, state court judges have issued numerous opinions concerning *Daubert* and its progeny, but one thing remains clear: There is no uniformity among the states or even within states. As one North Dakota judge noted in a concurring opinion, local lawyers are "adrift" among the many different amalgamations of admissibility standards. Some states, such as Tennessee, have held that the standard for admissibility is more strict than that set out in *Daubert*, while others, like Wisconsin, have adhered to a much less restrictive standard. Some apply one standard to criminal cases and another to civil cases, as in New Jersey, while still other states (Illinois and Kansas, for example) do not apply any standard at all when the "expert" testifying is the treating physician — even if the witness is testifying as to causation. At least one state, Oregon, holds that any *Daubert* type challenge is waived if not preserved during the expert's deposition. The following survey provides an overview of the standards adopted by each of the states concerning the admissibility of expert testimony.

Alabama: *Slay v. Keller Indus*., Inc., 823 So. 2d 623 (Ala. 2001). Applying *Frye*; refusing to adopt *Daubert*.

Alaska: *Alaska v. Coon*, 974 P.2d 386 (Alaska 1999). *Adopting Daubert but see Macron v. Stromata*, 123 P.3d 992 (Alaska 2005). Rejecting the application of *Daubert* to non-scientific expert testimony; explicit rejection of *Kumho Tire*.

Arizona: *Logerquist v. McVey*, 1 P.3d 113 (Ariz. 2000). Rejecting *Daubert* and *Kumho Tire* as placing the judge in a position of ruling on weight or credibility as opposed to admissibility; retaining *Frye* and Rule 702 alone.

Arkansas: *Farm Bureau Mut. Ins. Co. of Ark., Inc., v. Foote*, 14 S.W. 3d 512 (Ark. 2000). Adopting Daubert.

California: *People v. Leahy*, 882 P.2d 321 (Cal. 1994). Refusing *Daubert* and retaining the *Kelly-Frye* test — *People v. Kelly*, 549 P.2d 1240 (Cal. 1976).

Colorado: *People v. Shreck*, 22 P.3d 68 (Colo. 2001). Noting the judge may consider Daubert, but must issue specific findings on the record as to the helpfulness and reliability factors. CRE 702/evidence rule is the appropriate admissibility standard, not *Frye*.

Connecticut: *State v. Porter*, 241 Conn. 57 (Conn. 1997). Adopting *Daubert* in lieu of *Frye*.

Delaware: *M.G. Bancorporation, Inc*., v. Le Beau, 737 A.2d 513 (Del. 1999). Adopting the analysis of *Daubert* and *Kumho Tire*.

Florida: *Marsh v. Valyou*, 977 So. 2d 543 (Fla. 2007). Adhering to the *Frye* test, but only where the expert opinion is based on new or novel scientific techniques; noting most expert opinion testimony is not subject to Frye, such as an opinion based only on the expert's experience and training.

Georgia: *Spacht v. Troyer*, 655 S.E. 2d 656 (Ga. App. 2007). Holding that the relevant statute, OCGA § 24-9-67.1, governs expert testimony; subsection (f) allows consideration of *Daubert*.

Hawaii: *State v. Vliet*, 19 P.3d 42 (Hi. 2001). Noting that the touchstones of admissibility for expert testimony are the relevance and reliability factors under Rule 702.

Idaho: *State v. Merwin*, 962 P.2d 1026 (Id. 1998). Noting that Idaho has not expressly adopted *Daubert*, but applying its factors. See also Weeks v. Eastern Idaho Health Servs., 153 P.3d 1180 (Id. 2007). Holding that *Daubert* has not been adopted, but the judge may consider certain factors such as whether the expert's theory has been or may be tested and whether the theory has been subjected to a peer reviewed publication; declining to consider whether the theory is commonly agreed upon or has been generally accepted in the relevant scientific community.

Illinois: *Warstalski v. JSB Const. & Consulting Co.*, 892 N.E. 2d 122 (Ill. App. 2008). Holding that *Frye* applies generally, but it does not apply to medical testi-

mony; noting a treating physician's testimony as to causation is not subject to *Frye*.

Indiana: *Kempf Contracting & Design, Inc., v. Holland-Tucker*, 892 N.E. 2d 672 (Ind. App. 2008). Noting that consideration of the *Daubert* factors is proper, but the judge is not bound by them.

Iowa: *State v. Garcia-Miranda*, 735 N.W. 2d 203 (Iowa App. 2007). Noting that Iowa courts are not required to follow *Daubert* when applying the Iowa Rules of Evidence; judges are encouraged to use *Daubert* only when the expert evidence is novel or complex.

Kansas: *State v. McHenry*, 136 P.3d 964 (Kan. App. 2006). Noting that *Frye* is to be used only when the judge considers the admissibility of opinions based on new or experimental scientific techniques. See also *Kuhn v. Sandoz Pharmaceuticals Corp*., 14 P.3d 1170 (Kan. 2000). Holding that the *Frye* test is not applicable to an expert's "pure opinion" based on that expert's own experience, research, observation.

Kentucky: *Burton v. CSX Transp., Inc*., 2008 WL 4691059 (Ky. 2008). Holding that *Daubert* applies under the relevant Kentucky Rule of Evidence that is similar to FRE 702.

Louisiana: *Cheairs v. State Dept. of Trans. & Development*, 861 So. 2d 536, 542 (La. 2003). Noting that the standards set forth in *Daubert* are controlling.

Maine: *Hall v. Kurz Enterprises*, 2006 WL 1669656 (Me. Super. 2006). Noting that the controlling law is embodied in *State v. Williams*, 388 A.2d 500 (Me. 1978), and is relatively indistinguishable from *Daubert*. See *Searles v. Fleetwood Homes of Penn., Inc*., 878 A.2d 509 (Me. 2005). Noting the same, but specifically declining to adopt *Daubert*.

Maryland: *State v. Baby*, 946 A.2d 463 (Md. 2008). Holding that the admissibility of expert testimony is subject to the application of the *Frye-Reed* test for general acceptance in scientific community. *See Reed v. State*, 391 A.2d 364 (1978).

Massachusetts: *Com v. Powell*, 877 N.E. 2d 589 (Mass. 2007). Noting *Daubert* is adopted, but that a showing of general acceptance in relevant community is sufficient for admissibility regardless of any other *Daubert* factors.

Michigan: *People v. Unger*, 749 N.W. 2d 272 (Mich. App. 2008). Noting that Michigan evidentiary law incorporates *Daubert*.

Minnesota: *State v. Bartylla*, 755 N.W.2d 8 (Minn. 2008). Using the *Frye-Mack* standard of general acceptance for admissibility of novel or emerging scientific evidence, but specifying that the expert's technique must be based on a foundation that is scientifically reliable. *State v. Mack*, 292 N.W. 2d 764 (Minn. 1980).

Mississippi: *Watts v. Radiator Specialty Co.*, 990 So. 2d 143 (Miss. 2005). Applying *Daubert*.

Missouri: *State v. Daniels*, 179 S.W. 3d 273 (Mo. App. 2005). Noting that the criminal courts still follow *Frye*. See *Hawthorne v. Lester E. Cox Medical Centers*, 165 S.W. 3d 587 (Mo. App. 2005). Noting that admissibility of expert opinions in civil cases is governed by statute, § 490.065.

Montana: State v. Price, 171 P. 3d 293 (Mont. 2007). Applying Daubert, but noting that its application is proper only where introduction of novel scientific evidence is sought.

Nebraska: *State v. Schereiner*, 754 N.W. 2d 742 (Neb. 2008). Applying *Daubert* and noting that the trial court acts as a gatekeeper. *See Schafersman v. Agland Coop.*, 631 N.W. 2d 862 (Neb. **2001).**

Nevada: *Hallman v. Eldridge*, 189 P.3d 646 (Nev. 2008). Noting that the statute that governs admissibility is NRS 50.275, which tracks FRE 702; holding Nevada has not adopted *Daubert* yet and wide discretion is vested in the trial court.

New Hampshire: *Baxter v. Temple*, 949 A.2d 167 (N.H. 2008). Holding that *Daubert* applies and that its factors have been incorporated into statute, RSA 516:29-a.

New Jersey: *State v. Groen*, 2008 WL 3067920 (N.J. Super. 2008). Limiting the application of *Frye* to criminal matters. *See Thornton v. Camden County Prosecutor's Office*, 2006 WL 2361816 (N.J. Super 2006). Applying *Daubert* in civil cases.

New Mexico: *State v. Downey*, 2008 WL 4925022 (N.M. 2008). Noting that *Daubert* applies. *See State v. Albesico,* 861 P.2d 192 (N.M. 1993).

New York: *O'Brien v. Citizens, Ins. Co.*, 2008 WL 4754103 (N.Y. Sup. 2008). Holding that *Frye* applies to novel scientific theories or techniques.

North Carolina: *Howerton v. Arai Helmet, Ltd.*, 597 S.E. 2d 674 (N.C. 2004). Holding that North Carolina does not adhere to the *Daubert* standard, but trial judge must instead ask three questions: 1) Is the expert's method of proof sufficiently reliable; 2) Is the witness qualified; and 3) Is the testimony relevant?

North Dakota: *State v. Hernandez*, 707 N.W. 2d 449 (N.D. 2005). Noting that North Dakota never has explicitly adopted *Daubert* or *Kumho Tire*; expert admissibility instead is governed by North Dakota Rule of Evidence 702. The concurrence notes that the state's Rule 702 is identical to FRE 702 and that the Bar is "adrift" between *Frye*, *Daubert*, and 702.

Ohio: *Miller v. Bike Athletic Co.*, 687 N.E. 2d 735 (Oh. 1998). Adopting *Daubert*.

Oklahoma: *Christian v. Gray*, 65 P.3d 591 (Okla. 2003). Holding that *Daubert* applies to civil matters and to all expert testimony, — not just scientific or

technical evidence. *See Taylor v. State*, 889 P.2d 319 (Okla. Crim. App. 1995). Adopting *Daubert*.

Oregon: *Evers v. Roder*, 103 P.3d 680 (Or. App. 2004). Noting that *Daubert* applies, but that any *Daubert* challenge to the expert opinion will be waived if it is not raised during the expert's deposition.

Pennsylvania: *Betz v. Eriee, Ins. Exchange*, 957 A.2d 1244 (Pa. Super 2008). Holding that *Frye* applies only when a party seeks to introduce novel scientific evidence; it is not implicated every time science comes into courtroom. *Com v. Puksar*, 951 A.2d 267 (Pa. 2008).

Rhode Island: DePetrillo v. Dow Chemical Co., 729 A.2d 677, 686 (R.I. 1999). Noting courts may draw guidance from Daubert with respect to the admissibility of all expert testimony even though Daubert has not been expressly adopted.

South Carolina: *State v. Council*, 515 S.E.2d 508 (S.C. 1999). Noting that South Carolina has not adopted *Daubert*, but that the state's evidentiary rule is identical to FRE 702 and sets a "very similar" standard.

South Dakota: *Kostel v. Schwartz*, 756 N.W.2d 363 (S.D. 2008). Adopting the *Daubert* standard.

Tennessee: *McDaniel v. CSX Transp., Inc.*, 955 S.W.2d 257 (Tenn. 1997). Adopting factors similar to *Daubert*, but noting that the primary inquiry is whether an expert's opinion testimony will substantially assist the trier of fact and that this inquiry is somewhat stricter than the federal rule. The *Daubert* factors are useful, but Tennessee rules require that courts take a more active role when evaluating expert evidence.

Texas: *Bechtel Corp. v. Citgo Products Pipeline Co.*, 2008 WL 4482688 (Tex. App.)

2008). Applying *Daubert* factors. *See E. I. du Pont de Nemours and Co. v. Robinson*, 923 S.W.2d 549 (Tex. 1995). Finding *Daubert* persuasive.

Utah: *Haupt v. Heaps*, 131 P.3d 252 (Utah App. 2005). Noting that the state's Rule 702 applies to the admissibility question unless the expert testimony is novel and scientific. When the testimony concerns novel scientific methods or techniques, then *State v. Rinmasch*, 775 P.2d 388 (Utah 1989), requires a finding of inherent reliability prior to admissibility.

Vermont: *In re Appeal of Jam Golf*, LLC, 2008 WL 3877119 (Vt. 2008). Holding that *Daubert* applies.

Virginia: *Hasson v. Commonwealth*, 2006 WL 1387974 (Va. App. 2006). Noting that Virginia has not adopted *Frye* or *Daubert*, but that the *Daubert* factors are instructive.

Washington: *Lewis v. Simpson Timber Co.*, 2008 WL 1952125 (Wash. App. 2008). Holding that the Frye test is utilized for novel scientific evidence. *See State v. Gregory*, 147 P.3d 1201 (Wash. 2006).

West Virginia: *San Francisco v. Wendy's International, Inc*., 656 S.E. 2d 485 (W.Va. 2007). Noting that *Daubert* applies, but that when a judge excludes an expert as unreliable under *Daubert*, that decision is reviewed de novo. *See also Witt v. Burackes*, 443 S.E. 2d 196 (W.V. 1993).

Wisconsin: *State v. Swope*, 2008 WL 4923663 (Wis. App. 2008). Noting that Wisconsin employs a much less restrictive "relevancy test" for the admissibility of expert testimony — not *Frye* or *Daubert*.

Wyoming: *Dean v. State*, 194 P.3d 299 (Wyo. 2008). Noting that *Daubert* and its progeny had been adopted in *Bunting v. Jamison*, 984 P.2d 467 (Wyo. 1999).

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Table 1

A State-by-State Summary on Applying Daubert, Frye, or State Rules

State	Governing Rule	Comment
Alabama	Frye	Refusing to Adopt Daubert
Alaska	Daubert	Rejecting Daubert in non-science cases
Arizona	Frye/702	Rejecting Daubert
Arkansas	Daubert	
California	Kelly/Frye	Refusing Daubert
Colorado	CRE 702	May consider Daubert
Connecticut	Daubert	
Delaware	Daubert	
Florida	Frye	Based of scientific; most opinion based on expert's experience and training.
Georgia	State rules	Allows consideration of Daubert
Hawaii	702	
Idaho	State rules	Daubert factors of testing and peer review; not including general acceptance
Illinois	Frye	But not to medical testimony
Indiana	Daubert	But not bound by factors.
Iowa	State rules	Not required to follow Daubert
Kansas	Frye	Applies to science; not does apply to expert's pure opinion
Kentucky	Daubert	Similar to 792
Louisiana	Daubert	Controlling
Maine	State rules	Daubert/Not Daubert
Maryland	Frye	
Massachusetts	Daubert	Emphasis on general acceptance
Michigan	Daubert	
Minnesota	Frye	Foundation must be reliable
Missouri	Frye	Governed by State statute
Montana	Daubert	Applies to novel scientific evidence
Nebraska	Daubert	Trial court is gatekeeper
New Hampshire	Daubert	Incorporated into State statute
New Jersey	Frye/Daubert	Frye in criminal; Daubert in civil
New Mexico	Daubert	
New York	Frye	
North Carolina	Neither	Three questions: reliable, qualified, relevant
North Dakota	ND 702	Bar is adrift between Frye, Daubert and 702
Ohio	Daubert	
Oklahoma	Daubert	Applies to all testimony - scientific and technical
Oregon	Daubert	But will be waived if not raised during deposition
Pennsylvania	Frye	For novel scientific evidence
Rhode Island	Daubert	Not expressly adopted but applies to all testimony
South Carolina	State	Identical to FRE 702
Tennessee	State	Similar to Daubert rules, but court take a more active role in considering factors for admissibility
Texas	Daubert	
Utah	State 702	Emphasis on reliability
Vermont	Daubert	
Virginia	Neither	But Daubert factors are instructive
Washington	Frye	
West Virginia	Daubert	
Wisconsin	Neither	A much less restrictive "relevancy test"
Wyoming	Daubert	

Summarized from Sutherland (2009)

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Interfacing the Economic and Vocational in Personal Injury Cases

Everett G. Dillman

Introduction

Estimation of the monetary value of damages in a personal injury case usually includes both vocational and economic input. Most often the process will involve what has been described as "chaining"—that is, a doctor establishing some of the parameters for the vocational expert who, in turn, sets the foundation for the residual capacity for use by the economist (Brookshire, p. 4). This paper explores the essential interface between the vocational and the economic roles from the point-of-view of the economist.

Terminology

Problems in understanding the input of vocational experts with resultant difficulties in interfacing the testimony frequently arise because of misunderstandings in basic terminology. For purposes of this discussion, the following terms will be defined as:

1. Medical Impairment: The reduction in the ability of the individual to function. This may reflect physical or mental function. Medical impairment may be expressed as a percentage of the body part or the whole body but is more vocationally meaningful if expressed as restrictions to specific functions.
2. Occupational Disability: The extent to which a medical impairment would negatively affect an individual's ability to perform required job tasks. The effects on mobility to, from, or within the job site may also constitute a disability.
3. Vocational Capacity: All specific job titles (usually from the Dictionary of Occupational Titles) that the individual was able to perform without the limitations.
4. Earning Capacity: The dollar value of what an individual would have the ability to earn. Future earning capacity may not necessarily be the same as future earnings as capacity includes the concept of opportunity cost.

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5. Residual Vocational Capacity: Those job titles the individual is capable of performing, given the limitation.
6. Residual Earning Capacity: The dollar value of what an individual would have the ability to earn given the limitations. Residual earning capacity must consider the monetary effects, if any, of changes in general labor market competition given the limitations.
7. Labor Market Access: This refers to the ratio of Vocational Capacity (VC) to the Residual Capacity (RC). The formula is 100 - [(RC/VC) x 100], where the capacities are expressed as a percent. This number reflects the percentage of job titles (or positions) which the individual is now unable to perform but which he/she would have the ability to do absent the limitations.
8. Vocational Impairment: The extent to which the occupational disability affects the individual's ability to obtain and retain gainful employment.
9. Impairment to Earning Capacity: The monetary effect of a vocational impairment on the expected ability to earn over the individual's life cycle.

Vocational Role

The vocational portion of the analytical process involves the determination of the number, type, and wage levels of jobs an individual would have been capable of performing without the particular limitations (which are the focus of the litigation) and the number, type, and wage level of jobs capable of being performed given the limitations. Appraisal of the individual's ability to compete in the open labor market is also an essential element in the vocational role. Job availability, the selection ratio (i.e., ratio of the number of available jobs to the number seeking the jobs), as well as employer attitudes toward hiring an individual with the specific limitations, are all vocational considerations and often form the foundation for the economic analysis.

The vocational role will determine the extent of the client's residual earning capacity, if any. The process of establishing this capacity may be quite complex, however, as a number of significant factors must be considered and interrelated. The economist often must use the vocational input as a foundation for his/her testimony and therefore would be familiar with the process. These factors will be discussed in more detail later in this paper. In general, however, the impairment to the earning capacity can be shown to be a function of

$$\text{Impairment to Earning Capacity} = f(L,P,T,C)$$

Where: L = Reduction in labor market access
P = Reduction in the average pay for the residual jobs
T = Reduction in worklife or hours available for work
C = Reduction in the ability to compete—increase in rate of unemployment

Before the economic effects of an injury can be computed, then, the following vocational determinations must be made:

1. The most probable general occupational grouping available to the individual without any limitations. This will require consideration of age, sex, education, interests, aptitudes, temperaments, and prior experience. Testing may or may not be necessary depending upon the individual's background. For individuals with a relatively extensive work history, most if not all of these elements may be inferred based on experience. The vocational evaluation will develop a profile of the individual with and without the limitations.
2. Identification of the entrance level jobs previously available to the individual without the limitations and those currently available. The ratio of these two values is one measure of labor market access. This ratio, however, tends to understate true reduction in market access for previously employed persons because it does not count those jobs in the promotional ladder in the areas within which the individual already is experienced. This is true because only entrance level jobs are generally included in the evaluation.
3. Estimating the reduction in the most probable average wage (expressed as a percent) given the reduction in labor market access and the "promotional ladder" denied.
4. Estimating the reduction in competitiveness of the individual given the limitation. For example, a reduction of 50% in this factor would represent the expert's opinion that the individual's ability to obtain and retain employment has been reduced by one half. Or, if full time capacity is assumed without the limitations, the residual employment would be limited to one-half as many total hours.

Individual Profile

Development of the profile of the individual may be accomplished through testing or by analyzing the individual's prior work history. A complete profile can be quite comprehensive. Since the economist should be familiar with these basic concepts, a short description of the various elements and considerations is in order.

The elements in the individual profile are generally based upon work done by the U.S. Department of Labor. The Department has identified over 12,000 different jobs in the U.S. economy and has broken these jobs into the strength, aptitude, and temperament requirements. The individual profile is usually developed so a match can be made against the data base of job requirements. The job description of these jobs can be found in the Dictionary of Occupational Titles (commonly called the DOT) and the characteristics in various supplements to the DOT. The profile descriptions detailed in this section are taken largely from one of these supplements (Selected Characteristics of Occupations Defined in the Dictionary of Occupational Titles, 1981).

General Educational Development (GED): GED is defined as education of a general nature which contributes to the reasoning development and the acquisition of mathematical and language skills that are required of the worker to achieve average satisfactory job

performance.

For a particular person, GED is estimated from formal education level (grade) completed and/or from the GED levels required in the jobs previously held by that person, whichever is highest. The highest GED level gives the most accurate estimate of the level of capacity of the person . In some cases, however, the potential level of functioning may be higher than the individual has actually demonstrated in a work situation. For example, if a person has completed 9 years of formal education, but has for several years successfully performed a job requiring a GED level equivalent to completion of high school, it can be assumed that the person has been functioning at the GED level demanded by that job, that is, the level equivalent to the completion of high school. Although this same person may also be capable of functioning at a GED level equivalent to college entry, this has not been demonstrated either through formal education or work history and cannot be estimated without further testing.

There are six GED levels for each of the three subject areas: Reasoning, Mathematical, and Language. It is assumed that a person can function not only at their highest demonstrated GED level, but also at all GED levels lower than that which has been demonstrated. This assumption does not take into account the psychological factors (such as boredom, lack of challenge) which may make jobs at lower GED levels less satisfying for a given person, however. It is also important to note that even though a person may function at a GED level sufficient to perform a certain job, he or she may still be unable to perform the job due to Physical Demands or Environmental Conditions required by the job, or because of the absence of certain relevant and essential aptitudes.

The current functioning GED level can also be estimated through the use of tests and other assessment techniques. This is routinely done as part of the vocational evaluation process. This can be particularly useful when the person in question

1. is young (in their teens or early twenties) and has never worked.
2. has no significant work history, i.e. has worked in only unskilled jobs for short periods of time or on a part-time basis.
3. has not worked outside the home within the past 15 years.
4. has had no formal education in the past 15 years and/or has not been employed in a capacity which used the formal education that has been acquired.
5. has a head injury which may involve, or has been diagnosed as involving, brain damage.

Specific Vocational Preparation (SVP): SVP represents the amount of time required to learn the techniques, acquire information, and develop the facility needed for average performance in a specific job-worker situation. SVP levels are specific time spans ranging from a short demonstration to over 10 years as shown in the following table.

SVP levels of either 3, 4, or 5 are often used by vocational experts as representing cut-off points for entrance level jobs.

Level	Time
1	Short demonstration
2	Anything beyond short demonstration up to and including 30 days
3	Over 30 days up to and including 3 months
4	Over 3 months up to and including 6 months
5	Over 6 months up to and including 1 year
6	Over 1 year up to and including 2 years
7	Over 2 years up to and including 4 years
8	Over 4 years up to and including 10 years
9	Over 10 years

When a person has sustained an injury, he or she often cannot return to jobs formerly held and must seek retraining and/or an entry level position. It may be useful in these instances to ascertain the amount of time the person would be required to spend in preparing for a job or field of work. This, of course, is usually a part of the vocational evaluation process. The economist, however, should be careful to insure that the residual capacity only includes entry level jobs. Sometimes a vocational expert, through inexperience or for some other reason, will include jobs in the residual capacity that the individual would have no hope of obtaining because they would be unable to get their "foot in the door." This will be discussed in more detail in a subsequent section.

Aptitudes: Aptitudes are the specific abilities required of an individual to perform a given work activity. There are 11 aptitudes that are considered to be occupationally significant. Five levels are used to measure the amount of each of the aptitude required to perform a given job.

A required level for each of the 11 aptitudes has been determined for each of the over 12,000 job titles analyzed by the Federal Government. The level of each aptitude required from a worker for average, satisfactory performance has been identified, based on a thorough study of the physical actions which the worker performs, the judgments the worker must make, the mental processes involved, and the importance of the aptitude to successful job performance. (An aptitude is not considered to be important if it is present only in an incidental, insignificant, or occasional task.)

Definitions of the 11 aptitudes are given below:

General Learning Ability (G): The ability to "catch on" or understand instructions and underlying principles; the ability to reason and make judgments.

Verbal Aptitude (V): The ability to understand the meaning of words and use them effectively. Ability to comprehend language, to understand relationships between

words, and to understand meanings of whole sentences and paragraphs.

Numerical Aptitude (N): The ability to perform arithmetic operations quickly and accurately.

Spatial Aptitude (S): The ability to think visually of geometric forms and to comprehend the two-dimensional representations of three-dimensional objects. The ability to recognize the relationships resulting from the movement of objects in space.

Form Perception (P): The ability to perceive pertinent detail in objects or in pictorial or graphic material. Ability to make visual comparisons and discriminations and see slight differences in shapes and shading of figures and widths and lengths of lines.

Clerical Perception (Q): The ability to perceive pertinent detail in verbal or tabular material. Ability to observe differences in copy to proofread words and numbers, and to avoid perceptual errors in arithmetic computation. A measure of speed in perception which is required in many industrial jobs even when the job does not have verbal or numerical content.

Motor Coordination (K): The ability to coordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed. Ability to make a movement response accurately and swiftly.

Finger Dexterity (F): The ability to move the fingers, and manipulate small objects with the fingers, rapidly or accurately.

Manual Dexterity (M): The ability to move the hands easily and skillfully. Ability to work with the hands in placing and turning motions.

Eye-Hand-Foot Coordination (E): The ability to move the hand and foot coordinately with each other in accordance with visual stimuli.

Color Discrimination (C): The ability to match or discriminate between colors in terms of hue, saturation, and brilliance. Ability to identify a particular color or color combination from memory and to perceive contrasting color combinations.

Ratings of levels required in each of the 11 aptitude areas have been made for almost all the job titles. These levels can be used for comparison purposes. Tests and assessment techniques can be used to determine the individual's level of functioning in the aptitude areas and included in the profile.

The effects of the individual's current level of physical functioning on his or her work performance can often be graphically illustrated. For example, the loss of vision in an eye typically affects spatial perception, form perception, clerical perception, and to some extent, manual dexterity. A head injury can affect all aptitude areas to some extent, as can a severe dominant hand injury. A back injury typically affects motor coordination, manual dexterity, finger dexterity, and eye-hand-foot coordination. Speed of performance often drops significantly. These effects can all be measured through the use of various tests and other assessment techniques.

Interests: An interest is a liking or preference for an activity. If a person is interested in an activity, he or she will tend to become absorbed in the experience and continue it. Numerous studies have indicated a significant correlation between job stability and satisfaction, and positive interest in the type of work being performed.

There are 12 interest factors.

Artistic: Interest in creative expression of feelings or ideas.
Scientific: Interest in discovering, collecting, and analyzing information about the natural world and applying scientific research findings to problems in medicine, life sciences, and the natural sciences.
Plants and Animals: Interest in activities involving plants and animals, usually in an outdoor setting.
Protective: Interest in the use of authority to protect people and property.
Mechanical: Interest in applying mechanical principles to practical situations, using machines, handtools, or techniques.
Industrial: Interest in repetitive, concrete, organized activities in a factory setting.
Business Detail: Interest in organized, clearly defined activities requiring accuracy and attention to detail, primarily in an office setting.
Selling: Interest in bringing others to a point of view through personal persuasion, using sales and promotional techniques.
Accommodating: Interest in catering to the wishes and needs of others, usually on a one-to-one basis.
Humanitarian: Interest in helping others with their mental, spiritual, social, physical, or vocational concerns.
Leading-Influencing: Interest in leading and influencing others through activities involving high-level verbal or numerical abilities.
Physical Performing: Interest in physical activities performed before an audience.

All the job titles which have been analyzed by the Federal Government are also classified according to interest area. Persons having a significant work history within a given interest area (several jobs, of sufficient duration for familiarity with the work, or one job for an extended period of time) are assumed to possess the skills required to function within that interest area. Skills are generally considered transferable within interest areas. Transferable skills are those job skills, either natural or acquired, which a person possesses that can be transferred with little or no re-training to similar or related jobs.

A person's interest areas can be determined by examining his or her work history, if the person has been in the work force for sufficient time to have held one or several jobs past the initial training period. A person's interest areas can also be determined by testing. This can be useful in several instances. When an injury has occurred, an individual often is unable to return to jobs within his or her former interest areas, due to a decrease in

strength level or other factors. In other cases, the individual may be young with no significant work history. Assessment in these instances can determine the interest areas offering the most reasonable employment alternatives.

Temperaments: Temperaments are defined as the adaptability requirements made on the worker by specific types of jobs. Different job situations call for different personality traits on the part of the worker. A person's dissatisfaction with work or failure to perform adequately can sometimes be attributed to an inability to adapt to a work situation rather than to an inability to learn and carry out job duties. The degree to which a worker can adapt to work situations is often a determining factor for success at a given job.

Eleven temperaments have been identified as relevant to the work environment. These are listed below:

D - DIRECTING, controlling, and/or planning activities of others
R - Performing REPETITIVE and/or short-cycle work
I - INFLUENCING people in their opinions, aptitudes, and judgments
V - Performing a VARIETY of duties
E - EXPRESSING personal feelings
A - Working ALONE or apart in physical isolation from others
S - Performing effectively under STRESS
T - Attaining precise set limits, TOLERANCES, and standards
U - Working UNDER specific instructions
P - Dealing with PEOPLE
J - Making JUDGMENTS and decisions.

The temperaments required for successful performance in jobs have also been determined through Job analysis. To determine the temperaments present in an individual, assessment techniques, such as personality tests, can be used.

Physical Demands: Physical Demands are defined as the physical capacities required of the worker to perform assigned tasks. All the over 12,000 job titles have been classified according to strength level and the physical demands required to perform the job. When classifying a job according to Physical Demand factors, it is important to consider the following: 1) whether the Physical Demand factor is essential to the successful performance of one or more major or critical tasks of the job, 2) the intensity, frequency, and duration to the Physical Demand factor, and 3) whether the Physical Demand factor affects the safety of the worker or others.

The classification of Strength is the most common variable used in the determination of what jobs a person can or cannot do. The five degrees of strength are:

S - Sedentary Work

Lifting 10 lbs. maximum and occasionally lifting and/or carrying such articles as dockets, ledgers, and small tools. Although a sedentary job is defined as one which involves sitting, a certain amount of walking and standing is often necessary to carry out job duties. Jobs are sedentary if walking and standing are required only occasionally and other sedentary criteria are met.

L - Light Work

Lifting 20 lbs. maximum with frequent lifting and/or carrying of objects weighing up to 10 lbs. Even though the weight lifted may be only a negligible amount, a job is in this category when it requires walking or standing to a significant degree, or when it involves sitting most of the time with a degree of pushing and pulling of arm and/or leg controls.

M - Medium Work

Lifting 50 lbs. maximum with frequent lifting and/or carrying of objects weighing up to 25 lbs.

H - Heavy Work

Lifting 100 lbs. maximum with frequent lifting and/or carrying of objects weighing up to 50 lbs.

VH - Very Heavy Work

Lifting objects in excess of 100 lbs. with frequent lifting and/or carrying of objects weighing 50 lbs. or more.

The other Physical Demand factors which are considered are

1. Standing
2. Walking
3. Sitting
4. Reclining
5. Lifting
6. Carrying
7. Pushing
8. Pulling
9. Climbing
10. Balancing
11. Stooping
12. Kneeling
13. Crouching
14. Crawling
15. Reaching
16. Handling
17. Fingering
18. Feeling
19. Talking
20. Hearing
21. Tasting/Smelling
22. Near Vision
23. Midrange Vision
24. Far Vision
25. Depth Perception
26. Visual Accommodation
27. Color Vision
28. Field of Vision

After an injury, a person's ability to fulfill the Physical Demands of his or her job may change. He or she may no longer be able to perform at the strength level necessary for the

job. Also, the range of motion may be limited, precluding the ability to perform one or more Physical Demand functions. Performance levels for Strength and Physical Demand factors can be assessed using the physician's report, the Functional Capacities Checklist (a self-report instrument developed by the author) and other instruments. A number of physical tests are available which appraise the functional limitations imposed by the injury.

The number of jobs listed in the DOT by strength level and SVP is shown in Table 1. The percentage distribution is shown in Table 2.

TABLE l
Number of Job Titles in DOT By SVP and Strength Level

SVP	Sedentary	Light	Medium	Heavy	Very Heavy	Total
1	17	136	60	37	6	256
2	189	1,413	884	358	68	2,912
3	173	933	677	223	32	2,038
4	177	646	599	162	20	1,604
5	171	517	395	103	21	1,207
6	1,277	607	357	82	13	1,236
7	332	998	516	116	10	1,972
8	377	564	130	27	4	1,102
9	31	15	0	0	0	46
Total	1,644	5,829	3,618	1,108	174	12,373

TABLE 2
Percent Distribution of Job Titles By SVP and Strength Level

SVP	Sedentary	Light	Medium	Heavy	Very Heavy	Total
1	6.6	53.1	23.4	14.5	2.3	100.0
2	6.5 4	8.5	30.4	12.3	2.3	100.0
3	8.5	45.8	33.2	10.9	1.6	100.0
4	11.0	40.3	37.3	10.1	1.2	100.0
5	14.2	42.8	32.7	8.5	1.7	100.0
6	14.3	49.1	28.9	6.6	1.1	100.0
7	16.8	50.6	26.2	5.9	0.5	100.0
8	34.2	51.2	11.8	2.5	0.4	100.0
9	67.4	32 6	0.0	0.0	0.0	100.0
Total	13.3	47.1	29.2	9.0	1.4	100.0

Environmental Conditions: Environmental Conditions are defined as the specific physical working conditions to which the worker is exposed while performing assigned

tasks. The factor is considered to have an important effect on the worker if: 1) the worker is exposed to the factor an estimated 20% or more of the time, or 2) the factor is hazardous, in that it may cause bodily injury or danger to life and health. Jobs are classified as being performed Inside, Outside, or Both. They are also classified according to whether seven other Environmental Conditions or Hazards are present in the work environment. These Environmental Conditions and Hazards are listed below.

Environmental Conditions:
1. Exposure to Weather
2. Extreme Cold
3. Extreme Heat
4. Wet and/or Humid
5. Noise
6. Vibration
7. Atmospheric Condition

Inherent Hazards:
8. Moving, Mechanical Parts
9. Electric Shock
10. High, Exposed Places
11. Radiant Energy
12. Explosives
13. Toxic or Caustic Chemicals
14. Other

The Environmental Conditions under which an individual can work can be determined from his or her work and/or medical history. Often a person who has been injured can no longer tolerate inherent hazards, due to decrease in strength level, endurance, ability to react in time, etc. These limitations may well reduce vocational alternatives.

Reduction in Labor Market Access

If the vocational analysis were to conclude that the individual's earning capacity had been reduced by some given percent, the economic role would be greatly simplified—the impairment would be merely a matter of multiplying that percentage by the estimated capacity. This is seldom the case, however. In most cases, the vocational expert will give an opinion as to the reduction in the vocational capacity as opposed to earnings capacity. This is most often done through discussion of a reduction of labor market access. Although labor market access may be a factor in the determination of a reduction in earnings capacity, it is not the same thing. Labor market access addresses the question of the number of jobs available and therefore is only one measure of competitiveness. Sometimes the change in the average wages paid occupations in the original set of jobs, vis a vis the reduced residual set, is factored into the ratings. This introduces another element into the process and can often be quite useful, but in some cases it may be misleading. The missing factor, however, is the relative ability of the individual to compete with others in the open and competitive market given the limitations. The vocational expert must assign this factor, since most economists (if they do not have a vocational background) will be unable to make this assessment. The economist must recognize the difference between vocational impairment and impairment to earning capacity.

Labor market access is defined as the number of jobs (or job titles) an individual has the capacity to perform. The reduction in the number of jobs the individual can perform that has been caused by an injury (expressed as a percent) is the reduction in labor market access.

Labor market access is one measure of the individual's competitive position in the labor market. The greater the reduction in labor market access, the fewer the jobs the individual has to choose from and the greater the competitive effect. Labor market access does not necessarily equate to impairment to earning capacity, although it might in some cases.

In any event, the greater the reduction in labor market access, the larger the expected reduction in earning capacity. The fewer jobs an individual is capable of performing, the less the chance that he will be able to find a job opening. Obviously, if one can perform 100 different jobs, the chance of actually being hired is greater than if one can perform only 10 jobs.

This will not only affect whether one finds initial employment but may also influence potential upward mobility. One typical way to achieve advancement throughout the life cycle is to move from one job to another, in the same or different organization (i.e., age-earnings cycle). If the number of these jobs has been reduced, movement "up the ladder" can be expected to be adversely affected.

Physical injuries, then, which preclude performance at the Very Heavy, Heavy, or Medium level, will severely restrict the number of entrance level jobs available (especially for the potential blue collar worker). This can be seen in Tables 1 and 2.

Concept of Entrance Level Jobs

Access to jobs is not equal. In most cases, access to "higher level" jobs requires experience at lower level jobs in a promotional ladder. One cannot expect to become a Police Lieutenant without having first been a Patrolman. The jobs at the "bottom" of the ladder are called entrance level jobs. In the blue-collar work area, these jobs are frequently low paying and unskilled (or semi-skilled), requiring Medium or above strength classification (a great many require Heavy or more).

Jobs which require specific vocational preparation of one year or less can be considered as being entrance level. Some experts use an SVP of 3 (up to 3 months) or 4 (up to 6 months) as the cutting point for entry level work. An individual who would otherwise qualify could, with some training, learn the necessary skills and abilities to perform the necessary job tasks for entrance level jobs. For the most part, however, these jobs require a relatively high level of physical effort.

The reduction in the labor market access to the entrance level jobs which occurs because of a reduction in strength level (given a pre-injury strength level) is shown in Table 3. Table 3 contains data for all interest areas including clerical and therefore will somewhat understate the labor force reduction for "blue collar" employees. Similar tables for each

interest area have been developed and are available from the author.

TABLE 3
Percent Reduction In Labor Market Access[1]
Of Entrance Level Jobs[2] By Strength Level

Strength Level	Strength Level After Injury			
Before Injury	Light	Medium	Heavy	Very Heavy
Sedentary	83.4%	89.6%	90.8%	90.9%
Light	--	37.4%	44.4%	45.5%
Medium	--	--	11.2%	12.8%
Heavy	--	--	--	1.8%

(1) Percent of Job Titles in Dictionary of Occupational Titles not now able to perform because of change of strength level.

(2) An entrance level job is defined as one which has an SVP of up to and including one year.

As shown in the tables, in the blue-collar area, the predominance of jobs at the entrance level requires at least moderate physical strength. Experience at many of these entrance level jobs, however, is necessary before one can attain higher level, better paying, and less demanding sobs. The point is, then, that even if a person has the physical abilities, native intelligence, aptitudes, and temperaments to perform the higher level, non-physical, demanding jobs, if the entrance points are denied, so is the "entrance ladder."

Residual Capacity

The estimation of the residual earning capacity, expressed as a percent, then, can be made in one or more of several ways. One way to conceptualize the process would be as

$$\text{Residual Earning Capacity} = [(Rwr/Wr) \times (Rhrs/Hrs)] \times 100$$

Where: Wr = Average wage rate absent limitations
Rwr = Residual wage rate
Hrs = Hours (or time) worked absent limitations
Rhrs = Residual hours (or time) worked with limitations

Another way to express the residual earning capacity is to appraise the effect on the age-earning cycle. Table 4 shows age-earnings multipliers for males and females at various ages and educational levels (Dillman, Smith, Boswell, & Ernst, 1987). This table shows, for instance, that 81.73% of the total income for a 20-year-old male with a high school education is due to the age-earning cycle (i.e., upward mobility).

Table 4
Age-Earnings Multiplier

	Educational Level					
	1-3 years high school		4 years high school		4 years college	
Age	Male	Female	Male	Female	Male	Female
20	1.7349	1.2833	1.8173	1.3497	—	—
25	1.3717	1.1319	1.3863	1.1179	1.8186	1.1953
30	1.2176	1.0327	1.1784	1.0057	1.4879	1.1029
35	1.1223	.9999	1.0803	.9724	1.2405	1.0105
40	1.0260	.9897	.9943	.9771	1.1641	.9753

The residual capacity, as a percent, may sometimes be expressed based on the expected effect on the cycle. For example, if the vocational expert felt that the 20-year-old male high school graduate's age-earning cycle was reduced by 50%, the residual capacity would be

Original Multiplier = 1.8173
Residual Multiplier = 1.4087 (one-half of increase factor)

$$\text{Residual (\%)} = \frac{\text{Residual Multiplier}}{\text{Original Multiplier}} \times 100$$

$$= \frac{1.4087}{1.8173} \times 100 = 77.52\%$$

Impaired Earning Capacity, as a percent, may be defined as

$$\text{Impaired Earning Capacity} = 100 - \text{Residual Earning Capacity}$$

The economic role is to project the established base over the worklife, discount for the earning power of money, and apply the appropriate Impaired Earning Capacity Multiplier.

The vocational as well as the economic analysis must take into consideration the individual's potential progress throughout the entire life cycle. The vocational analysis cannot be limited to a short time span (as unfortunately is often the case in a rehabilitation setting) if damages occurring over a lifetime are to be calculated.

The Interface

The interface between the vocational and the economic roles occurs sometimes when making the determination of the client's original capacity level, but more often in the determination of the reduction in the earning capacity. The formulas and procedures which have been briefly discussed establish the framework within which the analysis takes place. The rest of the discussion in this paper involves other salient considerations.

Reduction in Earning Capacity

A reduction in earning capacity can occur in a number of ways. Some of the ways an individual may be impaired are

1. inability to work at all
2. inability to work full time
3. inability to perform the assigned tasks of some but not all jobs
4. change in age-earnings cycle
5. change in ability to compete in open labor market.

Total Disability

Generally, few problems arise in interfacing the vocational and the economic roles in those cases when the client is totally and permanently disabled (i.e., never will be able to work again in any capacity). In such cases, no residual capacity need be computed and the economic loss is equal to the present value of the individual's original capacity.

In some cases of total disability, however, problems may arise in attempting to establish the original capacity level. Care must be taken to insure that the vocational foundation for the economic analysis is appropriate. Problems may occur when the vocational assessment established a capacity based on some specific occupation(s) (or occupational families) and when the individual is young. Although data is available as to the average earnings of various occupations, because it is an average it includes persons of all ages and consequently the age-earnings cycle cannot be applied. Although a young person may well have the capacity to handle certain jobs, these are frequently entry level jobs at the bottom of the "ladder." To deny the client the individualized increases, as expressed by the age-earnings cycle (to be discussed later), will generally understate the true picture.

A more appropriate foundation would be based upon the entry level wages (as opposed to average wages) for selected occupations. The age/ earnings cycle, then, can be applied to this data. In most cases, however, the best approach for young individuals with little or no work experience is not to specify occupations at all but rather to measure capacity by the level of educational achievement the individual has (or could have been expected to

obtain). This is not to say that vocational determination of capacity by job title is inappropriate in all cases but rather that its use may distort the evaluation in many cases. In those instances where the individual is not young and yet has little work experience or has experience in jobs clearly below the "true capacity," capacity based on the determination of specific job titles may be appropriate. This is often the case for individuals who are in business for themselves and show little or no income yet have marketable skills (e.g. electronics).

Partial Disability

The real problems in interfacing the vocational and the economic roles occur when the individual is not totally disabled but rather has suffered a partial disability. The economic appraisal must subtract the residual earning capacity from the original capacity to attain the estimate of the impairment.

Part-time or Reduction in Worklife

In some cases the physical, mental, or emotional limitations caused by the injury are such that the individual is able to work but only on a part-time basis. If the individual is able to work on a predictable and consistent basis, even if part-time, some residual earnings may be computed. If the nature of the limitations are such, however, that the hours that the individual is able to work are unpredictable, then it would be difficult to obtain and retain most jobs.

Evaluation of part-time employment should include consideration of

1. number of hours per week,
2. pay rate,
3. labor-market competition,
4. effect on age-earnings cycle.

In some cases the medical condition will be such that the individual may be forced to retire early or in some other way have an expected reduction in worklife. The percentage reduction may be factored into the vocational analysis or may be used directly in the economic evaluation.

Effects of the Age-earnings Cycle

The determination of a reduction of earning capacity may be based upon consideration of a number of factors other than labor market access. To fully appreciate how a reduction in earning capacity may occur, one has to also consider the ability (or lack thereof) to "go up the ladder" (e.g. the age-earning cycle). This is a vocational issue which is often overlooked.

Basically, there are two major economic variables which act to modify one's earnings over time. These are (a) the general or structural wage increase or (b) the age-earnings cycle. The general (or structural) wage increase represents the wage forces affecting the entire economy. This is shown in statistical data as changes in the averages, e.g., the hourly wage. Although sometimes referred to as "inflationary increase," this variable is really composed of two interrelated components, that is, long-term increase in prices and long-term increase in the productivity of the overall economy. The structural increase is an economic issue. The age-earnings cycle has both economic and vocational implications.

Stated simply, the age-earnings cycle concept is nothing more than the fact that one's earnings are related to a great extent to one's age. When structural wage increases are held constant, it can be shown that the typical wage earner will enter the labor market at a relatively low wage rate, progress rather rapidly in earnings over the younger years, level off in mid-life and, in some instances, experience declining earnings toward the end of the life expectancy.

Since one can generally expect a rapid wage increase to occur during the early years of earnings, calculations of the earnings stream of a young person will be severely underestimated if these factors are not considered in the analysis. Because of the leveling phenomenon in mid-worklife, the computations will not be as severely affected if the client is middle-aged or older, especially at the lower educational levels.

The age-earnings cycle is dependent not only upon age but also upon one's educational achievement and sex. In fact, there is a different age-earnings cycle for each level of education and for each sex. In general, the greater one's education, the larger and more rapid will increases occur in early worklife, the later in life the leveling off of the income will occur, and the less the wage will decline at the end of the worklife expectancy. In attrition, the age-earnings cycle of females tends to be "flatter" than that of males. It should be noted, however, that there is considerable evidence to indicate that this sex-difference phenomenon will tend to disappear over time as the new female entries into the labor force progress through their life cycles.

Impairment to the Age-Earnings Cycle

A disruption to the normal progression of the age-earnings cycle can occur in one or more of several ways. Some of these are

1. A partial disability which would allow one to continue at the same level (holding structural increases constant) but would preclude future advancements.
2. A partial disability which results in a delay in the age-earnings cycle. It sometimes occurs that an injury will delay an individual's entrance into the income stream and will therefore delay the age-earnings cycle. This occurs occasionally when the individual is in a training program of some type when the injury occurs and, although he recovers, his training has been delayed.

If the foundation as to the estimated effects of the injuries is properly developed in the vocational analysis, the economic evaluation can compute the dollar effects.

Competitive Position in Open Labor Market

Most individuals who have suffered a significant medical impairment encounter a change in their ability to compete in the open labor market. This lack of competitiveness may have a negative impact on their ability to obtain and/or retain employment and therefore adversely affect the future earning capacity. This phenomenon is well known. In fact, one of the central roles of the rehabilitation specialist is to assist in reducing the competitive disadvantage.

Any personal injury evaluation, then, must take into consideration the change in the individual's competitive position, regardless of the ability to perform the tasks. The mere fact that the individual may be able to perform most (or even all) of the tasks involved in the job does not mean that he/she will be on an equal footing with unimpaired others seeking the same position.

Determination of the change in competitive position and the subsequent effect on the earning capacity is not an easy task. One cannot go to a table and find some precise number. Instead the vocational expert must rely on his/her experience to make this estimate.

Estimates of a reduction in the client's competitive position would normally consider the concept of selection ratio. The selection ratio is merely the ratio of the number of jobs being sought to the number of positions open (for a given job).

$$\text{Selection Ratio} = \frac{\text{Number of Qualified Jobs Seekers}}{\text{Number of Positions Open}}$$

A selection ratio which is less than 1 means that there are fewer qualified applicants than job openings. In this case, theoretically, everyone would be hired. If this ratio is quite low, the employer may reduce the qualification criteria. This has the effect of increasing the numerator of the equation and increasing the selection ratio. A client with a medical impairment will generally find fewer negative competitive effects under these circumstances. When the selection ratio is low, the employer often is less reluctant to accept task limitations and/or to redesign the work place or modify the work environment.

Unfortunately, the selection ratio is seldom low in entrance level jobs. Since, by definition, an entrance level position is one which has a short (i.e., one year or less) vocational preparation period, there are generally many potential job seekers.

In general, the larger the selection ratio, the more difficult it will be for the medically impaired to compete. In fact, if the selection ratio is high enough, the employer may "tighten" or increase the qualification criteria. This, of course, will reduce the set of

qualified job seekers. Because fewer applicants will have to be increased, this increase in qualification criteria may actually decrease the employer's cost of hiring. This, of course, will generally work to the detriment of the medically impaired client.

In most cases, the precise data as to selection ratio will not be available. The concept, however, can still be of value to the vocational expert in getting forth an opinion. Some relevant information may be gathered from the Employment Security Agencies, which will assist in estimating the appropriate ratios for any given geographic area.

Problems in the vocational-economic interface arise in the interpretation of the dollar effect of any reduction in competition. Statements such as "the client will find it difficult to compete" or "his chances of obtaining and retaining substantial employment are limited" convey the meaning that the client is not going to be as well off as he/she would have been absent the limitations but fail to give any quantitative information for use by the economist.

As difficult as it may be, the vocational role must translate the estimate of any loss in competitiveness into terms the economist can use. This may be accomplished in one or more of several ways. The following are examples.

1. A statement as to the proportion of time the individual can be expected to be employed. An example would be, "Because of his inability to effectively compete, Mr. Jones can be expected to be unemployed approximately 25% of the time due to his impairment."
2. A statement as to the type of jobs and pay rates available. For example, "Given her extensive cosmetic injuries, Ms. Smith will not be able to continue to function in a positive way with the public or to have extensive contact with fellow workers. In my opinion, she will be able to perform 'back office' type clerical functions such as Mall Clerk. The expected pay rate in such positions is estimated to be approximately 60% of that of jobs for which she would have previously been qualified."
3. An estimate of the effect on the age-earnings cycle. The opinion might state, "Mr. Stiffle's ability to 'move up the ladder' either by promotion and/or by changing employers has been severely hampered. In my opinion, the effects of the age-earnings cycle have been reduced by at least half."
4. An opinion as to the annual effect on earnings. A statement of this type can be used directly by the economist as a multiplier. A typical statement would be, "In my opinion, this loss of the ability to compete will, by itself, reduce his earning capacity by at least 10%."

Estimates of the effects of the reduction in competition on earning capacity are just that—estimates and opinions. In most cases, such opinions should be stated in range of values (i.e., 15-35%) or as "at least" some percent.

Vocational Assessments with Poor Economic Interface

The following are typical vocational assessments and/or conclusions that do not lay a strong foundation for the economist unless the economist also has a strong vocational background:

1. The client should be retrained in (some specific) occupations.

Delineation of areas for rehabilitation retraining gives the economist very little to work on. This approach fails to address the question of:

(a) What was the individual's original vocational capacity?

(b) What is the probability of success of the retraining program?

(c) Given retraining, what would be the individual's competitive position in the open labor market?

(d) What effect does the reduction in open labor market access have, even given successful completion of the retraining?

(e) Would expected earnings change, given retraining?

2. The client is able to do (some specific) occupations.

This opinion is a little bit better than the preceding one, but still is deficient. An opinion of this type falls to address the following:

(a) What would be the client's competitive position in the open labor market?

(b) What is the effect of the reduction of labor market access?

(c) Are these jobs entrance level? If so, would the individual's normal age-earnings cycle be affected?

(d) What are the relative pay differentials between these jobs and those previously available to him/her?

3. The client's labor market access has been reduced by (some given) percentage.

A percentage reduction in labor market access is one measure of the individual's competitive ability. In many (if not most) cases, however, the percentage reduction (by itself) does not directly equate to an equal reduction in earning capacity. An opinion of this type needs to be supplemented with

(a) Estimates of the client's competitive strength in the set of residual jobs.

(b) Most probable entrance salary levels in set residual jobs.

(c) Estimate of effect on the age-earnings cycle.

Vocational Assessments with a Strong Economic Interface

The following are examples of vocational assessments that the economist can easily work with:

1. The individual has the capacity to function at (some given) educational level.

Data for earnings by sex and by expected educational levels are available from U.S. Government sources. The economist can use a vocational opinion of this type to easily

compute differences based on different educational expectations.

2. The individual has suffered a (stated) percent impairment to the earning capacity.
   If the vocational opinion is stated as some given percent of earning capacity, the task of assigning the dollar amount is greatly simplified. The discounted value of earning capacity is simply multiplied by the percent reduction to reach the dollar value.
3. The individual has the residual capacity estimated at the Federal minimum wage (or at some other given wage rate).
   In many cases, the nature of the opinions is such that the individual's future employment activities would be limited to jobs at, or near, minimum wage. If this is the case, the residual earning capacity can easily be computed. Even this vocational opinion, however, should be supplemented by opinions as to
   (a) whether the individual would be limited to full- or to part-time employment
   (b) the competitive effects on the individual to obtain this level of employment
   (c) the expected effects on the age-earnings cycle.

Conclusions

In many personal injury cases, the economist's testimony will be based, at least in part, upon a foundation previously laid by a vocational expert. Quite often, however, the foundation is lacking in one or more ways. It is incumbent upon the economist to insure that his/her testimony will interface well with the vocational. This paper has examined the vocational role and has pointed out some areas with which the economist should be familiar.

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Life Care Plan Survey 2009: Process, Methods and Protocols

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Abstract

A national survey was conducted to obtain current information about life care planners, the life care planning process, as well as methods and protocols utilized by practicing life care planners. Areas addressed in the survey included: a) demographics; b) business practices; c) roles and functions of the life care planner; d) life care planning protocols; and e) future growth and development.

Survey results describe the current state of life care planning practice, provide data on protocols/procedures used by life care planners and identify areas of life care planning practice where further definition, refinement and/or research may be necessary. In addition to descriptive data, responses were analyzed in terms of similarities and differences related to field of practice, certification status, and amount of deposition experience. Results are expected to enhance life care planning practice by promoting continued discussion and consideration regarding roles, scope of practice, competencies, and standards of practice.

Introduction and Historical Perspective

Since the term "Life Care Plan" was published in *Damages in Tort Actions* (Deutsch & Raffa, 1981) and *A Guide to Rehabilitation* (Deutsch & Sawyer, 1985, Rev. 2005), the scope and practice of life care planning has developed and grown. A variety of training programs in life care planning have been established to provide detailed instruction on the format, methods and procedures involved in outlining future care needs and costs for individuals with catastrophic injuries, disabilities or chronic medical needs. Life care planning courses and continuing education seminars are now taught through several professional organizations as well as at a number of universities offering graduate programs in rehabilitation counseling and nursing.

Books and numerous peer reviewed publications provide information about life care planning and address disability as well as practice issues including procedures, services, technology, ethics and standards (e.g., Weed & Berens, 2010; Riddick-Grisham, 2004; Riddick-Grisham & Deming, in press; Weed, Berens, & Deutsch, 2002). The *Journal of Life Care Planning* not only includes peer reviewed articles that address life care planning needs for individuals with specific disabilities (e.g., traumatic brain injury, spinal cord injury, swallowing disorders, chronic pain), but includes an ethics interface column as well as articles on medical equipment replacement schedules (Amsterdam, 2002; Marini & Harper, 2005), hospital pricing (Rosenblatt, 2002), outcomes (McCollom & Crane, 2001; Reavis, 2002;

Casuto & Gumpel, 2003; Patterson, Murphy, & Masterson, 2004), reliability/ validity (Sutton, Deutsch, Weed, & Berens, 2002; Kendall & Casuto, 2005), research methods (Kendall & Deutsch, 2002), importance of vocational rehabilitation (Field, 2002), informed consent (Hogue, 2003), selecting a life care planner (Fick, 2003), school nursing (Cosby, 2003), technology (Hill, 2003, 2004; Deutsch, Kendall, Raffa, Daninhirsh, & Camino-Ferguson, 2005), home support services (Fischer, 2004; Yu, Pomeranz, Moorehouse, Shaw, & Deutsch, 2008), household services (Fischer, 2007), neuropsychological evaluation (Bryant & McLean, 2004; Kohn, Hooper, Ballard, Raphael, & Golden, 2009), methodology (Weed, 2004; Neulicht & Berens, 2005; Neulicht, 2006; Field, Choppa, Johnson, Jayne, Fountaine, & Smith, 2008), clinical judgment (Choppa, Johnson, Fountaine, Shafer, Jayne, Grimes, & Field, 2004), aging (Mitchell, 2004a, 2004b), needs of a forensic economist (Ireland, Rizzardi-Pearson, 2004), wheelchairs (Mitchell, 2005), vehicle modifications (Weed & Engelhart, 2005), personal care assistance (Pomeranz, Shaw, Sawyer, & Velozo, 2006; Preston, 2009), home assessment (Karl & Weed, 2006), use of scientific research and clinical practice guidelines (McCollom, 2005; Pomeranz, Yu, Wemmer, & Watson, 2007), medical coding (Maniha, 2008), long term physical therapy needs (Marini, Luckett, Miller, & Blanco, 2009), and life expectancy (Krause & Saunders, 2010), to name a few.

Professionals involved in the specialty practice of life care planning have developed *Standards of Practice* (Preston, 2002; Reavis, 2002; McCollom, 2006; International Academy of Life Care Planners, 2006; Fick & Preston, 2006) and focused on consensus building with regard to methods and protocols through biennial Summits (Weed & Berens, 2000; Berens, 2002; Riddick-Grisham, 2003; 2006; Berens, 2004; Deutsch & Allison, 2004; Preston, Pomeranz, & Walker, 2008; Berens, Johnson, Pomeranz, & Preston, 2010).

Turner, Taylor, Rubin, & May (2000) conducted a study of the job functions associated with the development of life care plans. Results of a more recent role and function study (Pomeranz, Yu & Reid, 2010) indicate that 21 themes were validated by professional life care planners (e.g., advocacy, assess independent living needs, community re-entry, consultation services – legal system, coordination and service delivery, counseling and services, disability prevention – health promotion, equipment needs/assistive technology, ethics, evidence-based practice, health-care management, insurance benefits, legislation, medical and psychosocial aspects, medical background, outreach and marketing, professional development, program management and evaluation, rehabilitation team, vocational information and life care planning needs assessment). For full text of the role and function study, the reader is referred to the *Role and Function Study of Life Care Planners* (Pomeranz, Yu, & Reid, 2010).

Continuing the ongoing progress in life care planning education, professionalism, principles, and identification of pertinent practice issues, an online national survey of life care planners was conducted in 2001 (Neulicht, Riddick-Grisham, Hinton, Costantini, Thomas, & Goodrich, 2002). The survey was conducted in an effort to obtain current information about life care planners, the life care planning process, as well as methods and protocols utilized by practicing life care planners. It provides a baseline for future surveys documenting the evolution of life care planning over time.

In the past nine years, the number of certified life care planners has more than doubled. In tandem with the field's growth, specificity of information required in a life care plan and the increased complexity of referrals, it is not surprising that questions relevant in 2001 continue as current issues, e.g., What are the performance indicators of a comprehensive life care planning process? In what manner would an individual life care planner compare and contrast his/her methodology with that of another life care planner? Do standards accurately

represent the individual life care planner in their day-to-day practice?

The purpose of the *Life Care Plan Survey 2009* was to replicate and update the 2001 study. Survey results are expected to enhance life care planning practice by promoting continued discussion and consideration regarding competencies and *Standards of Practice*. This article will provide results of the *Life Care Plan Survey 2009*, describe the current state of life care planning practice, provide data on protocols/procedures used by life care planners and identify areas of life care planning practice where further definition, refinement and/or research may be necessary.

Methodology

Study Design

An online survey of practicing life care planners was completed by Neulicht, Grisham, Goodrich and Hinton in July 2009. The survey instrument was developed over a two-year period of time and consisted of multiple-choice questions with the option of providing comments on selected items. Areas addressed in the survey included: a) demographics; b) business practices; c) roles and functions of the life care planner; d) life care planning protocols; and e) future growth and development. Survey respondents were requested to provide information regarding current practice and/or protocols used during the past 12 months for all questions except for those that specified a different time frame. Questions were to be answered based on the practitioner's or company's usual practice. Questions regarding future growth needs also were included in the survey. The framework for updating the survey instrument included review of the 2001 survey questions and results, Summit Proceedings, as well as review of the literature, International Academy of Life Care Planning (IALCP) *Standards of Practice* (2006), and International Commission on Health Care Certification (ICHCC) life care planning competencies. Question topics new to the 2009 survey include:

- Number of plans completed per year
- Types of cases
- Charges for rush cases and administrative services
- Closed file contents and methods of retention
- Average length of an in-person interview
- Independent HIPAA (Health Insurance Portability and Accountability Act) release requests
- Recommendation for specific medical follow-up, procedures and/or diagnostic testing based on LCP expertise
- Example/rationale for including costs for goods and services related to pre-existing conditions
- Identification of collateral funding streams/sources
- Examples of databases
- Sources used in forming opinions regarding household support needs
- Inclusion of private vs. direct hire attendant care
- Inclusion of additional costs for live-in food, utilities, supply expenses
- Consideration of time a parent would normally be expected to perform parenting duties in recommendation for pediatric in-home supervision
- Physician sign-off/review
- Updating the plan with change in evaluee's condition
- Requesting that referral source provide a copy of the life care plan to evaluee
- Contacting evaluee/family to determine if the life care plan is being/has been followed

(See Appendix A for survey questions)

The tool was piloted/reviewed by twelve leaders in the field of life care planning and feedback was used to refine questions. The study was funded, in part, by the Foundation for Life Care Planning Research (FLCPR). It was endorsed by the International Academy of Life Care Planners (IALCP) and approved by the Institutional Review Board (IRB) of research on human subjects at the University of North Carolina at Chapel Hill. Since the respondents' identities were not available to the research team and the individuals gave informed consent through voluntary participation by completing the survey, no risks to individuals were identified.

One hour of continuing education credit (CEU) was awarded by the Commission for Case Manager Certification (CCMC).

Respondents

No centralized or comprehensive list of life care planners currently exists; therefore, multiple rehabilitation, life care planning and education/training organizations were contacted to request names and contact information since individuals from various disciplines complete life care plans. E-mail lists were obtained from the International Association of Rehabilitation Professionals (IARP) IALCP and Forensic Sections, The Care Planner Network and Medipro Seminars for a one time only use. The lists of names and email addresses provided by the organizations and institutions were reviewed and merged to avoid duplication.

Three weeks prior to the launch of the survey (5/5/09), announcements were sent to listservs for life care planners (i.e., IALCP, IARP Forensic Section, Care Planner Network, and ICHCC). Several steps were taken to create a valid survey distribution list. A mass e-mail was sent via Constant Contact requesting confirmation that recipients were practicing life care planners (3252 e-mails sent, 1080 bounced back). Individual e-mails also were sent to verify addresses and status as a practicing life care planner. Of the 1,704 individual e-mail invitations to participate in the survey sent on 5/29/09, 415 were returned due to undeliverable e-mail addresses. Daily lists of resends, additions and corrections were submitted to SurveyTracker and two follow-up e-mail invitations were sent to the final audience of 1,346 usable e-mail addresses. To reach life care planners who did not have an e-mail address and/or may not have received the invitation to participate, listserv messages and reminders were periodically posted with instructions for survey access.

Data Collection

The research team retained Training Technologies, Inc. (TTI©) to assist in the data collection using their SurveyTracker product. SurveyTracker is an authenticated, secure, independent Application Service Provider with considerable research/university experience (Training Technologies, 2010). The authors are not connected with this firm in any manner. They do not own any portion of this firm and are not employed in any manner by the firm. Neither TTI© nor any of their products/services have or had a link to any of the authors' local computers or networks.

The e-mail list of potential life care planner participants was given to SurveyTracker. SurveyTracker sent all e-mail invitations requesting participation, collected the data from respondents, and sent the data to the researchers without respondent identifiers. Participants were given approximately six weeks to respond (5/29/09 to 7/13/09). Responding participants completed the survey instrument online. Due to the length of the survey (estimated time of 30

to 60 minutes to complete), respondents were able to *Save & Resume*, if needed to take a break while responding. After SurveyTracker received survey responses, data was forwarded in aggregate form to the authors and statistician for analysis.

Statistical Analysis

Descriptive analysis was generated directly from the SurveyTracker database of responses and included frequency and percentage data for all questions. Chi-Square (2) and one-way Analysis of Variance (ANOVA) were completed, as appropriate, to determine if there were significant differences in responses to selected questions by field of practice, certification status, and amount of deposition experience.

Definition of Terms

For purposes of the survey, the research team developed definitions for select terms included in the survey. The terms, with definitions, are as follows:

Testifying expert: An individual who is an expert in his/her field, hired in a litigation situation to provide expert testimony regarding a specific topic. The expert's name must be revealed/listed with the court. Work completed is discoverable.

Non-testifying Consultant: An individual who is an expert in his/her field, hired in a litigation (or potential litigation) situation to provide "behind the scenes" consultation AND is not retained to provide expert testimony. The Non-Testifying Consultant's name is routinely not revealed to the other side or to the court. Work product of the Non-Testifying Consultant is routinely not discoverable.

Evaluee: The person who is catastrophically injured or chronically ill for whom the Life Care Plan is being developed is called the evaluee. Depending on the Life Care Planner's professional background, the evaluee can also be referred to as the injured worker, patient, or plaintiff (Barros-Bailey, Carlisle, Graham, Neulicht, Taylor, Wallace, 2008; 2009).

Routine: Greater than 75% of the time.

Life Care Plan: A Life Care Plan is a dynamic document based upon published standards of practice, comprehensive assessment, data analysis and research, which provides an organized, concise plan for current and future needs with associated costs for individuals who have experienced catastrophic injury or who have chronic health care needs

Source: Combined definition of the University of Florida and Intelicus annual life care planning conference and the American Academy of Nurse Life Care Planners (now known as the International Academy of Life Care Planners) presented at the Forensic Section meeting, NARPPS (now IARP) National Association of Rehabilitation Professionals in the Private Sector, (now International Association of Rehabilitation Professionals) annual conference, Colorado Springs, CO and agreed upon 4/3/98.

Results

Demographics

Response rate

Responses were obtained from 293 individuals or 22% of the usable invitation list. Eighty-five percent of those who started the survey completed it. In response to the first question on the survey, 222 individuals (76% of respondents) indicated that they are practicing life care planners. For purposes of this study, a practicing life care planner was defined as one who has submitted one or more life care plans to a referral source within the last 12 months. Individuals who provide research or work under the direction of a life care planner or have completed life care plan training/education but have not submitted a life care plan to a referral source within the last year were asked to end the survey.

For the remaining analyses, only life care planner respondents are included. Not all individuals answered all questions on the survey.

Gender

Respondents were predominantly female (70.4%) with significant gender distribution differences between professional groups. Nurses had a significantly lower proportion of males (2.1%) than did rehabilitation counselors (42.79%; 2 (1) = 44.72, p<.001). Other professions were not sufficiently represented to conduct comparisons.

Geographical distribution

Respondents were geographically distributed throughout all 11 United States Court Districts with the highest response rate from the 9th circuit (n=34; states include California, Nevada, Arizona, Oregon, Idaho, Washington, Montana, Alaska, Hawaii) followed by the 4th circuit (n=21; states include Maryland, North Carolina, South Carolina, Virginia, West Virginia). The state with the highest number of respondents was California (n=14). There were no responses from life care planners in Alaska, Delaware, District of Columbia, Hawaii, Illinois, Iowa, Kentucky, New Hampshire, North Dakota, Rhode Island, South Dakota, Utah, West Virginia, and Wyoming. Of the Canadian provinces, completed surveys were received from life care planners in Ontario (n=6) and Alberta (n=2).

Licensure or certification/field of practice

When questioned as to whether a respondent is licensed or certified at the state level, forty-eight percent (47.7%, n=106) of the respondents indicated registration as a nurse whereas 45% (n=100) reported certification as a rehabilitation counselor or licensure as a mental health counselor.

Responses for respondents' primary health care profession follow a similar pattern: 44.6% (n=99) designated nursing as their primary field of practice and 36.9% of respondents (n=82) indicated rehabilitation counseling. Individuals also indicated a primary field of practice by writing in other areas (e.g., case management, nursing case management, rehabilitation ergonomics/economics, legal, disability management specialist and neuropsychology) and were grouped as "Other Professionals" for data analysis when compared to the "Rehabilitation Counselor" and "Nurse" groups.

Education

Forty-seven percent (47.3%, n=104) of the respondents indicated their highest academic degree is at the Master's degree level; 26.8% (n=59) have earned a Bachelor's Degree and

10.5% (n=23) have obtained doctoral degrees. The remaining respondents were Diploma Nurses (7.3%, n=16) or had earned an Associate's degree in nursing (6.4%, n=14). No respondents indicated that they were physicians or chiropractors. One respondent completed a Juris Doctor degree.

Professional affiliation

Respondents reported that they hold an average of 2.7 certifications (n=222, Standard Deviation (SD) =1.34; range=0 to 6) and belong to an average of 2.73 organizations each (n=222, SD=1.58, range=0 to 9). Seventy-four (74.3%) percent of the respondents (n=165) reported that they hold the ICHCC Certified Life Care Planner (CLCP) designation, 41% (n=91) are Certified Case Managers (CCM), 34.2% (n=76) are Certified Rehabilitation Counselors (CRC) and 10.8% (n=24) are Certified Nurse Life Care Planners. The most commonly cited organizations in which respondents hold an active membership are: IARP (63.5%, n=141), IALCP (61.7%, n=137), Case Management Society of America (25.7%, n=57), American Association of Nurse Life Care Planners (17.6%, n=39) and American Association of Legal Nurse Consultants (16.7%, n=37).

Eight-five percent (84.7%, n=188) of the respondents indicated they are active members of a professional listserv. Nurses and Rehabilitation Counselors indicated they are active members of a listserv in statistically equal proportions (71/82, 86.6% Rehabilitation Counselors; 87/99, 87.9% Nurses).

Forty-seven (47.3%) percent of the respondents (n=105) complete an average of 11-20 Continuing Education Unit (CEU) hours on topics specific to life care planning each year. Another 26.6% complete an average of 21-30 hours per year, and 12.2% complete less than 10 hours per year. There was no significant difference in CEU hours between Nurses and Rehabilitation Counselors (2 (4) = 5.38, p=.25).

Experience

A majority of respondents (92.8%, n=206) indicated that life care planning has been part of their practice for six years or more. Thirty-nine percent (38.7%, n=86) have performed life care planning services for 11 – 20 years and 17.1% (n=38) for 21 years or longer.

Rehabilitation Counselors, Nurses, and Other Professionals were not equally represented with respect to levels of life care planning experience. Rehabilitation Counselors differed significantly from Nurses (2 (4) = 11.5, p=.02). While 14.7% of Nurses reported 21 or more years of experience, 25.0% of Rehabilitation Counselors reported that level of experience. Similarly, Nurses differed significantly from the combined non-nurse professions (2 (4) = 10.1, p=.04). The differences reflected here were at the very low and very high end of the experience spectrum. Specifically, 6.7% (n=2) of Nurses but no Other Professionals reported less than a year of experience, whereas 6.3% (n=6) of Other Professionals had 30 or more years of experience. While none of the Nurses reported this many years of experience, fifty-five percent (54.8%, n=47) of Nurses reported between 21 and 30 years of experience – the highest percent in any category for any group. Similarly, Rehabilitation Counselors also differed from the Other Professionals group (2 (4) = 9.8, p=.05) due to the higher percentage of Rehabilitation Counselors with 21 or more years of experience (25.0% versus 12.9% for Other Professionals) as well as the higher percentage of Other Professionals with less than 11 years of experience (54.8% versus 28.8% for Rehabilitation Counselors).

Of the 211 respondents providing information on the number of life care plans completed, 47.9% (n=101) had completed less than 100 life care plans and 20.4% (n=48) had completed

250 or more life care plans. A majority of respondents (89.9%, n=187) indicated that at least 50% of the life care plans they complete are on adults (age 22 – life) whereas 17.6% (n=36) of the respondents complete at least half their life care plans on pediatric evaluees who are 21 years old or younger.

Among respondents, the mean number of life care plans completed in their respective careers was 187.1 (SD=305.4). Individual totals ranged from one to 2,500. For 61.5% of respondents (n=136), life care planning represents 50% or less of their practice. Twenty-three percent (22.6%) of the respondents (n=50) indicated that life care planning was a significant proportion (76 - 100%) of their practice.

Forty-eight percent (48.2%) of the respondents (n=107) reported that they provide regional life care planning services (e.g., a 3 – 5 state radius) whereas 36.0% (n=80) provide national services, 35.6% (n=79) provide local services, and 11.3% (n=25) provide international services. (Note: total "N" exceeds the sample size because many respondents provide services in more than one response category.) Characteristics of the typical respondent are provided in Table 1.

Table 1. Typical Life Care Plan Survey 2009 Respondent

- Female
- From 9th or 4th circuit (United States Court Districts)
- From California, Pennsylvania, Florida, North Carolina
- Nurse or Rehabilitation Counselor
- Predominant degree is Master's Degree, followed by Baccalaureate
- CLCP, CCM, CRC (an average of 2.7 certifications)
- Member of IARP, IALCP (an average of 2.73 organizations)
- Active member of a listserv (Care Planner Network, IALCP)
- 11 to 20 years of experience in rehabilitation or with people with disabilities prior to work as a life care planner
- 11 to 20 years of experience in life care planning
- At least 50% of plans completed are on adults
- Provides life care planning services on local and regional (3 to 5 state radius) bases
- Completes up to 10 life care plans per year
- Has not been subjected to a Daubert challenge

Seventy percent of this survey sample (70.03%, n=171) have deposition experience. Fourteen percent (14.0%, n=31) of the respondents have never testified as an expert witness regarding a life care plan. Among respondents who reported deposition experience (n=171), the mean number of career life care plan depositions was 74.7 (SD=176.0; range= 1 to 1750). The median number of depositions was 20.0, indicating that experience was not evenly distributed across the sample.

Of the 105 respondents with expert testimony experience in Federal Court, the mean number of testimonies was 12.8 (SD=20.4, median=5.0, range=1 to 116). Expert testimony experience in State Court was indicated by 146 respondents. The mean number of State Court testimonies was 41.9 (SD=84.5, median=10.0, range=1 to 600). With regard to the 69 respondents who reported expert testimony in Workers' Compensation cases, the mean number of testimonies was 14.4 (SD=56.0, median=2.0, range=1 to 460).

Only a small number of respondents reported expert testimony experience exclusively in Federal Court (n=6), State Court (n=3), or Workers' Compensation hearings (n=5). The level

of testimony experience among these individuals was relatively low, ranging from a mean of 1.2 (SD=0.5) for Workers' Compensation to a high of 7.7 (SD=2.5) for State Court. A similarly low number of respondents had expert testimony experience exclusively through a combination of Federal and State Court (n=4). A somewhat higher number of respondents reported exclusively providing expert testimony in depositions (n=21) with a mean number of depositions of14.0 (SD=42.9, range=1 to 200). More than half (n=116) of the respondents reported providing expert testimony in Workers' Compensation cases in addition to either Federal or State Court. Ninety-six percent (96.4%) of the respondents (n=214) have never been subjected to a Daubert challenge. Seventy-eight percent (78.4%, n=174) have not assisted an attorney in preparation for a Daubert hearing regarding another expert witness.

Business Practices

Practice setting

A majority of respondents (52.3%, n=116) indicated that they practice as owner/independent practice with employees/subcontractors. Other practice settings included owner/independent practice setting without employees/ subcontractors (28.8%, n=64) and private rehabilitation or case management company employee (16.2%, n=36). There was no significant difference by field of practice.

Referral base

The most common sources of referrals for this sample of life care planners were attorneys (96.4%, n=214), followed by Workers' Compensation (49.5%, n=110) and insurance carriers (46.8%, n=104). A majority of respondents (89.6%, n=199) reported that they are not listed with an expert witness service. Almost fifty percent of the respondents (49.55%, n=110) receive at least 50% of their referrals from plaintiff attorneys. Seventy-eight percent of the respondents (77.5%, n=172) receive 50% or less of their referrals from defense attorneys. Life care plans are prepared primarily for personal injury or accident cases, followed by medical malpractice.

Case acceptance/retainer

Sixty-five percent (65.3%, n=145) of the respondents indicated that they require a signed agreement (or letter of engagement) prior to accepting a case. Seventy-two percent (72.1%, n=160) of the respondents reported that they require a retainer before initiating work on a case. For those who request a retainer, 27.9% (n=36) request $1000 or less, 18.4% (n=25) request $1001 to $1500, 20.1% (n=26) request $1501 to $2000 and 32.6% (n=42) request more than $2000. Among those who require a retainer, the mean amount was $1,945 (SD=$1,140) and the amount ranged from $25 to $6,000.

File documentation

Fifty-seven percent (57.2%, n=127) reported that copies of all time sheets (contact/activity) are part of their file. Most respondents routinely include written correspondence in their case files, with rates ranging from 76.6% (n=170) for correspondence from the evaluee to 88.3% (n=196) for correspondence from professionals. Correspondence from a referral or legal source is routinely included by 82.4% (n=183) of respondents. A majority of respondents also routinely include e-mail correspondence with a range from 56.8 % (n=126) for evaluee e-mail correspondence to 58.6% (n=130) for referral/legal e-mail and a high of 62.6% (n=139) for e-mail from professionals. Respondents indicate they typically

maintain closed files for seven years in both paper and electronic formats. A majority of respondents routinely include generated work product (including correspondence), interview/case notes, their deposition and report, other experts' reports, research notes and medical records in a closed case file. Other experts' depositions are not routinely kept in a closed file.

Billing

A majority of the respondents (84.4%, n=134) indicated that the average total number of hours required to complete a life care plan ranges from 30 to 50. The mean length of time was 40.0 hours (SD=18.0 hours) and the range was 10 hours to 120 hours.

Eighty-nine percent of the respondents (88.7%, n=197) indicated that they (or their company) bill by the hour. Across types of referrals, the mean hourly rate was $169 (SD=$73.40). The mode for insurance (e.g., reserve setting), legal and Workers' Compensation cases was $150 per hour and for court/deposition testimony, $250 per hour. On average, rates range from $62.50 to $750 per hour. Seven percent (7.4%, n=16) of the respondents charge $100 or less per hour whereas 11.0% (n=24) charge $101 to $125 per hour and 81.6% (n=177) charge $126 or more per hour. Rate structure differences between professional groups were not statistically significant (Oneway ANOVA, $F(2,205)=2.75$, $p=.07$). When rate structure was examined by certification status, it was found that rate differences between CLCPs and non-CLCPs were not statistically significant ($T(173)=0.95$, $p=.035$).

Fifty-seven percent of the respondents (57.1%, n=124) reported that they charge a different rate for court/deposition appearance. Of those providing more specific information (n=106), 104 (98.1%) state they charge a higher rate for court/depositions. Twenty-two percent of the respondents (22.2%, n=48) indicated that they (or their company) charge a different rate for travel. Of those providing additional information, 93.0% (n=40) charge a lower rate for travel (averaged across life care planning and court travel rates). Few respondents (5.4%, n=12) charge a different rate for professional services in the area of life care planning when serving as a non-testifying consultant (versus as an expert witness). For those who charge a different rate and provided more detailed rate information, 80% (n=8) charge less per hour as a non-testifying consultant. With regard to contracted workers or other staff, the most common use is to assist with cost research. The majority of respondents do not charge a different rate for rush work, research assistance, or administrative services.

The primary avenue utilized by respondents for resolving non-payment of bills is to contact the referral source (46.4% of respondents; n=103). The second most frequently cited response was that non-payment of bills was "never a problem" (26.6%, n=36). The remaining options for resolution of non-payment were: legal representation (19.4%, n=43); bar association complaint (16.2%, n=36); and collection service (17.1%, n=38).

Roles and Functions of the Life Care Planner

A majority of respondents (76.0%, n=168) indicated that they have not served in the role of a case manager, counselor or therapist for a client prior to developing the life care plan. Likewise, a majority of respondents (77.5%, n=172) reported that they have not served in the role of a case manager, counselor or therapist on a case after completing a life care plan, nor served in the role of a case manager, counselor or therapist on a case after another person completed a life care plan (65.3%, n=145). Nearly one-half of respondents (46.4%, n=96) indicated that they have not mentored life care planners, either formally or informally. Among

the remaining respondents who have been involved in life care planner mentoring (n=111), the mean number of mentees was 11.0 (SD=37.0, median=3.0) with the number of mentees ranging from 1 to 300. Seventy-four percent (73.9%, n=82) with mentoring experience have mentored 5 or fewer individuals.

Twenty percent (19.8%, n=44) of the respondents have never reviewed and/or analyzed a life care plan of an opposing expert to provide a testifying expert opinion in a litigation situation. Twenty percent (20.3%, n=45) have never reviewed and/or analyzed a life care plan of an opposing expert to provide a non-testifying consulting opinion in a litigation setting. Forty-one percent (40.5%, n=90) have reviewed or analyzed one to ten plans of an opposing expert to provide an expert opinion in a litigation situation and 45.9% (n=102) have provided this service on one to ten plans as a non-testifying consultant. Only 10.8% (n=24) have reviewed and/or analyzed more than 50 life care plans of an opposing expert to provide an opinion as a testifying expert, and 7.2% (n=16) did so as a non-testifying expert.

Twenty-four percent (24.2%, n=53) of the respondents have been asked to assist in the development of deposition questions for the opposing life care plan expert more than 50% of the time. Fourteen percent (14.2%, n=31) of the respondents have not been asked to do so.

Eighty-three percent (83.1%, n=182) of the respondents reported that they do not discount to present value the cost of the items in the life care plan. Thirty-eight percent (37.9%, n=83) of the respondents indicated that they routinely provide information to an economist to clarify lifetime cost projections. Eleven percent (11.4%, n=25) never do this.

Eighty percent (80%, n=176) of the respondents indicated that they do not videotape evaluees, and most respondents (56.1%, n=124) never participate in development and presentation of day-in-the-life videos. Fourteen percent (13.5%, n=30) videotape evaluees up to 25% of the time and 10.4% (n=23) of the respondents participate in day-in-the-life videos at least 50% of the time. Thirty-three percent (33.3%, n=74) do not take photographs of evaluees' equipment or homes and 27.0% (n=60) of respondents take photographs 25% of the time or less. Sixty-one percent (60.47%, n=104) of responding life care planners have not contacted evaluees/families to determine if the life care plan is being followed. Among those who have made such contacts, the mean number of calls was 21.4 (SD=38.3, median=8.0).

Twenty-nine percent (28.8%, n=64) of the respondents reported that they review the life care plan with the evaluee and/or family greater than 50% of the time, while 27.5% (n=61) never do so. Sixty-one percent (61.3%, n=136) of the respondents never provide a copy of the life care plan to the evaluee and/or family; 5.0% (n=11) routinely do so.

Life Care Planning Protocols

Records request. Upon referral, a majority of respondents routinely make a verbal request for medical records, neuropsychology/psychology/ psychotherapy/counseling, therapy records, expert reports, medical depositions, pharmacy/ medication records, family depositions, school records, signed consent form, billing records, employment records, and day-in-the life videos/journals. Only medical records were routinely requested in writing by a majority of the respondents (51.3%, n=114). Details regarding routinely requested information are presented in Table 2.

Table 2. Information routinely requested at referral

Item	Verbal Request	Written Request
Medical Records	91%	51%
Neuropsychology/Psychology Psychotherapy/Counseling	85%	48%
Therapy Records	83%	44%
Expert Reports	82%	46%
Medical Depositions	77%	42%
Pharmacy/Medication	73%	42%
Family Depositions	72%	41%
School Records	65%	38%
Signed Consent Form	57%	36%
Billing Records	56%	35%
Employment Records	56%	36%
Day-in-the-life Videos/Journals	52%	29%

Interview. Respondents indicate that interviews range from one to eight hours with a mean of three hours. A majority of respondents request a personal interview with the evaluee verbally and utilize the evaluee's home for the interview. Respondents routinely conduct an in-person interview with an evaluee and/or family in cases referred by plaintiff attorneys, but not in cases referred by defense attorneys. Respondents also routinely provide written documentation if the request for an evaluee interview is denied.

A majority of respondents routinely:

- Use a structured interview form
- Use standardized questionnaires and/or checklists to document information from evaluee, family, and allied health professionals
- Use standardized checklists and/or questionnaires to manage the life care planning process
- Request a HIPAA compliant signed consent form (plaintiff referred cases)
- Review medical records

- Utilize clinical practice or standard of care guidelines
- Obtain more than one cost quote
- Request usual, customary and reasonable or retail fees
- Consider the time that a parent would normally be expected to perform parenting duties when recommending in-home supervision for a pediatric evaluee
- Include a discussion/rationale for recommendations
- Include discussion or reference to life expectancy
- Update a life care plan based on a change in condition or additional information that impacts recommendations
- Sign the life care plan

While a majority of the respondents do not routinely perform and utilize a literature search, practicing life care planners consult the literature when input from physicians or allied health professionals is not available (e.g., to identify potential complications).

Life Care Plan Development

Collaboration with rehabilitation team. In addressing medical recommendations, 73.42% (n=163) of the respondents indicated that they routinely consult with physicians. Fifty-six percent of the respondents (55.86%, n=124) follow up with written confirmation after a personal or telephone interview with a physician. When direct physician or allied health input for recommendations is not available and/or outside the life care planner's area of expertise, respondents utilize the following sources (in preferred order): medical records, clinical practice guidelines, expert testimony, and literature.

In the process of completing a life care plan, a majority of respondents reported that they routinely request the following non-medical evaluations: neuropsychology/cognition (86.5%, n=192), psychology/counseling (67.6%, n=150), assistive technology/adaptive equipment (65.8%, n=146), driver evaluation/architectural (64.9%, n=144), occupational therapy/ADL (62.6%, n=139), functional capacity (57.7%, n=128), physical therapy (55.9%, n=124) and speech therapy (54.1%, n=120). Fifty percent or less of the respondents indicated that seating, mobility, home care, nutrition, educational, recreation, audiology, and music therapy evaluations were routinely requested.

Vocational Issues. In the process of completing a life care plan, 50% (n=111) of the respondents routinely address the potential need for a vocational assessment. Vocational was the most frequently cited write-in non-medical evaluation.

Cost Research. Respondents indicated that the most preferred resources for obtaining costs for items and services recommended in the life care plan are current vendors, followed by local vendors or providers, Internet, manufacturers, national database with geographic adjustment, catalogues, an office cost file or database, and national database without geographic adjustment. Geographic location is the primary factor that affects decision making in determining which resources to use to secure cost information. Other factors endorsed by a majority of the respondents are the life care planner's experience with the item or service, experience with the vendor or provider, evaluee or family preferences, Physician preferences, and time frames for completion of the life care plan. The primary database used to research costs is *Medical Fees in the United States* (54.8%, n=92) followed by *Physicians' Fee Reference* (50.6%, n=85), *American Hospital Directory* (50%, n=84), Healthcare Common Procedure Coding System (HCPCS) (31%, n=52), Healthcare Cost and Utilization Project (HCUP) (26.2%, n=44), *Red Book: Pharmacy's Fundamental Reference* (23.8%, n=40), and

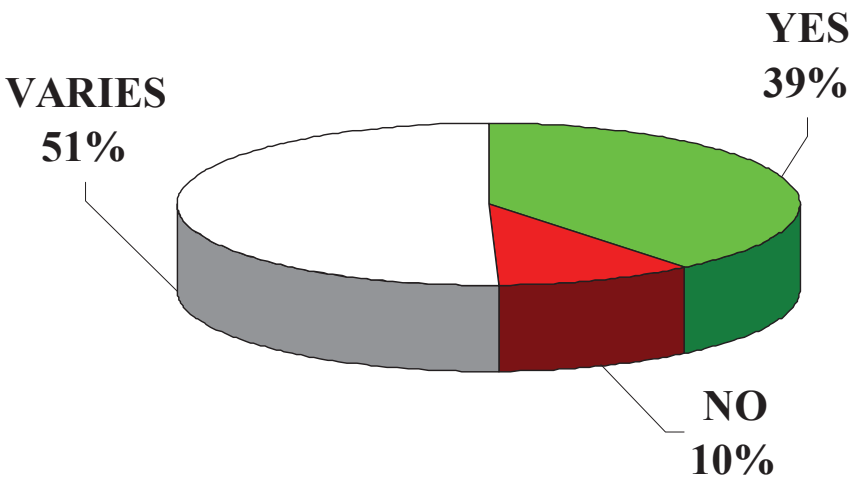
National Fee Analyzer (20.8%, n=35).

When listing costs for items or services, 48.2% of the respondents (n=107) reported that they will not use information older than one year.

As indicated in Figure 1, a majority of respondents (51%, n=111) vary the number of cost quotes for each item identified in the life care plan. The primary factor that affects decision-making regarding the number of cost quotes obtained is the availability of a current vendor/provider, followed by item/service

availability, nature of the item/service, recent experience, cost of the item/service, time frame required and national database availability.

Figure 1. Obtain a specific number of cost quotes



A majority of respondents indicate that if difficult to quantify costs, an annual allowance/allocation for goods/services is used. Quantities of items/services are specified when annual costs are listed. A majority of respondents do not use negotiated fees and/or an established fee schedule.

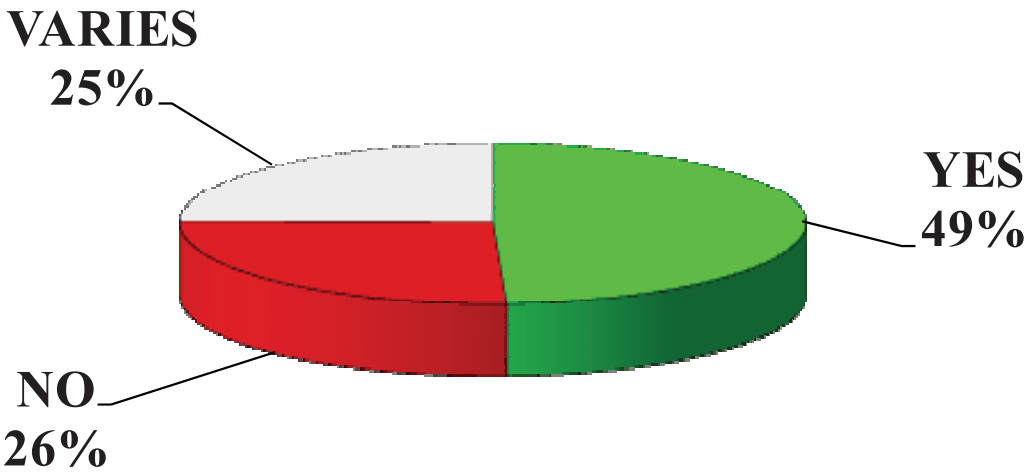
Home Modification. In forming opinions with regard to home modifications, respondents routinely utilize a contractor estimate (31.4%, n=66), architect estimate 18.1% (n=34), VA Specialized Adaptive Housing Grant allowance (15.3%, n=27), literature (12.5%, n=23), and rehabilitation engineer (6.6%, n=11).

Home Healthcare Needs. In forming opinions regarding the level of care related to the development of home care and/or family care recommendations respondents indicated that the most preferred source is physician recommendation, followed by health care/rehabilitation professional's opinion, the respondent's expertise, education, training and/or experience, self (evaluee/family) report of usage, state regulations, published standard of care/guidelines, home/healthcare agency recommendations and evaluee/family perspective or opinion regarding future needs. Fifty-four percent (53.6%, n=119) routinely utilize more than one home care/facility care option.

Household Support. Respondents indicated that the most preferred source for opinions regarding household support needs was a physical/ occupational therapy evaluation followed by physician recommendations, the respondent's expertise, education, training and/or experience, self (evaluee) report, clinical practice guidelines, and *Dollar Value of a Day*

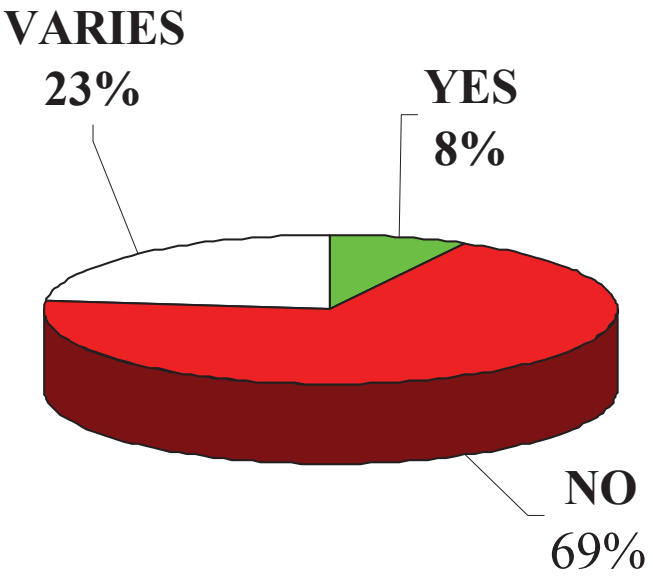
(2010). As indicated in Figure 2, when presenting home care options, forty-nine percent (49.1%) of the respondents include private/direct hire costs, twenty-six percent (25.68%) do not, and twenty-five percent (24.77%) indicate that it varies.

Figure 2. Include private/direct hire costs in home care options



Pre-existing conditions. While a majority of respondents (79.2%) routinely document pre-existing conditions, 69% (n=153) do not include costs for goods and services related to pre-existing conditions in a life care plan. Eight percent (n=17) of the respondents include such costs and 23% (n=52) indicate that inclusion of costs for pre-existing conditions varies. Data on inclusion of costs for pre-existing conditions are presented in Figure 3.

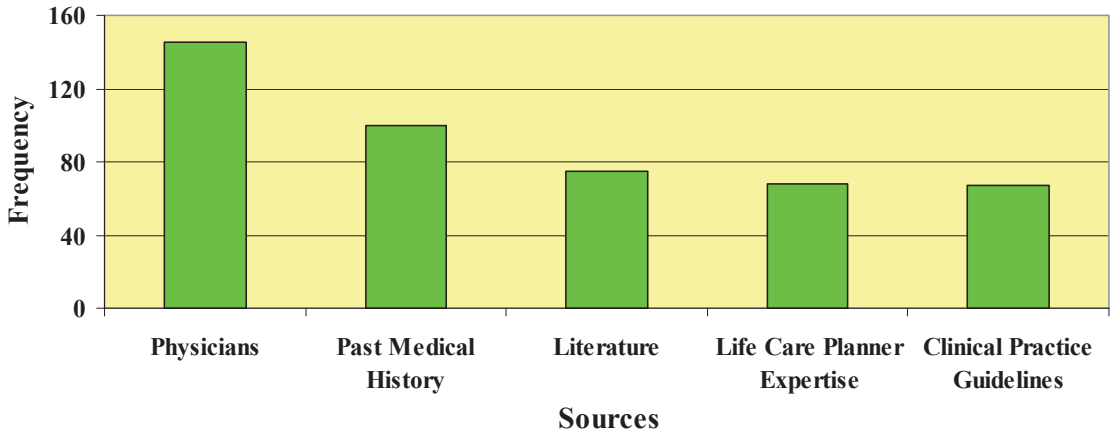
Figure 3. Include costs for goods/services related to pre-existing conditions in a life care plan



Complications. When considering potential or possible complications (less than a 50% likelihood of occurrence), 42.86% (n=84) of the respondents do not include costs in a life care

plan, while 28.06% (n=55) show the costs but never include in the annual and/or total costs; 22.96% (n=45) sometimes include the costs and 6.12% (n=12) show/always include the costs. The primary resource utilized to identify potential complications is the physician(s), followed by the past medical history, literature, respondent's expertise, education, training and/or experience, and clinical practice guidelines. Sources used to identify potential complications are depicted in Figure 4.

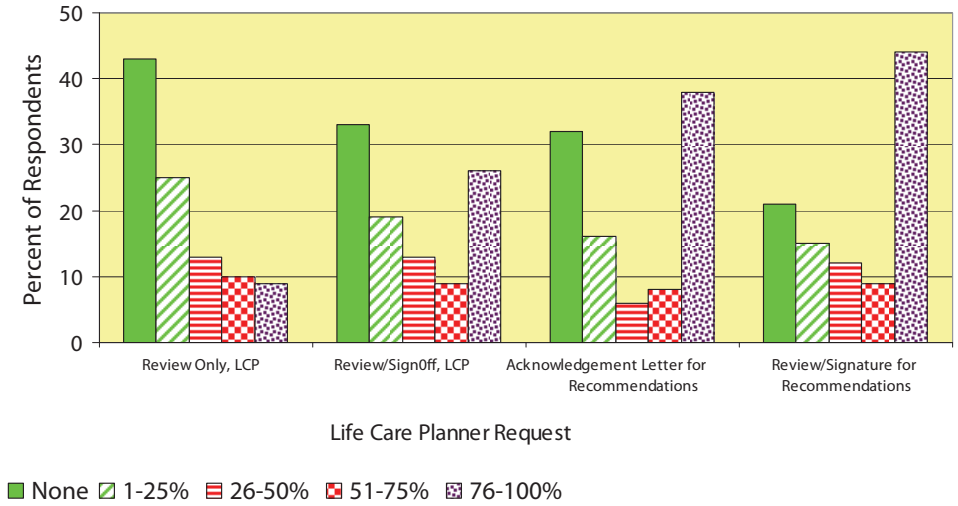
Figure 4. Sources used to identify potential complications



Life Expectancy. For life expectancy opinions, a majority of respondents use life expectancy tables published by the government (70.7%, n=157) and/or defer to a physician or other qualified professional (64.9%, n=144).

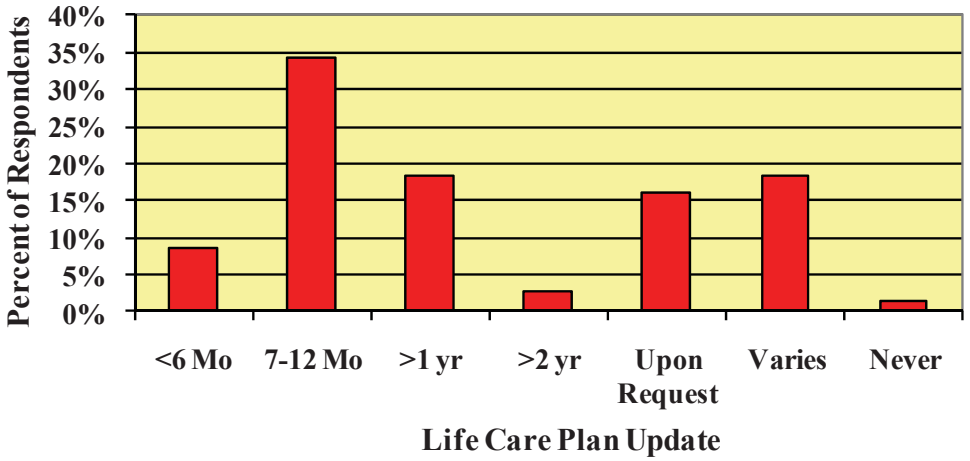
Physician Review: A majority of respondents do not routinely request physician review of the life care plan. This includes review without signing off on the plan, as well as physician review and sign off. Further, a majority of respondents do not send a letter of acknowledgment regarding recommendations made by the physician or send a letter to the physician requesting review and signature regarding specific recommendations made by the physician. A graphic presentation of the physician review data is presented in Figure 5.

Figure 5. Physician review



Plan Update(s). Prior to testimony, thirty-four percent (34.38%, n=66) of the respondents indicated that they routinely update a life care plan if the plan is 7 to 12 months old while eighteen percent (18.23%, n=35) indicate that it varies or update the plan if it is older than one year. Sixteen percent (16.15%, n=31) of the respondents update a plan only when requested by the referral source. Three percent (2.6%, n=5) update a plan if it is older than 2 years. Less than two percent (1.56%, n=3) never routinely update a life care plan prior to testimony. Data on plan updates are provided in Figure 6.

Figure 6. Routinely update a life care plan prior to testimony



Report Organization

Documentation. When serving as a testifying expert, a majority of respondents routinely include the following items in their report:

- Beginning/ending dates for items/services
- Daily routine/schedule
- Date of first contact
- Date of life care plan (LCP)
- Durable medical equipment list
- Evaluations requested
- Frequency/replacement schedules
- Functional abilities
- LCP tables/charts including beginning/ending dates for items/services
- Location of interview
- Medical diagnoses
- Medical summary/chronology
- Medication regimen
- Narrative report
- Other records requested
- Providers/professionals consulted
- Psychosocial/psychiatric diagnoses
- Rationale/purpose for recommendations
- Reason for referral
- Recommendations by source

- Records received/reviewed
- Referral source
- Social/environmental profile
- Summary of total costs (annual and/or lifetime)
- Supply consumption
- Vendor list
- Vocational/educational profile

A bibliography, clinical practice guidelines, collateral sources, date of referral, financial profile, nursing diagnoses, pictures, research articles and Rule 26 disclosure are not routinely included in a testifying expert's report.

Areas covered in a life care plan. A majority of respondents use the following standardized categories in a life care plan:

- Projected evaluations
- Projected therapeutic modalities
- Diagnostic/educational testing
- Wheelchair(s)/mobility
- Wheelchair accessories/maintenance
- Orthotics/prosthetics
- Orthopedic equipment
- Durable medical equipment
- Aids for independent function
- Supplies
- Medication(s)
- Home furnishing/accessories
- Home care
- Facility care
- Future medical care routine
- Transportation
- Architectural renovations
- Health and strength maintenance
- Acute medical intervention
- Vocational/educational plan
- Potential complications

The most frequently cited "other" category is special or support services such as trust management, guardianship fees, association memberships, community connections, case management, leisure and recreation.

Twenty-six percent of the respondents (n=65) indicated that they document consideration of the above categories even if recommendations are not relevant to a case; thirty-four percent (33.6%, n=84) do not do so and twenty-nine percent (28.8%, n=72) of the respondents indicated that this practice varies by case.

Field of Practice Differences

There were four areas of significant difference that emerged in analyses of the differences between respondents trained as Nurses, Rehabilitation Counselors and Other Professionals:

- Whether personal or telephone interviews with Other Professionals were followed by written confirmation ($X2(10)= 18.69$, $p=.044$): While 46% (46/99) of Rehabilitation Counselors routinely follow up with written confirmation after personal or telephone

interviews with Other Professionals, 30% of Nurses and 37.5% of Other Professionals in this sample perform this action. Conversely, 13% (13/99) of Rehabilitation Counselors never follow up these interviews with written confirmation, compared to about a quarter of the Nurses (22.5%, 9/40), and Other Professionals (25%, 16/64) in this sample.

- Obtaining cost information from published databases (X2(10)= 28.7, p=.001): While 27.5% (11/40) of Nurses never obtain cost information from published databases, 13.1% (13/99) of Rehabilitation Counselors do not utilize this type of cost information. Other Professionals were closer in this practice to Rehabilitation Counselors than to Nurses (10/64, 15.6%). However, Other Professionals had the lowest percent who routinely seek published cost information (4/64, 6.3% vs. 20% for Nurses and 19.1% for Rehabilitation Counselors.)

- Rendering opinions on life expectancy: Three percent (3/99) of Rehabilitation Counselors did not render life expectancy opinions, compared to 20% (8/40) of Nurses and 14.1% of Other Professionals. These differences were significant: X2(2)=11.10, p=.004. While 7.8% of Other Professionals (5/64) use statutory life expectancy tables, 20% (8/40) of Nurses and 23.2% (23/99) percent of Rehabilitation Counselors do so. This difference was significant: X2(2)=6.51, p=.039. There was a trend toward significant difference between field of practice with respect to deferring to a physician or other professional regarding life expectancy opinions (X2(2)=5.04, p=.08). While 57.8% of Other Professionals (37/64) and 57.5% (23/40) of Nurses reported this practice, nearly three quarters of Rehabilitation Counselors do so (72.7%, 72/99).

- Requesting an educational evaluation (X2(2) = 7.73, p=.021): Nurses in this sample were significantly more likely to have requested an educational evaluation in the past five years than were Rehabilitation Counselors or Other Professionals. Fifty-three percent (52.5%, 21/40) of the Nurses request this evaluation, while 32.3% (32/99) of Rehabilitation Counselors and 26.6% (17/64) of Other Professionals do.

There was a trend for Nurses in this sample to be more likely to request a mobility evaluation (23/40, 57.5%) than those in the Other Professionals category (23/64, 35.9%) which was statistically significant at (X2(2) = 4.72, p=.094). Rehabilitation Counselor requests for mobility evaluations fell between these two groups (46/99, 46.5%). Similarly, there was a trend for Rehabilitation Counselors in this sample to be more likely to request a nutritional evaluation (48/99, 48.5%) than those in the Other Professionals category (20/64, 31.3%), also a statistically significant difference (X2(2) = 5.40, p=.067). Nurse results were between these two groups (14/40, 35.0%). However, those in the Other Professionals group (33/64, 51.6%) were less likely to request an occupational therapy evaluation than were Nurses (27/40, 67.5%) or Rehabilitation Counselors (67/99, 67.7%), another statistically different finding at (X2(2) = 4.83, p=.089).

There were no significant field of practice differences for:

- using clinical practice or standard of care guidelines
- recommending specific medical follow-up, procedures, and/or diagnostic testing based only on respondent's expertise

- conducting a telephone or in-person interview with a physician or allied health professional
- confirming in writing information discussed with a physician during a personal or telephone interview
- conducting a telephone or in-person interview with allied health professionals
- addressing potential vocational issues
- using cost information by age of information (e.g., not used if older than one year)
- using standardized codes
- reviewing the life care plan with the evaluee (or family) and providing a copy
- asking the referral source to provide a copy of the life care plan to a family
- contacting evaluee/family to determine if the life care plan is being followed/implemented

Deposition Experience Differences

To analyze the effects of experience based on number of depositions, a new variable was created by dividing number of depositions given into three equal groups:

Low deposition experience: Less than 4 depositions
Medium deposition experience: At least 4 but less than 30 depositions
High deposition experience: 30 or more depositions

There were five areas of significant difference that emerged in these analyses. In each case, the likelihood of utilizing the particular tool or approach was significantly higher among those with high levels of deposition experience. The five differences were:

- Utilization of clinical practice or standard of care guidelines ($X2(5)= 24.76$, $p=.006$): While 45.8% (33/72) of those with high levels of deposition experience utilize guidelines at least 76% of the time, 77.9% (53/68) of those with low levels of deposition experience do so. Those with medium levels of deposition experience fell between the other two groups: 65.7% (44/67). Similarly, 85.3% (58/68) of the low experience group, 76.1% (51/67) of medium experience group, and 63.8% (46/72) of the high experience group use practice guidelines more than 50% of the time.

- Utilization of expert testimony when physician or allied health input is not available ($X2(10)= 18.56$, $p=.046$): While 53.6% (37/69) of the high deposition experience group ranked this as more frequently used than clinical practice guidelines, literature/published data, medical records, personal expertise, or other resources, 38.6% (22/57) of the medium deposition experience group and 32.1% (18/56) of the low deposition experience group ranked expert testimony as their most frequent resource in this circumstance.

- Reviewing the LCP with the evaluee or evaluee's family ($X2(8)= 17.49$, $p=.026$): Those in the low deposition experience group were the least likely to do this, with use of this practice increasing across deposition experience groups. Thirty-eight percent (38.2%, 26/68) of the low deposition experience group never conduct this type of review, while 25.3% (17/67) of the medium group and 12.5% (9/72) of the high deposition experience group never do so.

- Being asked to help find other expert witnesses (X2(10)= 29.1, p=.001): The percent of those who are never asked for this kind of assistance increased across deposition experience groups, from low experience to high experience. Thirty-one percent (30.8%, 20/68) of the low experience group are never asked for assistance locating another expert witness, while 6.0% (4/67) of the medium experience group and 5.5% (4/72) of the high experience group never receive such requests.

- Requesting a neuropsychological/cognitive assessment in the past five years (X2(2) = 12.98, p=.002): Those in the high deposition experience group were significantly more likely to have made such a request than those in the medium or low deposition experience groups. Ninety-seven percent (97.2%, 70/72) of the high experience group typically makes this request, while 83.6% (56/67) of the medium experience group and 76.5% of the low experience group do so.

There were no significant differences by deposition experience for:

- documenting standardized life care plan categories even if recommendations are not relevant to a case
- including additional expenses for live-in 24 hour care
- including cost of potential complications
- recommending specific medical follow-up, procedures and/or diagnostic testing based only on respondent's expertise
- conducting a telephone or in-person interview with a physician
- conducting an in-person interview with an allied health professional
- confirming in writing information discussed with a physician during a personal or telephone interview
- addressing potential vocational issues
- using cost information by age (e.g., not used if older than one year)
- using standardized codes
- using databases
- discussing life expectancy
- citing sources for life expectancy opinions

Future Growth and Development

Goals. The primary business goals identified by respondents include increasing efficiency (56.8%, n=126) and number of life care plan referrals (56.3%, n=125). Additional goals were to provide more consultation (40.09%, n=89), change mix of referral sources (35.14%, n=78), and plan for retirement (28.4%, n=63).

Questions regarding best practices. Fifty-four percent (n=120) of the respondents indicated that the primary area of life care plan practice that creates questions regarding best practices is the differing opinions of treatment providers followed by critiquing/reviewing an opposing life care planner's opinions (51.8%, n=115), analyzing an opposing life care planner's methodology (45.9%, n=102), dealing with referring attorney's differing opinions (45.5%, n=101), obtaining price information (40.5%, n=90), using cost information obtained for other cases (25.2%, n=56), preparing files for deposition (23%, n=51), discussing the plan with the attorney while in development/ recommending further evaluation (20.3%, n=45), dual

relationships (18%, n=40), setting/establishing fees (15.8%, n=35), collecting fees (15.3%, n=34) recommending specific experts (14.4%, n=32), confidentiality/marketing practices (14%, n=31), and evaluee informed consent (12.2%, n=27).

Future Training. The majority of respondents wanted additional training in the following areas:

- foundation for life care plan recommendations
- coding
- expert testimony
- malpractice issues
- records management
- environmental exposure
- office technology
- acquired brain injury
- spinal cord injury
- ethical issues
- birth trauma (e.g., Cerebral Palsy, Erb's Palsy, intellectual disabilities)
- transplantation
- burns
- multiple trauma
- pain
- amputation

The most preferred training option is a conference with multiple speakers/topics, followed by dedicated topic seminars, and web-based training. Correspondence courses were the least preferred training option.

Rewards and Frustrations

When asked about the rewards of life care planning, responses reflected themes of personal reward and service to others. Respondents commented on the sense of accomplishment felt from the actual process of developing a well thought out life care plan, and making a real difference in the life of another. Respondents most often expressed frustration with opposing counsel during depositions and trial, as well as dealing with attorneys trying to influence the content of their plan, time demands, "rush" requests, not receiving payment in a timely fashion, lack of response or delayed response from physicians, and obtaining costs. Owning one's own business was cited as a reward and a frustration when working as a sole practitioner (e.g., isolation; lack of collegial contact). Other frustrations included burnout, scheduling, administrative work, fluctuation in work load, not having someone to review work, and worry about cash flow.

Survey Limitations

An ideal survey controls for error by ensuring that each member of a population has an equal chance of being included in the sample, that sample members are randomly selected in large enough numbers to assure representability, and that everyone who is included in the sample responds. Surveys, whether distributed by postal mail, telephone, or Internet seldom achieve these ideal conditions (e.g., Dillman, Sinclair, & Clark, 1993; Sills & Song, 2002; Vicente, & Reis, 2010).

Although a mixed mode administration (Millar, O'Neil & Dillman, 2009) was considered

for the *Life Care Plan Survey 2009*, an Internet-based survey design was chosen as it was a cost-effective way to meet the needs of the study. Studies show that when participants are provided multiple options, they more often choose the web-based survey method (e.g. Sax, Gillmartin & Bryant, 2003; McCabe, 2004; Kiernan et al, 2005). However, response rate is not the only consideration for a survey (Greenlaw, Brown-Welty, 2009). In this online survey, the research team implemented cost and time savings measures as there was no printing or mailing of questionnaires and data was received automatically in an electronic format. Time and effort were not spared in the research design and implementation of the *Life Care Plan Survey 2009*. The research team carefully considered the depth and breadth of topics and questions to include in the survey. They also incorporated several components of a tailored design method (Dillman, 2000; 2010) in an effort to increase response rate by using address-based sampling, sending out a pre-survey "save the date" e-mail, providing a detailed consent form explaining why responses are important and whom to contact with questions, sending thank you/reminder e-mails 1 and 3 weeks after the survey was distributed, posting several humorous listserv messages to capture attention and serve as gentle reminders, forwarding a specially designed request to those who had paused their survey but not completed it, and providing a small incentive (1 CEU awarded by CCMC).

Non coverage results when the sampling frame does not cover all members of a population and thus, the odds of those non covered members being selected for the sample are not equal to the odds for other members. Due to the fast pace of change in e-mail addresses, efforts were made to "clean up" the e-mail lists through individual requests, a mass e-mail, as well as several listserv posts to make sure that all practicing life care planners had an opportunity to receive a survey and respond. Technical problems with delivery of the survey likely affected the response rate for this survey. Correct e-mail addresses were not obtainable for all of the nondeliverable invitations and not all life care planners routinely utilize a listserv for information. Some respondents could only access their survey link from a spam folder (as was the case for the senior author). Despite multiple attempts to resend the individualized link (daily requests were submitted), there were life care planners who reported never receiving the survey. Though life care planners typically use the Internet in their practices, those who responded may be more computer savvy and/or be more familiar/comfortable responding to survey questions.

Non response error is the discrepancy between the observed cases (respondents) and the entire population (respondents + non respondents). Questionnaire length may be an important explanatory factor for non response as there is evidence that shortening the questionnaire (to reduce respondent burden) produces a better response (Dillman, Sinclair, & Clark, 1993). In order to be as complete as possible, the *Life Care Plan Survey 2009* instrument included 164 questions, many with multiple responses. As this length is quite formidable, drop-down menus and check boxes were used to reduce the time needed to fill in the survey. A mix of question types was used (open and closed ended) with options for comments, and "write in" responses to provide in continuous data. The *Save & Resume* feature was added so that respondents, if unable to finish in one sitting, could return to where they left off. Further, as questions could not be numbered by SurveyTracker, a percent completed bar was added so that respondents could determine their progress. Although the subject of the survey is salient to practicing life care planners, some respondents may have failed to complete the survey because they either could not find the time or they put the task "on the back burner" and then forgot about it. In the future, short "topic" surveys using a web- based model may boost the response rate and resolve some of the technical issues.

The generalizability of results presented in this article also may be limited to the extent that the sample that responded to this survey is not representative of the population of life care planners. As was true in 2001 (Neulicht, et al, 2002), without an inclusive up-to-date list of practicing life care planners, it is impossible to precisely determine a population count. The number of respondents who started the survey (293) mirrors International Symposium on Life Care Planning attendance for the 5 years preceding the survey (range of 260 to 295, = 276). The number of respondents who completed this survey (222) parallels recent attendance at the 2010 Symposium (223); which may be the best indicator of active practicing life care planners. In a further effort to determine whether survey respondents are representative of the population of life care planners, demographic data from the survey sample was compared to a list of IARP IALCP and Forensic Section members. One-third of the IARP database entries (170) were either not complete or incorrect. When information was not included in the biography or other directory/web site data, names were "Googled" and/or other life care planners in the same geographic location were contacted to clarify field of practice. The list was culled for duplicates and life care planners who are members of the Forensic Section, but not IALCP were included. All names were further coded by gender. Results reveal that, of the IARP members who identify themselves as life care planners, 73% are female and 27% are male, similar to the survey sample. However, while the survey respondents are primarily nurses, the primary field of practice for IARP life care planners is vocational rehabilitation (46% CRC/51% overall vs. 33% Nurses), as is true of IARP in general. Thus, to the extent that many nurses are not members of IARP, this comparison is not reflective of the total population of life care planners. In addition, members of a web directory (e.g., IARP, ICHCC, Care Planner Network) may identify themselves as life care planners yet not meet this survey definition of a practicing life care planner.

Discussion

Despite the above issues, results of the *Life Care Plan Survey 2009* reveal a number of areas where practice methodologies and business practices are consistent across different disciplines involved in life care planning as well as areas where further discussion, evaluation and research is warranted.

Comparison of the *Life Care Plan Survey 2009* results parallel the 2001 data for demographics such as gender and geographic distribution, the roles and functions of a life care planner, as well as for protocols/plan development. These findings suggest that practicing life care planners demonstrate consistent practice methodology across all disciplines and in tandem with published role and function studies. This data also suggest that there is consistency in the educational training programs offered to life care planners. Per self report, *Life Care Plan Survey 2009* respondents appear to be adhering to published *Standards of Practice* (e.g., IALCP, 2006) and certification guidelines (e.g., ICHCC).

Although a majority of the business practices have remained the same over time, there are findings that reflect change. A majority of the respondents require payment of a retainer agreement with the retainer amount increasing since 2001. Such a change may reflect improved business practices necessitated by changes in economic times and/or reflected in slower funding of the business receivables. Another consideration is that life care planners have changed their business practices to take into consideration the common delays inherent in litigated cases that may be extended for years with ever changing timelines. Delays in payment are common, especially when small law firms lack cash flow.

In 2001, life care planners reported varying their fee/rate schedules for non-testifying and

testifying services. By 2009, fee/rate schedules have tended to merge to a single pricing structure. This may be indicative of the evolving complexity of life care planning as a consequence of more stringent rules of evidence and/or the sophistication of the legal profession in analyzing the life care planning work product.

It is interesting to note that the majority of life care planners have not served in the role of case manager, counselor or therapist after cases resolve. Most life care planners have significant background and experience in long term management of individuals with catastrophic injury or chronic health conditions, thus making them an appropriate choice for plan implementation (e.g., Weed & Riddick, 1992; Preston, 2003). This suggests that stakeholders in such cases may not understand that the life care planner can fulfill the role of a case manager. More discussion needs to occur with the professionals who manage care and financial planning after case resolution with targeted training programs to educate them about the long term benefits associated with use of the life care planner for plan implementation and re-evaluation over time. Life care planners serve multiple roles (Weed, 2002; Cimino-Ferguson, 2005). If in the future more life care planners implement their plans, it will be important to avoid possible role confusion or ethical conflict. The life care planner will need to inform all parties of any change in role. As per Section IV, Standards of Performance, item #3, of the IALCP *Standards of Practice* (2006),

> "Each client should be fully informed about the role of the life care planner... Also, Life Care Planners who have dual role responsibilities should clarify that the life care planning role is separate and should clarify what the limits of their participation might be" (128–129).

When forming opinions regarding the level of care related to home care and/or facility care, survey respondents indicated that the most preferred source is physician recommendation. Deutsch (in press) notes that the case manager, not the physician, works to establish home health care programs as part of their role. It is the case manager that works directly with home health agencies or arranges privately hired support care personnel as part of their involvement with implementing life care plans and managing an individual's disability. Additionally, according to Deutsch (in press), far too often the physician takes into consideration the family's ability to provide all or part of the care and that is not a factor the life care planner should be taking into consideration. Although discussed at the 2010 Life Care Planning Summit, the field of life care planners may benefit from greater definition regarding functions that fall within the scope of practice of a life care planner (Berens, Johnson, Pomeranz, & Preston, 2010).

This study revealed an emerging trend towards greater detail and more documentation in the life care plan. For example, more life care planners are using photographs and demonstrative exhibits in the forensic arena. Educating referral sources regarding the long term complications related to an injury or chronic illness is reflected in the study finding that more life care planners are including a discussion of potential complications without including the related costs. In addition, more life care planners indicate they provide information to an economist to clarify lifetime cost projections to ensure accurate interpretation of the life care plan.

In 2001, there were no significant field of practice differences for sending written confirmation after personal or telephone interviews with physicians. In 2009, differences have

emerged in that rehabilitation counselors are more likely to provide such documentation. While this study reveals more field of practice similarities than differences, further discussion regarding the differential use of databases, discussion of life expectancy, and recommendations for non-medical evaluations may shed light on "best practices" for the life care planning community. Similarly, while the relatively few differences among respondents with more deposition experience may indicate consistency, discussion of the differences that emerged may be warranted. For example, respondents with more deposition experience review their life care plan with the evaluee and/or family, which could be an important measure of internal consistency when asked if an evaluee will actually follow the recommendations in a plan. While the ability to recommend other experts may come with greater experience, the use of expert testimony, the nuances of which clinical practice guidelines are most effective to utilize as well as when and what type of specialty evaluations to request could be helpful to the beginning life care planner.

Conclusion

The *Life Care Plan Survey 2009* updates data from 2001 and represents the most comprehensive survey to date on the practices of life care planners. Results provide a foundation upon which practitioners can compare their methods to data from peers across the nation. The survey documents changes in life care planning over time and provides further foundation for understanding the multidisciplinary aspects of life care planning as well as protocols used by responding life care planners. As in 2001, results indicate that while respondents report methodology and protocols which parallel role and function studies, educational programs, published standards and certification guidelines, there is a trend toward more precise business practice (e.g., retainer agreement, requirement for a retainer) and reports/life care plans that contain more detail. As life care planners gain more experience, it will become important to continue to reflect on changes in roles, scope of practice, competencies and standards of practice.

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White Paper: Who is the Client in Forensics?

Mary Barros-Bailey, Jeffrey Carlisle, Michael Graham, Ann T. Neulicht, Robert Taylor, and Ann Wallace

Who the client is in a forensic rehabilitation evaluation has been the source of confusion and much debate among expert witnesses for many years. In an attempt to clarify the issue, several leaders within the rehabilitation forensic practice setting met in Las Vegas, Nevada on November 4, 2007 to review the various definitions of client among the codes of ethics to which forensic certificants or professional members adhere. The goal of the work group was to identify and define the intent of the relationship among the parties in a legal matter and to offer definitions to clarify those relationships utilizing terminology that might be universally accepted by certification and membership bodies to which many rehabilitation expert witnesses belong. This white paper addresses the history of the issue, the conflict caused by competing definitions, and offers a definition that has been accepted and ratified by the American Board of Vocational Experts, the Commission on Rehabilitation Counselor Certification, and the International Association of Rehabilitation Professionals.

A Historical Perspective

In the 1970s, the primary ethical problem facing rehabilitation practice was centered on a relationship triad. It comprised the client, the rehabilitation counselor, and the agency through which services were delivered. In the 1980s, ethical issues were raised for rehabilitation counselors regarding the identity of their clients. A primary question asked was, "Were [clients] the consumers or the payers of service?" (Kontosh, 2000). Cottone (1982) emphasized that in private-for-profit rehabilitation, primary allegiance always goes to the client when rehabilitation is the goal and the client is always the person with a disability, never the insurance company. Offering a contrary opinion were Taylor, Golter, Golter, and Backer (1985) who identified the client allegiance as shifting from the worker to the bill payer. Ethical issues were also discussed by Nadolsky (1986) in the transition from public to private rehabilitation. Though rehabilitation services can help resolve legal issues arising from an acquired disability, they can also restore or provide vocational functioning and, thus, independence to a person with a disability.

Generally, within the counseling field the definition of client has been more in line with what Cottone (1982) proposed over a quarter century ago (American Counseling Association, 2005; Commission on Rehabilitation Counselor Certification, 2001). However, in other helping professions, particularly in forensic psychology (American Psychological Association, 2003), the definition was more consistent with Taylor, et al. (1985). Given that rehabilitation expert witnesses came from counseling and psychology (e.g., degrees in rehabilitation counseling, counseling psychology, rehabilitation psychology), the competing definitions left the professional in a quandary.

The Problem

Who is the client? Historically, this simple question has proven to generate anything but a simple answer. The question has been the source of much disagreement and debate among professionals who work as practitioners and as expert witnesses. Adding to the confusion is that fact that the various professional and credentialing bodies did not ascribe to the same defi-

nition. The professional was left with a definition of client depending upon: a) certification(s); b) practice settings; c) scope of practice; and, d) the type of case. This quagmire resulted in dramatic moments for the expert witness and the profession. When faced with the question of who the client was, one professional might testify that it was the person who they evaluated while another professional might suggest it was the referral source. While neither person was completely correct, it became clear that professionals had a significant challenge before them. The credibility of expert witnesses was at stake and an opportunity existed to bring key groups together to collaborate on and arrive at a consensus about a common definition.

In 2006, the American Board of Vocational Experts (ABVE) Board of Directors took the first step in clarifying the definition of the terms of referral source and client. After many years of impasse on addressing the definitions, leaders from the ABVE, the Commission on Rehabilitation Counselor Certification (CRCC), and the International Association of Rehabilitation Professionals (IARP) engaged in a history-making meeting during the IARP Forensic Conference in November, 2007.

The Role of the Expert Witness

The practice of expert witness testimony is not restricted to members of any specific organization. In fact, it is possible to be retained by an attorney to testify in court without belonging to any regional, state, or national organization. Cases in which expert witnesses testify imbed two sides of a legal equation: a) the attorney who knows the facts of the case and the rules of evidence as well as what type of expert is needed to get these facts into evidence during court proceedings; and, b) the retained expert who needs sufficient education or training or possesses knowledge of a particular subject in greater depth than the public at large to be able to effectively respond to questions that create a pool of evidence from which the trier of fact can draw conclusions.

The main question qualifying a professional's expertise is: In what setting has the expert demonstrated relevant education, skills, training, and/or experience? If that setting places the counselor in a role where a range of services will be provided to assist the client in achieving rehabilitation needs, there is little disagreement among professionals that there are direct services provided by the counselor to that person; clearly, the person with disabilities *is* the client of those direct services and a counselor-client relationship has been established (Wheeler & Bertram, 2008). In this setting, there is an expectation among the parties that the counselor will use pertinent professional expertise to assist the client in meeting goals, and the tenets inherent in codes of ethics providing guidance in primary care settings are best suited for the practitioner engaged in delivering these services.

However, in a forensic setting where the professional is retained to provide admissible evidence in a court of law, the focus is different. The ultimate role of the expert witness in this setting is to communicate the truth of the matter (Blackwell, Martin, & Scalia, 1994), as the expert sees it. Expert opinion, given as admissible evidence in a court of law, relies on clinical judgment and the weight the professional gives to empirical data. As long as the derived conclusions and opinions are based on objective data and sound methodology, the retained expert has met the ethical obligations to the legal process, the profession, and to society at large.

Objectively pursing the truth, as opposed to preserving the interests of any specific party to the legal action, places the expert witness in a neutral and educator role rather than in a direct service provision role. The testifying expert must be able to demonstrate, through admissible testimony, a reliance on factual foundations and empirical data. In the forensic setting, the expert witness should rely on evidence-based information, apply professional clinical judgment to these facts, and communicate clearly the relationships between the data analyzed and the opinions offered. No empirical case-related evidence should be ignored, discounted, or minimized in an effort to preserve the interests of a specific party.

With the above two-pronged case operational distinctions in mind, an intra-organizational work group explored and endorsed a definition of client for professionals operating in the forensic arena. This white paper is the result of months of research and discussion by members of the work group to find a shared, endorsed, and approved definition of a client in forensics.

Roles of Parties in a Forensic Setting

The work group members agreed that:

- in a forensic setting, the professional who is engaged as an expert witness has no client;
- the responsibility of the expert witness is to communicate the truth of the matter based on the case-related facts and the education, training, and experience of the expert;
- the opinion(s) communicated by the expert witness should be objective and unbiased and not advocate for any party in the legal matter, such as the interests of the referral source, person being evaluated, or any other party in the legal matter; and,
- the expert witness must use sound methodology and empirical data, using their unique specialized knowledge and skills to analyze the empirical data, generate

hypotheses, test their validity against the facts, and use skilled clinical judgment to express opinions that reflect the issue(s) at hand.

Definitions of Parties in a Forensic Setting

Further, the work group agreed on the following definitions:

Evaluee: The person who is the subject of the objective and unbiased evaluation.

Referral Source: The individual who referred the case to the expert witness. This may be through self-referral of the evaluee, family member, attorney, insurance company, or other source.

Payer: The entity paying for the services provided by the forensic rehabilitation expert. This entity may be the evaluee, family member, attorney, insurance company, referral source, or other source.

Ratifying the Definition

After complete agreement from all work group members about the definition of the client in a forensic setting, each of the work group members provided a copy of such definition to the respective organizations with which they were affiliated. The definition passed each of these organization's boards, unanimously and without changes, on the following dates:

ABVE:

Full Board: September 16, 2008

CRCC:

Code of Ethics Revision Task Force: February 2, 2008

Ethics Committee: March 8, 2008

Full Commission: June 7, 2008

IARP:

Forensic Board: November 20, 2007

Full Board: December 20, 2007

Conclusions

For over a quarter of a century, the definition of who the client may be in a forensic analysis has been controversial. Now, all major organizations with members or certificants who generally provide expert witness testimony in rehabilitation settings have come together to unanimously agree upon a definition. In their deliberations, the work group opted to put aside semantics around the world "client" and to focus on the intent of the relationship between the parties. Thus, terms more specific to these entities as well as the responsibility of the evaluator within the process became the focus of the definition. The dissemination of this definition among all sectors of rehabilitation practice will ensure that practitioners and expert witnesses will know the difference between a client and an evaluee, the quality of the relationship between the expert witness and the individual being evaluated, and the responsibility of the expert witness on and off the witness stand.

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Clinical Judgment: A Working Definition for the Rehabilitation Professional

Timothy F. Field, Anthony J. Choppa, and Roger O. Weed

How clinical judgment is used and what the rehabilitation professional understands it to mean is the focus of this article. This article was developed as a result of conversations overheard at the IARP Forensic Conference (Memphis, 2009) where the debate over the definition and role of clinical judgment appears to a continuing "hot" issue. Clinical judgment is not a "lay" term, nor is it intended to be a glib comment thrown out when an expert has no other basis for opinion. Clinical judgment is a term that has a specific meaning, has been published in peer reviewed journals, and has achieved general acceptance in the field of rehabilitation. The professional meaning of clinical judgment is predicated on valid, reliable and accepted assessment methodologies, instruments and background information about the client concerning the medical aspects of disability by a professional who has specialized knowledge, education, training and/or experience. The term "clinical judgment" is often utilized in publications, expert reports, depositions, trial testimonies and posts to various list serves. The focus of this article is to make clear that utilization of clinical judgment is appropriate with the assumed understanding of the accepted definition and the specialized knowledge involved in its utilization.

Background

Since the onset of the Daubert ruling by the U.S. Supreme Court in 1993 (Daubert v. Merrill Dow Pharmaceutical [Daubert]), one of the most talked about, written about, and debated topics is the general issue of admissibility of expert opinion. Early on, several authors warned of the coming demise of any rehabilitation testimony that did not adhere sharply to the four Daubert standards (Caragonne, 1999; Feldbaum, 1997; Mayer, 1998; & Stein, 2002). Emerging as well was the less stringent view that, in light of Kumho (Kumho Tire Company v. Carmichael [Kumho], 1999) and Joiner (Joiner v. General Electric [Joiner], 1997), the Daubert factors were not meant to strictly govern all testimony, but that other factors might apply - especially in the social sciences. Several authors (Bernstein, 1998; Field, 2002; Field, 2006; Field & Choppa, 2005; Neulicht & Barros-Bailey, 2005; Staller, 2002; and Weed & Johnson, 2006) presented a view of the Daubert issue which was much less threatening and, in fact, has resulted in being a rather relatively minor problem for rehabilitation consultants in terms of meeting the "scientific" standards. Clearly, the strict Daubert view has been on the losing side of the admissibility battle for several good reasons—a battle lost that some professionals still fail to comprehend.

Parallel to the Daubert debate has been a growing discussion of the efficacy of a reliance on the use of clinical judgment for non-science situations. In addition to Choppa et al. (2004), Downie and MacNaughton (2001) challenge the wide-spread view that all of medicine is scientific and evidenced-based. As an alternative, the authors make a case for clinical judgement, sufficiently based on technical evidence which may be neither quantifiable nor even scientific, but would certainly contain judgments based on the best information available, including scientific and/or technical information. In leading up to an appropriate understanding of the meaning of clinical judgment for the rehabilitation profession, the following considerations are presented.

1. The Rulings: A careful reading of the rulings (Daubert, 1993; Kumho, 1999; Joiner, 1997; and Paoli

Railroad Yard PCB Litigation [Paoli], 1994) clearly suggest that the criteria for deciding on the admissibility of testimony comes with latitude (discretion) on the part of the gatekeeper with leeway[1] to include other criteria which may[1] be more appropriate to the facts of the case. To assert that the four Daubert criteria should be the standard for all testimony is over-reaching and not supported by the Daubert and Kumho courts, or rulings from the lower courts.

2. The Federal Rules of Evidence: The Federal Rules of Evidence (FRE), and especially FRE 702 (see below), are the prevailing procedural and judicial guidelines for admissible testimony. In fact, the Daubert ruling was predicated largely on the FRE 702 underpinning (Daubert, 1993; also see Countiss & Deutsch, 2002).

3. Specialized and Technological Knowledge: FRE 702 identifies both "scientific" and "specialized and technological" knowledge which suggests that these two entities are different. Daubert (1993), and the four-point criteria, relates directly to "science" testimony and the scientific method. "Specialized and technical" as discussed in Kumho (1999) knowledge relates more to the social sciences which are not always subject to scientific inquiry.

4. Judgment and Common Sense: Some issues can be decided by good judgment and simple common sense (Ireland, 2009, p. 120). For example, to apply the Daubert criterion of the estimation of error rate to a life care plan makes no sense at all. An estimate of standard error is a "measure of the variability of a sampling distribution" of a previous statistic, i.e., the distribution of mean scores" (Downie & Heath, 1970, p. 160). As such, there is not much in the world of the social sciences, and rehabilitation planning, in particular, that lends itself to strict scientific statistical measures. That is, through simply good judgment and common sense some issues can be addressed by way of the specialized knowledge that professionals in the rehabilitation arena possess from education, training, certifications and other professional means (Countiss & Deutsch, 2002). This specialized knowledge is utilized in opinions and recommendations based on clinical judgment as defined and generally accepted in the field (Choppa et al., 2004).

5. Court Rulings: A review of subsequent rulings in the lower courts involving expert testimony from vocational rehabilitation consultants and life care planners (Field & Choppa, 2005; Weed & Johnson, 2006) clearly indicate that the four Daubert factors do not always strictly apply to the facts of the case. In fact, there is only one case (Kinnaman v. Ford Motor Company, 2000) the authors found in which a judge dismissed a case outright based on the Daubert factors. One issue for the Kinnaman case was that the vocational expert utilized an Internet based computer program as a foundation for her vocational opinion. The court determined that her testimony did not include "corroborating evidence that the methodology . . . is acceptable, had been tested and is generally accurate . . . and that it is used by other persons in her discipline . . . ." Since similar cases have been allowed by courts in various jurisdictions (Field & Choppa), it appears that the expert may have erred by not explaining, or being able to explain, the methodology on which the computer program was based.

Staller (2002) and Countiss and Deutsch (2002) have suggested that the two Daubert criteria that reasonably relate to the social sciences are peer review and general acceptance. Furthermore, Bernstein (1998) acknowledged that the application of the four Daubert factors to non-scientific testimony would mean excluding all non-scientific testimony.

6. The N of 1 Argument: Finally, working with people, and especially people with disabilities, results in an individual work product (Choppa & Johnson, 2008). For example, it is clear and obvious that not all people with a traumatic brain injury should be treated the same. Because of the individual's unique characteristics rehabilitation plans will reflect opinions and recommendations that are relevant only to that individual (Ripley & Weed, 2009). However, the methodology for the process of determining needs could be the same for clients with substantially varying disability related differences (Countiss & Deutsch, 2002; Weed, 2009). Several publications recounted in the Countiss and Deutsch article that provide the foundation for the value of credentials, specialized knowledge, expertise and utilization of an established methodology in developing life care plans. For example, one of the first studies of the reliability of life care planning methodology by Sutton, Deutsch, Weed, and Berens (2002) demonstrated that no significant difference was found between original life care plans and updated life care plans in two professionals' caseloads representing a wide varieties of disabilities, ages and gender. The consistent factor was that both caseloads utilized the published life care planning methodology.

Field (2008) has suggested individualized factors such as age, gender, educational background, work experience, wage earning capacity (Dorney, 2008), and the severity of the person's disability, to name just a few. At the same time, the professional associations in the field of rehabilitation and life care planning have delineated the various competencies, procedures, methodology, standards and ethical components of a responsible rehabilitation practice with an emphasis on individual planning (Field et al., 2009). Over-reliance on large sets of survey data, or placing people into categories of disability groups, such as "severe disability" or "not severe disability", fails to reasonably account for individual differences of a person's capacity to work and earn money. That is, (example of flawed rationale) the client is considered severely disabled,

therefore there is no need to evaluate the client because one only needs to know the data associated with people who are also severely disabled and those data supply the answer.

Federal Rule 702

This important rule reads as follows:

> *If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.*

As noted in the Kumho ruling,

> *The Daubert gatekeeping obligation applies not only to scientific testimony, but to all expert testimony." The key word in Rule 702 is the word "knowledge", not scientific, or technical, or specialized. Some knowledge is scientific, and in those cases the Daubert rule would more appropriately apply. In Kumho, the decision noted that "a trial judge determining the admissibility of . . . testimony may (italicized in the written opinion for emphasis) consider one or more of the specific Daubert factors. The emphasis on the word "may" reflects Daubert's description of the Rule 702 as a flexible one . . . the Daubert factors do not constitute a definite checklist or test. Some of those factors may be helpful in evaluating the reliability even of experienced-based expert testimony. It is only partially true that the Daubert factors must be applied in all cases (science or non-science).*[2]

Finally it has been well established that there exists both latitude and flexibility in the application of FRE 702 within the intent and meaning of the Daubert, Kumho and Joiner rulings. Burnette (2000) reaches the following conclusion on the admissibility of courtroom testimony:

> *The US Supreme Court recognized the difficulty in applying specific criteria outlined in Daubert to all types of testimony. It held the four-part test outlined in Daubert was non-exclusive and a "flexible" approach to the assessment of reliability should be applied using factors appropriate to the particular case. In certain cases, virtually none of the specific criteria outlined in the Daubert case would be applicable. In those cases, the trial judge would be given broad discretion in considering other factors which might establish reliability for the specific type of expert testimony at issue.2*

A Definition of Clinical Judgment

Readings from actual court rulings clearly suggest that all testimony does not require the scrutiny or strict application of the four Daubert factors. It is incumbent upon the expert to show that their testimony is both relevant and reliable as required by both the Daubert and Kumho rulings of the US Supreme Court. In particular, the twin tests, as suggested by Staller, are the tests of peer review and general acceptance (the old Frye standard). The definition of clinical judgment, first drafted and published by Choppa, et al., (2004), reflects the important components of FRE 702, and is consistent with the intent and meaning of the US Supreme Court cases of Daubert (1993), Joiner (1997), and Kumho (1998), all within the knowledge and skill parameters of the expert. The definition also acknowledges that rehabilitation and life care planning on behalf of a rehabilitation client must address the individual factors and issues that are germane to that particular client. In a very real sense, data and information are applied to the individual—a methodological approach of an "N of 1."

> *Clinical judgment requires that the final opinion be predicated on valid, reliable and relevant foundation information and data that are scientifically established through theory and technique building which has been tested, peer reviewed, and published, with known error rates, and is generally accepted within the professional community. In cases where any of the above factors do not apply, but other factors have greater relevance, the expert will rely on these other factors within a methodological approach, based on the expert's knowledge, skill, experience, training, or education in order to assist the trier of fact to reach a conclusion. Therefore, clinical judgment, which is the extension of the credentialing factors of the expert, encompasses all relevant factors germane to the weight of the case while discarding those factors which are not relevant, and which are allowed by the court (Choppa et al., 2004).*

In support of the above concept, Richard Countiss, an attorney, co-authored an article (Countiss & Deutsch, 2002) which was the basis for a "friend of the court" brief. Drawing upon the standards for physicians, he asserts:

> *Standards exist for the evaluation and diagnosing of the patient, choosing the procedure, applying the procedure and following-up with the patient. Yet within those standards, the physician has the ability to exercise a range of professional judgments that take into consideration individual patient differences, variations in the specific nature of the disorder, and variations in how best to apply specific procedures to individual patient differences. This same need for Rehabilitation Experts/Case Managers to exercise professional*

judgment is a component of the Life Care Planning process. However, this must be done within the context of the standards noted and a careful balance between published, accepted standards and professional judgment must be maintained. Published standards are never an excuse for failing to exercise appropriate professional judgment yet, at the same time, one can not say that they chose to exercise professional judgment as a means to simply, and lightly, dismiss accepted standards (p. 40).

Relevant Case Studies

The following five cases represent examples of actual court decisions. The first three court decisions allow testimony and the fourth represents a situation in which the expert was well qualified based on credentials, but the expected testimony was deemed unreliable and the person was excluded from testifying. The fifth case represents an attempt by an expert to offer his opinion based on a "hybrid" of two well known methodologies, but it resulted in an appeal and remand for new trial on damages. Perhaps of special interest is case #3, Hanford Nuclear Reservation, where extensive transcripts and information have been published (see below for more information). The expert overcame objections because he was able to substantiate his opinions based on experience, education, special skills and reliance on standards and methodologies generally accepted by other practicing professionals in the field of rehabilitation consulting.

Case #1: Testimony allowed although expert's credibility and plan foundation was successfully questioned and case remanded for new trial.

Francis Adeola and Grace Adeola, individually and for the use and benefit of their minor child, Fadeka Joyce Adeola v. Dr. Shawn M. Kemmerly, Dr. Michael A. Frierson, Dr. Niels J. Linschoten and Ochsner Clinic State of Louisiana Court of Appeals, First Circuit 2001 CA 1231 (Judgment Rendered: June 21, 2002)

The first case (Adeola et al., v. Dr. Shawn M. Kemmerly) involves a plaintiff who was a young child who had routine blood work as a part of a well baby checkup. The stick site became infected, but initially was diagnosed as a sprained wrist. By the time that the correct diagnosis was made, the infection had become quite serious with bone infection, compounded by other complications, "resulting in a weaker, shorter, severely scarred arm, in addition to permanent limitations on her activities and movements" (p. 3).

The appealing party, Louisiana Patient's Compensation Fund (LPCF), argued that an exorbitant award for damages was reached by the jury after a judge purportedly allowed testimony improperly without proper cross-examination of the expert's credentials in front of the jury " . . . thereby preventing the jury from having a basis for evaluating credibility . . . ." (p. 2).

At trial, the defendant requested, and the trial court granted, a Daubert/Foret hearing of the life care planning expert outside of the jury's presence. After the hearing, but before the jury returned to the courtroom, the judge commented that he thought the proffered professional was "eminently qualified as a life care planner and rehabilitation expert" p. 4). Citing Rule 702, the judge decided that the jury would benefit from hearing his testimony. However, when court resumed with the jury present, when the defendant counsel attempted to conduct voir dire, he was told by the judge that qualifications were already covered in the hearing. As an apparent way to shorten the process, the judge instructed the jury as follows, "As previously indicated, the court has instructed you as to testimony of expert witnesses because even though the court finds one to be an expert, the weight to be given is decided by you" (p. 5) and instructed the attorney not to question the expert about his background or credentials.

The defendant's attorney argued that he should have been allowed to conduct voir dire in front of the jury since it could affect the jury's view of the expert's credibility. In agreement, the appeals court commented, "Without a full cross examination of [the expert's] background, qualifications and credentials, the jury could not properly weigh [the expert's] testimony and evidence, nor properly determine the value of the evidence and testimony. The lack of a full cross examination impermissibly denied LPCF the right to fully present its case and therefore, it was denied the right to a fair trial" (p. 8). Further, "We conclude that [the expert's] testimony, the weight of his testimony, and the credibility determination regarding his credentials and qualifications as an expert witness, were of critical importance to the jury's decision. We cannot conduct a meaningful de novo review because it would involve eliminating all of [the expert's] testimony, thereby depriving plaintiff of a jury trial on the quantum issue" (p. 9). The bottom line; the judgment was vacated and remanded for a new trial.

One important aspect of the above case is that the role of the judge as a gatekeeper does not necessarily mean that the judge will prevent an expert from testifying when their credibility may be under scrutiny. Instead, the jury will be charged with assessing not only the value of the testimony but the credibility of the witness as well.

Case #2: Expert's testimony was neither speculative nor unreliable and appeal was denied.

Ruby Kay Ballance, et al. v. Wal-Mart, No. 98-1702, U. S. Court of Appeals for the 4th Circuit, 1999, U.S., App. Lexis 7663

In Ballance et al. v. Wal-Mart, 1999, while shopping at Wal-Mart, the plaintiff fell when she apparently slipped on plastic hangers left on the floor. The main focus of the appeal was whether Wal-Mart was liable for the injuries which were complicated by pre-existing conditions (asymptomatic congenital spine defects). However, part of the appeal (the only part to be addressed in this summary) was the argument by Wal-Mart that the damages related experts should have had their testimony limited under the standards as set forth by Daubert v. Merrell-Dow Pharmaceuticals decision relating to scientific expert evidence. Identified were the well known four factors: (1) The extent to which the theory has been or can be tested; (2) Whether the theory has been subjected to peer review and/or publication; (3) The technique's potential rate of error; and (4) Whether the underlying theory or technique has been generally accepted as valid by the relevant scientific community.

Further, under Kumho Tire v. Carmichael, the Supreme Court extended the gatekeeping function to all expert testimony, not just "scientific" testimony. ". . . the Court explained that this discretion is not confined to application discussed in Daubert. Id. At *9-10. Rather the district court has 'considerable leeway' to examine any number of factors in determining whether expert testimony is reliable; these factors may included, but are not limited to, the Daubert factors" (p. 4). In the case of Kumho Tire, the district court was correct in the decision to exclude the testimony of the tire expert as unreliable.

In the Ballance case, the expert offered two alternative life care plans: One where treatment successfully stabilized the patient's medical condition and the other in the event the patient's condition declined. Wal-Mart did have their own expert witness to counterclaim come of the plaintiff's expert's opinions.

Wal-Mart argued that one of the medical experts, on which much of the life care plan was based, offered opinions which were speculative and unreliable. Some future care and conditions might be "possible" and Wal-Mart argued the testimony would have been limited. However, Wal-Mart's expert testified that (for an example) an anticipated surgery was 80% likely to be successful, but agreed it could also worsen the condition (including loss of bowel and bladder function and the ability to walk).

Turning to the life care plan, Wal-Mart argued that future care plans are contingent upon future events and choices and therefore are unreliable and speculative. Additionally, they argued that under Federal Rules of Evidence 403,[3] the life care plan expert's testimony should have been limited. However, the district court was found to have exercised proper discretion and the appeal was rejected. First, this case underscores the value of separating probable vs. possible future care. In the original format of the life care plan literature (Deutsch & Raffa, 1981, Damages in Tort Action) the authors included a page for listing "Potential Complications" for which no prediction of duration or frequency could be determined. Secondly, opinions based on clinical judgment relating to two possible scenarios were accepted as reasonable and reliable.

Case #3: Expert did possess specialized skills and knowledge and relied upon accepted methodologies and was allowed to testify.

In RE Hanford Nuclear Reservation, No. CY-91-3015-WFM, United States District Court for the Eastern District of Washington at Spokane (January 21, 2005). [Also see Choppa, T., Field T. & Johnson, C. (2005). The Daubert challenge: From case referral to trial. Elliott & Fitzpatrick: Athens, GA. for extensive transcripts and notes regarding this case.]

In this case, the Daubert related hearings took prior to trial. A rather extensive challenge was launched with examples as follows (1) the expert is not qualified to offer opinions regarding radiation, (2) the expert relied exclusively on plaintiffs' experts, (3) expert "worked here as an information coordinator and scrivener, not medical or rehabilitation expert" (Choppa, Field & Johnson, p. 42), (4) portions of the life care plan were not based on "more probably than not" concept, (5) past cost analysis was simply a compilation as determined by plaintiffs' experts, and (6) the expert's opinion included personal observation of the plaintiffs under the guise of an expert opinion. In addition to the rebuttal by a plaintiff's attorney, the expert offered his own report with extensive support for how a life care planner conducts an evaluation and publishes an opinion. Topic headings included experience, ethics, associations, existing standards, and specific responses to the defendant's motion.

The court's ruling was that the expert would be able to testify regarding the data in the life care plan, although unless medical testimony supported surgery, this item should be removed. Additionally, the expert could testify about his interactions with the plaintiff but may not offer an expert opinion as to the plaintiff's credibility.

Case #4: Expert for the plaintiff was deemed well qualified, but opinions were not consistent with foundation testimony and opinions and she was excluded.

Cindy Taylor, Individually and as Guardian Ad Litem for Brody Patrick Wright and Arthur M. Taylor vs. Speedway Motorsports Inc. and Charlotte Motor Speedway, LLC, doing business as Lowe's Motor Speedway; Tindal Corporation, formerly Tindall concrete Products, Inc and Anti-Hydro International , N.C., Mecklenburg County Super. Ct.: 01-CVS-12107

This case relates to a successful motion to exclude a life care planning expert who was expected to testify on behalf of the plaintiff. The judge embellished on his ruling on March 7, 2003 with following commentary.

> *" . . . the Court notes that the witness [for the plaintiff] wishes to express an opinion or numerous opinions without the proper foundation, in the opinion of the Court, having been laid for the expression of said opinions. The Court finds that these opinions are entirely speculative, for example, including, but not limited to, the following examples: Expressing her opinions as to how the plaintiffs would be seen and treated by various health care providers in years to come and the cost of that, without evidence to substantiate that or lay a proper foundation for that. Secondly, expressing opinions as to the medical equipment of the plaintiffs 15 or more years in the future, when the treating physicians have not indicated in their testimony any substantiation for this opinion. The record is devoid of any such evidence, in the opinion of the Court. Third, that she expresses opinions as to what surgery would be needed and the frequency of surgery for as far out as ten years from now when there is no medical evidence to support that. The Court finds, in its discretion, that the proffered testimony is unreliable and is not relevant therefore. I am basing this ruling in part on Kumho Tire vs. Carmichael - I do not have the U.S. citation, it's 119 Supreme Court 1167;Daubert vs. Merrell Dow Pharmaceuticals, 509 U.S. 579; State vs. Bullard, 312 NC 129; State vs. Spencer, 119 NC Appellate 662. Further, the Court finds that the proffered testimony would not be helpful and will not assist the jury in understanding the evidence or determining the facts in issue. Further, the Court finds that for all of the above reasons the probative value of such testimony is substantially outweighed by the danger of unfair prejudice, misleading the jury, and waste of time. The Court further notes and finds as a fact that there has been no peer review of the testimony or of the anticipated testimony of this witness. There is no publication to which reference has been made in any testimony that would substantiate this. There has been no offer of visual aids to assist the jury. And for all of these reasons the testimony of [the expert witness] is excluded" (pp. 33-34).*

The wording by the judge encompasses several areas of interest. First, the qualifications of the expert were not in dispute, just the expected testimony. Second, Daubert and Kumho Tire cases were referenced as justification for the judge's "gate keeping" discretion which disallowed testimony rather than giving the jury the responsibility to determine the credibility of witness. Third, another topic which the judge asserted in his commentary was related to Federal Rules of Evidence 403 which indicated that the testimony was, in essence, a waste of the court's time.

A discussion ensued with regard to some deposition testimony which was read where conflicting opinions seemingly were expressed. One example was when the judge referenced the testimony of the treating psychologist stating, " . . . and it's [the opinions of the life care planner] contrary to what I thought was an outstanding witness, Dr. Owens" (p. 23) and whose recommendations the life care planner apparently ignored or did not accept.

Case #5: Expert testified at trial that the client was 50 to 60% disabled by combing two well known methodologies into a hybrid approach, resulting in an appeal and remand for new trial on damages (for this issues and others).

Elcock vs. K-Mart Corp. (1998, US Ct of Appeals, 3rd Cir, No. 98-7472)

There were several issues discussed in this appeal, but a central theme was related to the expert's "thin" vocational rehabilitation education and knowledge and his unique application of two existing disability determination methodologies. The court allowed the expert to testify without allowing a Daubert type hearing. K-Mart asserted that the expert provided unreliable testimony on which, in part, the jury relied when determining the damage award. The court of appeals agreed.

The expert opined that Elcock was between 50 and 60 percent vocationally disabled and that this disability was permanent. When pressed for an explanation of the methodology used, he testified:

> *I use a combination of the procedure recommended by Fields [sic] which is to look at level of preinjury access to the labor market and post injury access and the percentage and the difference between those percentages Fields says is the loss of jobs or the lost percentage. I also looked at which is what I normally do at the procedure recommended by Anthony Gamboa and he suggests that you look at all the factors involved in the client's analysis, injury, test results, psychological results, the client's statements, and so on, and then you as the clini-*

cian must make a, you as a vocational expert must make an estimate. And so what I do is I use Fields analysis as a starting point and then I revert to Gamboa to depart from Fields [sic] to come up with an estimate (p. 20).

The appeals court countered with: "However, we are inclined to view [the expert's] admittedly novel synthesis of the two methodologies as nothing more than a hodgepodge of the Fields and Gamboa approaches, permitting [the expert] to offer a subjective judgment about the extent of Elcock's vocational disability in the guise of a reliable expert opinion" (p. 21). It is valuable to note that: "K-Mart does not dispute that the Fields[sic] and Gamboa approaches are accepted methodologies in the vocational rehabilitation field; what it does challenge is [expert's] combination method" (p. 20).

The above case summarizes most issues relevant to this paper. The court needed to determine if the expert was qualified to testify regarding vocational rehabilitation by education, experience, knowledge, training and skill and the testimony would assist the jury in reaching a decision. There is an extensive review of these factors in the appeals court decision. Further, the expert was allowed to express opinions based in part on clinical judgment, which was termed in the appeal as the expert's "ipse dixit statement" (p. 18) or because he said it, therefore it is so. However, the appeals court rejected the expert's opinions based in part on the lack of evidence that the hybrid concept was generally accepted and the case was remanded for a new trial on damages.

Conclusion

In conclusion, the issues surrounding admissibility of testimony, in view of the more scientific criteria of Daubert and the broader standard established by Kumho and Joiner, have been largely settled. An emphasis on the appropriate methodology or methodologies is in order. Table 1 summarizes issues related to developing an opinion utilizing clinical judgment. Clearly, as noted in the Table, given the fact that persons require individual attention through evaluation and assessment, planning, resource development, and the reliance on foundation data and information, a reasonable course is to apply clinical judgment skills to problem-solving consistent with all the facts of the case. Objective data (i.e., test scores, computer analyses, consultants' reports, etc.) are required "to provide a concrete basis for the making of some decisions, and to make somewhat less intuitive some of the clinical judgments which have to be made when objective data are lacking" (Super & Crites, 1949, p. 596). Furthermore, courts rulings underscore that testimony must be reliable and based on generally accepted methodology. The days of opinions founded simply on one's experience or offering some unique obscure, esoteric theory are probably over. In the final analysis, however, in instances of opinion development with most rehabilitation cases, the rehabilitation and life care planning consultant must rely on a methodology that includes clinical judgment.

Author Notes

[1] These two words were italicized in the Kumho ruling for emphasis.

[2] This brief section on FRE 702 has been abstracted from Field and Choppa (2005, p. 3-4).

[3] Editor's note: Rule 403 refers to "Exclusion of Relevant Evidence on Grounds of Prejudice, Confusion, or Waste of Time." Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence. Source: http://www.law.cornell.edu/rules/fre/rules.htm#Rule403

Table 1
Clinical Judgment Parameters

- ✓ Are opinions based on relevant information, facts and data?
- ✓ Do opinions correctly utilize widely accepted and/or peer reviewed methodology?
- ✓ Are opinions for medical care founded upon clinical practice guideline and/or outcome studies?
- ✓ Are opinions consistent with relevant standards of practice?
- ✓ Are statistical studies used in support of opinions which are individual and client/evaluee centered (which is appropriate), or are opinions based primarily or solely upon statistical studies (which is inappropriate)?
- ✓ If testing is pertinent, are the tests reliable, reliable and valid?
- ✓ Are opinions objective, unbiased, ethical and professional?

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The Vocational Expert and Ethics

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Abstract: A review of the purpose of ethics is presented from the perspective of values and valuing along with a discussion of principle and virtue ethics as related to the role of the vocational expert practitioner. Guidelines for the resolution of dilemmas are noted. The American Board of Vocational Experts' Code of Ethics preamble is presented and discussed introducing the concept that the client is, in the forensic practice arena, the referral source. It is concluded that the vocational expert is professionally obligated to apply principle and virtue ethics to the referral source's client as well as to operate from a spirit of fair play, honesty, and integrity. The American Board of Vocational Experts' Code of Ethics provides a platform that guides the practitioner in doing exactly that.

Ethics is related to many differing aspects of professional conduct. Ethics concern the philosophies that a profession is based upon, the principles of morality, and the codes that define and guide ethical behavior. Ethics ultimately is measured by behavior; that is, the actions or inactions of the practitioner regarding the manner in which a particular service is provided or rendered. Ethical behavior for the vocational expert or, for that matter, any human service professional represents an ideal in terms of personal traits and characteristics that must be constantly pursued (Corey, Corey & Callanan, 2003/2007).

Corey (1996) has noted that professional codes of ethics serve a number of purposes: (a) to educate the public about the profession and its responsibility (for the practitioner and the general public), (b) as an accountability mechanism (to protect against unethical practice), and (c) to improve practice (through reflection and self-monitoring). Because codes of ethics describe such a broad range of issues and expected behavior, only minimal standards of excellence are articulated for the practitioner to follow. Moreover, Corey (1996) has noted that "there is a real difference between merely following the ethical codes and making a commitment to practicing with the highest ideals" (p. 55). As such, ethics may be viewed from two vantage points:

- *Mandatory ethics* entails a level of ethical functioning at which... [practitioners]...simply act in compliance with minimal standards.
- *Aspirational ethics* pertain to striving for the optimum standards of conduct.

Tarvydas (1997) similarly has written that codes of ethics are an attempt by the professional organization to articulate appropriateness regarding conduct. Moreover, Tarvydas has observed that codes of ethics are not absolute formulas to be followed, but rather they are normative standards. The purpose of this article will be to explore the foundation upon which codes of ethics are based and to proffer recommendations for the forensic practitioner and for forensic practice.

Ethics ultimately is measured by behavior; that is the actions or inactions of the practitioner regarding the manner in which a particular service is provided or rendered.

Values and Valuing in Rehabilitation Settings

Values have been defined as enduring beliefs that become standards for guiding actions (Rokeach, 1973). Values are constants that guide our actions and judgments across situations and time. Vocational experts must identify what is valued in terms of professional goals and practice outcomes. On a practical level, practitioners must assess if values guide standards of practice or if, in actuality, standards of practice shape the values that practitioners hold toward clients and services provided. It is therefore significant to propose values that influence practice and to understand the potential for impacting services and the development of a code of ethics (Curtis, 1998).

Values act as standards or beliefs that guide actions and judgments across situations and time. Values and resulting value systems operate at the individual or personal level, the institutional or professional level, and a societal or national level (Rescher, 1969; Schwartz, 1990). Personal values, for instance, are values that do not necessarily involve interaction with others. Personal values are expressed by an individual's behavior that generally brings about the value satisfaction (e.g., someone who works diligently on a job because he or she values a strong

work ethic) (Gordon, 1975). Institutional or professional values, alternatively, may be described as a specified prioritization or constellation of values that serve to express and encourage the identification and advancement of the group's values (Schwartz, 1990). In this sense, professional values serve as a group's standards and have the propensity to set the direction toward which an organization works (NICHCY News Digest, 1993).

The Relationship of Values to Vocational Expert Practice

The purpose of exploring values is to increase the understanding about the impact that values have upon individuals and organizations. Values that influence rehabilitation, however, fall within a global framework of values and valuing. When initially exploring the role of values in rehabilitation, a definition of values that is conceptually person-centered in its orientation is a logical choice. The overall design of forensic rehabilitation is such that, even when values are discussed about things (e.g., a work sample system) or behaviors (work performance), such a discussion takes place in relationship to a person or groups of people. Additionally, such discussions may take place in relationship to services that are being provided for people by other people (e.g., forensic rehabilitation practitioners, vocational evaluators).

It is also logical to define values in the sense of such authors as Kluckhohn (1951), Rokeach (1973), and Williams (1968), wherein values serve as standards by which to make evaluative decisions. In this way, values serve as the basis by which judgments are made in and about the rehabilitative process. Rokeach (1973) stated evaluation of values and value-related behaviors can be accomplished using behavioral, cognitive, or affective terminology. In discussing the properties of values, Rokeach (1973) described two types of values; a means or an end-result of actions that are appraised as to their desirableness. Both instrumental and terminal values play a role when setting goals and objectives that are personally and socially preferable to other alternatives. Instrumental values can be seen in the short-term objectives and goals that constitute the steps it takes to successfully reach long-term goals. Again, these values concern themselves with *modes of conduct* dealing with moral, competence, or self-actualizing behaviors (Rokeach, 1973).

The constellation of values that steer an organization also govern how an organization functions daily and establishes the standards and goals that motivate employees (Wilson, 1988). This is particularly accurate when the collective value sets of an organization's membership reflect a similar constellation. In rehabilitation, as in other human service oriented professions, values can be observed as being inherent within the organization's mission or goal statements, professional codes of conduct, and standards establishing competency requirements for certification, licensure, educational degrees, and the provision of services.

Ethical Principles

Ethical principles are derived from the general understandings or fundamental assumptions of the larger society regarding what is considered to be right and wrong (Cottone & Tarvydas, 1998). Cottone and Tarvydas (1998) have noted that "...principle ethics involves objectively applying a system of ethical rules and principles to determine what is the right or moral decision when an ethical dilemma arises" (p.135). Beauchamp and Childress (1983) identified these principle ethics as: beneficence, nonmaleficence, autonomy, justice, and fidelity.

Beneficence

The principle of beneficence lies at the heart of most ethical standards and value systems because it can be defined simply as *doing good*. Beneficence is the concept of contributing to the welfare of others or helping individuals. The concept of beneficence gives meaning to the process of forensic rehabilitation because, by following this ethical principle, the rehabilitation practitioner is guided to seek, first and foremost, that which will benefit each individual client.

Nonmaleficence

Rehabilitation practitioners are guided not only by the principle of doing good, he or she is additionally guided by the concept of *not causing physical or emotional harm.* Nonmaleficence refers to the physician's creed: "First, do no harm." Nonmaleficence is part of the equation that must be considered in the rehabilitation practitioner's efforts when adhering to the principle of beneficence. The ethical principle of nonmaleficence, with a commitment toward beneficence, provides a standard for the checks and balances rehabilitation practitioners must take into consideration as professional opinions and recommendations are made that have a potential, momentous impact on the lives and livelihood of persons who have experienced trauma, injury, or disease as well as the effect of the dissolution of marriage when vocational expertness is required.

Autonomy

A broad definition of autonomy refers to an individual's right to make decisions and to then act upon the fulfillment of those decisions. In this way, the concept of autonomy is closely linked to self-regulation and self-determination. In essence, autonomy refers to *the right of an individual to make their own decisions.* From a forensic perspective, the rights and abilities of the person who has sustained an impairment that imposes impediments to employment is represented by an attorney of their choice who engages the services of a forensic rehabilitation practitioner in concert with the ethical principle of autonomy. The rehabilitation practitioner must respect the autonomy of this person and act in a manner that preserves this person's right to make decisions.

Justice

The principle of justice refers to *fairness.* In our country's legal system, justice and fairness imply that people are treated equally; they are given

equality of opportunity and consideration regardless of the differences that somehow set them apart from the mainstream of American life. Our society has been impacted substantially by numerous social movements that serve as a focal point to various segments in their fight for justice and fairness on a personal, political, and pragmatic level. An example of this can be seen when people with disabilities seek consideration for equality of access to all segments of society including meaningful, well-paying jobs, housing of choice, transportation, communication methods, the ability to vote, and multi-dimensional media portrayal. Justice and fairness do not imply that an individual will receive consideration *because they are* but rather will have the opportunity to receive consideration *just like anyone else.* Implicit in the ethical principle of justice is the concept that all individuals have inherent value and worth so that consideration given to all segments of our society is done in a meaningful way, made in good faith, and includes progress toward an enriched quality of life. From a forensic perspective, for example, persons who have experienced discrimination, against the provisions of the American with Disabilities Act may very well require the services of a vocational expert to effect the principle ethic of justice.

Fidelity

Fidelity refers to *being honest, loyal, and keeping promises.* This means, that as rehabilitation practitioners, we continually strive toward creating and maintaining relationships with clients, peers, and other professionals that are built upon a solid reputation. In this regard, "solid" implies one is known for being honest in their business affairs, is loyal, and has "sticking power" even when cases and circumstances are difficult, and follows through on their word or promises. The ethical principle of fidelity has much to do with our reputation as rehabilitation practitioners, the manner in which we conduct our business, and how we treat clients and others. Issues of fidelity are closely related to maintaining confidentiality (for both clients and other professionals) and following accepted standards for informing and obtaining consent for services and the nature of the relationships we have with clients and persons with disabilities or those who require vocational expert services.

Corey, et al. (2003) have included another principle ethic: *veracity.* Veracity means being truthful; being truthful, for instance, about the implications of a particular diagnosis, testing, confidentiality, or scope of practice of the practitioner. Veracity and fidelity are similar in that both principle ethics relate directly to honesty.

Virtue Ethics

A second set of ethics known as virtue ethics or the ethics of care relate to the personal characteristics of the practitioner. These ethical precepts in combination with principle ethics should set the standard for the vocational expert practitioner to aspire to in daily practice. Meara, Schmidt, and Day (1996) provide a clear differentiation between principle ethics and virtue ethics by noting that principle ethics center on moral issues, providing a means of resolving dilemmas that give insight as well as implications for future ethical behavior. Virtue ethics, on the other hand, center on the practitioner doing the very best for his or her clients as exemplified by four core virtues. These virtues are prudence, integrity, respectfulness, and benevolence. In the context of forensic rehabilitation, *prudence* as a virtue embodied by the vocational expert practitioner infers wisdom in terms of making good judgments; *integrity* meaning straightforwardness and honesty regarding demeanor in all situations; *respectfulness* meaning the practitioner holds all persons in esteem regarding their determination to succeed; and *benevolence* is exemplified by the vocational expert practitioner's compassion and will to do good.

Meara et al. (1996) provide the following characteristics as noted in Corey et al. (2003) of virtuous professionals which are quite instructive:

- They are motivated *to do what is right for the right reasons.* They do what is right not simply because they feel obligated or fear the consequences.
- They possess *vision and discernment,* which involve sensitivity, judgment, and understanding and leads to decisive action.
- They possess *compassion* that involves a regard for the welfare of others and sensitivity to the suffering [*sic*] of others.
- They possess *self-awareness.* They have a capacity for self-observation; they know how their assumptions, convictions and bias are likely to affect their interactions with others.
- They are *connected with and understand the mores of their community* and the importance of community in moral decision-making, policy setting, and character development. (p. 14)

ABVE Code of Ethics

The attitudes and behaviors of rehabilitation practitioners almost always reflect on the profession to which he or she is a member, particularly as an active member, regardless of the location or setting of the practitioner. The American Board of Vocational Experts' (ABVE) preamble to the *Code of Ethics for Vocational Experts* (revised by Board action during the first quarter of 2006) has been developed with these attributes in mind:

> Vocational experts are primarily committed to determining the vocational capacities of individuals. In fulfilling this commitment, vocational experts work with individuals, standard vocational texts, governmental statistics and publications, standardized vocational tests, as well as with members of the community. The vocational expert also takes into consideration the age, education, previous work experience, earnings record, mental and physical status of the person with the disability as well as test data, and the expert's own vocational experience. Vocational experts may

be called upon to provide psychological, vocational, and rehabilitation testimony, which may include information concerning vocational testing, vocational exploration, job placement and job development. In addition, evaluation of social, medical, vocational, and psychological data as well as economic information may be required as part of court testimony.

Vocational experts must demonstrate adherence to the ethical standards of this profession and must ensure that the standards are enforced. The Code of Ethics, henceforth referred to as the Code, is designed to facilitate the accomplishment of these goals. The primary obligation of a vocational expert is to present a fair and reasonable vocational assessment of the individual they have evaluated.

The basic objective of the Code is to promote the public welfare and serve as a guide by specifying and enforcing ethical behavior expected of vocational experts. Accordingly, the Code consists of two types of standards (a) Canons and (b) Rules of Professional Conduct.

The Canons are general standards of aspirational and inspirational nature reflecting the fundamental spirit of respect which professionals share. They are maxims that serve as models of exemplary professional conduct. The Canons also express general concepts and principles from which more specific Rules are derived. Unlike the Canons, the Code defines more exacting standards governing the behavior of certified members of the American Board of Vocational Experts. Vocational experts who violate the Code are subject to disciplinary action.

A Rule violation is interpreted as a violation of the applicable Canon, and the general principle embodied thereof. The use of the title, Diplomate of the American Board of Vocational Experts or Fellow of the American Board of Vocational Experts is a privilege granted by the American Board of Vocational Experts (ABVE). The ABVE reserves unto itself the power to suspend and/or to revoke the privilege or to approve other penalties for Rule/Code violation.

Disciplinary penalties are imposed as warranted by the severity of the offense and its attendant circumstances. All disciplinary actions are undertaken in accordance with published procedures. These procedures are designed to assure the proper enforcement of the Code within the framework of due process and equal protection of the laws. When an ethical violation or a specific Rule violation has been identified, the individuals engaging in that behavior are encouraged to refrain from such behavior until the matter can be clarified.

ABVE members who need assistance in interpreting the Code should request in writing an advisory opinion from the Ethics Committee of the American Board of Vocational Experts. Vocational Experts who are not members of ABVE are not bound by this Code, although, they are encouraged to use the Code as a guideline of professional behavior.

Definitions used in the ABVE Code of Ethics: *Referral Source.* The referral source may be an attorney for the defense or plaintiff, an applicant attorney, or the attorney for the Petitioner or Respondent in a Family Law matter. The *Referral Source* might also be an agency or an organization such as the Social Security Administration, the court of jurisdiction, or a private individual. *The Client.* In the context of forensic Vocational Experts, *client* always means the *Referral Source.*

The basic goal of the ABVE Code of Ethics is to promote public welfare by specifying ethical behavior expected of vocational expert practitioners working in a legal or forensic environment. The Enforceable Standards within the ABVE Code of Ethics are intended to provide the practitioner with guidance in situations where ethical standards may be subject to ambiguity. Vocational experts who violate the ABVE Code of Ethics are subject to disciplinary action based upon any transgression of these articulated standards. Disciplinary actions are applied in accordance with published standards affording each individual due process and equal protection.

Within the commentary section of this issue of the JFVA, the American Board of Vocational Experts' Code of Ethics is presented for your review and reflection. The canons and rules of professional conduct noted in this document provide the vocational expert practitioner with a platform to guide ethical behavior.

Resolution of Dilemmas

The resolution of ethical dilemmas poses a significant responsibility upon the rehabilitation practitioner to consciously understand the principle ethics of beneficence, nonmaleficence, autonomy, justice, fidelity, and veracity. Several models of resolving ethical dilemmas are available to the rehabilitation practitioner (Cottone, 2001; Cottone & Tarvydas, 1998; Corey, 1996; Hill, Glaser, & Harden, 1995; Tarvydas, 1997; and Rubin, Wilson, Fischer, & Vaughn, 1992; Walden, 1997; and Forester-Miller & Davis, n.d.) and the reader is advised to consult one or more of these citations for more detailed information. Corey et al. (2003/2007) in a review of ethical decision making models suggests the following steps be followed by the professional in the resolution of ethical dilemmas.

- *Identify the problem or dilemma:* Ethical dilemmas do not have 'right or wrong' answers, so you will be challenged to deal with ambiguity. Consultation with your client begins at this initial stage and continues throughout the process of working through an ethical problem, as does the process of documenting your decisions and actions.
- *Identify the potential issues involved:* Consider the basic moral principals of autonomy, benefi-

cence, nonmaleficence, justice, fidelity, and veracity and apply them to the situation. Good reasons can be presented that support various sides of a given issue and different ethical principles may sometimes imply contradictory courses of action.

- *Review the relevant ethics codes:* Ask yourself whether the standards or principles of your professional organization offer a possible solution to the problem.
- *Know the applicable laws and regulations:* It is essential for you to keep up to date on relevant state and federal laws that apply to ethical dilemmas. In addition, be sure that you understand the current rules and regulations of the agency or organization where you work [as well as the professional organization to which you belong and its Code of Ethics].
- *Obtain consultation:* Consultation can help you think about information or circumstances that you may have overlooked. In making ethical decisions, you must justify a course of action based on sound reasoning. Consultation with colleagues, whether it is formal or informal, provides an opportunity to test your justification. Remember to document the nature of your discussions with those whom you consult.
- *Consider possible and probable courses of action:* As you think about the many possibilities for action, discuss these options with your client as well as with other professionals.
- *Enumerate the consequences of various decisions:* Consider using the six fundamental moral principles (autonomy, beneficence, nonmaleficence, justice, fidelity, and veracity) as a framework for evaluating the consequences of a given course of action.
- *Decide on what appears to be the best course of action:* Once you have made what you consider to be the best decision, do what you can to evaluate your course of action. Reflecting on your assessment of the situation and the actions you took are essential if you are to learn from your experience. (pp. 20-21)

Conclusion

Forensic practice demands a differing set of behavioral constructs than rehabilitation counseling, yet both occupational paths share the core values and beliefs of human service professions. That is, the principle ethics of beneficence, nonmaleficence, autonomy, justice, fidelity, and veracity as well as the core virtue ethics of prudence, integrity, respectfulness, and benevolence. The vocational expert practitioner's principal client is the referring source (the attorney-defense or plaintiff, the attorney for the petitioner or respondent in a family law matter or the employing organization such as the Social Security Administration, court of jurisdiction, or private individual). Does this mean that the vocational expert practitioner does not apply these ethical and virtue principles to the subject of the expert's opinion? No, of course not! The vocational expert practitioner provides a reasoned, scientifically based opinion that is scrutinized by a decision maker(s) who renders a judgment based on the law(s) governing compensation for resultant disability as a result of disease, trauma, accident, or injury or in the instance of family law the inequity of a particular spouse's ability to enter or re-enter the workforce. The vocational expert is professionally obligated to apply principle and virtue ethics to the referral source's client as well as to operate from a spirit of fair play, honesty, and integrity. Ethical conduct enables one to respond with maturity, judgment, discretion, wisdom and prudence (Corey, Corey, & Callanan, 2007) within a framework of honesty in relationships. The American Board of Vocational Experts' Code of Ethics provides a platform that guides the practitioner in doing exactly that.

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Forensic Ethics and Indirect Practice for the Rehabilitation Counselor

Mary Barros-Bailey, Jeffrey Carlisle, and Terry L. Blackwell

For nearly 50 years, the specialty area of forensics has emerged as an established practice setting in rehabilitation counseling, and it is predicted to be the fastest-growing area of practice in the profession. Reflecting the increased number of practitioners in the specialty, the revised *Code for Professional Ethics of Rehabilitation Counselors* names Section F (Forensics and Indirect Services) as a guide to the ethical practice for rehabilitation counselors in this specialty. The section includes 17 standards specific to clients' and evaluees' rights, rehabilitation counselors' forensic competency and conduct, forensic practices, and forensic business practices. Furthermore, the unique relationship of the forensic rehabilitation counselor with the person receiving services is clarified through the introduction of the definition of *evaluee*, a term that has gained unilateral agreement throughout the field of forensic rehabilitation.

Keywords: ethics, forensic, vocational expert, indirect service, rehabilitation, counseling

Forensics in rehabilitation counseling has continued to grow as a specialty area of practice (Berens & Weed, 2001), and it is predicted to be the fastest area of growth in professional practice (Barros-Bailey, Benshoff, & Fischer, 2009). Codes of ethics of professional and credentialing organizations have been, with increasing regularity, addressing issues inherent to this practice specialty that involve face-to-face consultation and indirect service provision. The first code to address these issues was that by the American Board of Vocational Experts. In review of this organization's first code, it became apparent that it derived mostly from the Commission on Rehabilitation Counselor Certification's (CRCC's) 1987 *Code of Professional Ethics for Rehabilitation Counselors* (hereafter, the *Code*), with the exclusion of the advocacy rules that constituted the *Code* and with the change of *rehabilitation counselors* to *vocational experts* (Barros-Bailey, 1999). In 2006, the International Association of Rehabilitation Professionals conducted the first effort to independently study issues specific to forensics among a variety of professions and to integrate those into a code consistent with all forensic practice, not just that within rehabilitation counseling (Barros-Bailey, Holloman, Berens, Taylor, & Lockhart, 2005). The CRCC's 2010 *Code of Professional Ethics for Rehabilitation Counselors* benefits from the recent focus and research in forensic ethics. It has a new section—Section F—dedicated entirely to the practice of forensics and indirect service provision by rehabilitation counselors, and it expands on the efforts of the last decade to guide certificants practicing in these specialties. Section F constitutes one of the greatest changes to the 2010 *Code*. The 2001 *Code*, for example, only had one standard specific to forensics (F.12) and two standards specific to or mentioning indirect services (A.3.c and D.7.c). Indeed, Section F in the 2010 *Code* includes 17 standards, and the overall *Code* mentions forensic and indirect services in 4 other standards and throughout the preamble. The purpose of this article is (a) to explore ethics as it pertains to rehabilitation counselors delivering forensic and indirect services to evaluees and clients and (b) to describe and explain the expanded or new standards within the revised 2010 *Code*.

History and Practice of Forensics and Indirect Services in Rehabilitation Counseling

It is not entirely clear when and in what public or private disability system the first rehabilitation counselor was used for forensic or indirect services. However, the Social Security Administration's use of vocational experts in disability determination and adjudication, starting in the 1960s, significantly contributed to the development and growth of forensic rehabilitation counseling. For about five decades, the use of forensic rehabilitation counselors has continued to grow for expert witness work and in indirect service provision. Indeed, research (Barros-Bailey, 2010) suggests that forensic practice by rehabilitation counselors has expanded into many private and public systems where the skill set descriptive of the profession's scope of practice is important in assisting decision makers where issues of disability and/or work are important. In the private sector, these systems include workers' compensation, short- and long-term disability (including credit disability), Railroad Retirement Board Act, Longshore Act, Jones Act, no-fault auto insurance, life insurance, tort (disability, age, employment, gender, and racial discrimination; product, malpractice, or other liability; harassment; student loan default employability; bankruptcy; wrongful birth/life; wrongful death; wrongful termination), family law (marital dissolution and child custody), and trust fund management. In the public sector, forensic or indirect services are provided to the Social Security Administration, the state/federal vocational rehabilitation system (service appeals), Department of Veterans Affairs (service appeals), state pension funds, and K–12 Individuals with Disability Education Act services. The expertise of rehabilitation counselors thus became recognized as being important in a variety of public and private sector disability or legal systems requiring the use of these skills in a forensic capacity. As this happened, ethical complaints against those providing these services increased (Saunders, Barros-Bailey, Rudman, Dew, & Garcia, 2007), as did the request for advisory opinions to the CRCC Ethics Committee (Shaw & Lane, 2008), thereby demonstrating the risk to rehabilitation counselors in this adversarial practice setting to ethical dilemmas (Manoogian, 2007). Section F in the 2010 *Code* attempts to give guidance to rehabilitation counselors providing services in this established area of practice that continues to grow and evolve.

Difference Between Primary Care and Forensic Practice

What is the difference between providing services in a primary care capacity and doing so in a forensic or indirect service capacity? The answer is simple: expectations in the relationship between the counselor and the client or evaluee. In the provision of rehabilitation counseling services to a client, there is a client–counselor relationship established, with all the provisions of such a relationship that ethical codes contain. In a forensic capacity, there is no relationship established. However, in either instance, the primary obligation of the rehabilitation counselor remains with the client or evaluee. Specifically, *forensics* is defined in the *Code* as providing "expertise involving the application of professional knowledge and the use of scientific, technical, or other specific knowledge for the resolution of legal or administrative issues, proceedings, or decisions" (glossary).

Methodology of the Inclusion of Forensic Ethics in the 2010 *Code*

The taskforce created by the CRCC in 2007 to review and recommend revisions to the 2002 *Code*, brought together individuals from a variety of practice settings in rehabilitation counseling and in academia. Workgroups of three members were formed and assigned specific areas of the *Code* for study, analysis, research, and debate regarding recommended changes and enhancements. Each member of the Forensic Ethics workgroup possessed forensic experience; two members served on the CRCC and had been chairs of the Ethics Committee within the last half decade; and, all members had published and presented on forensic-related practice issues in rehabilitation counseling over the last two decades.

The 2002 *Code* was largely silent regarding the area of forensic ethics. One mention is found in Section F: Evaluation, Assessment, and Interpretation—specifically, Standard F.12:

When providing forensic evaluations, the primary obligation of rehabilitation counselors will be to produce objective findings that can be substantiated based on information and techniques appropriate to the evaluation, which may include examination of the individual with a disability and/or review of records. Rehabilitation counselors will define the limits of their reports or testimony, especially when an examination of the individual with a disability has not been conducted.

Given the use of forensic rehabilitation counselors in a variety of public and private disability and legal systems, one standard addressing ethics in the *Code* was insufficient guidance to practice. Clearly, a more comprehensive concentration was needed to provide rehabilitation counselors with guidance in the discharge of their professional duties and their conduct when faced with ethical dilemmas.

To that end, the Forensic Ethics workgroup undertook a detailed review of the codes of ethics of other certifi-

cation and professional bodies, as well as the codes of certifying bodies concerning themselves with the regulation of practice within their respective disciplines. The codes consulted were as follows:

- the American Board of Vocational Experts' *Code of Ethics* (2006),
- the American Counseling Association's *Code of Ethics* (2005),
- the American Psychological Association's *Ethical Principles of Psychologists and Code of Conduct*, (2002),
- the American Psychological Association and American Board of Forensic Psychology's *Specialty Guidelines for Forensic Psychology* (2006),
- the American Rehabilitation Economics Association's *Code of Standards and Ethics* (1998),
- the British Association for Counselling and Psychotherapy's *Ethical Framework for Good Practice in Counseling and Psychotherapy* (2007),
- the Certification of Disability Management Specialists Commission's *Code of Professional Conduct* (2007),
- the Commission for Case Manager Certification's *Code of Professional Conduct for Case Managers*, (2004),
- the International Association of Rehabilitation Professionals' *Code of Ethics, Standards of Practice, and Competencies* (2006),
- the National Board for Certified Counselors' *Code of Ethics* (2005), and
- the Rehabilitation Counselling Association of Australia's *Code of Professional Ethics for Rehabilitation Counsellors* (2005).

Also reviewed were ethical dilemmas from the 2006 CRCC Ethics Survey (Tarvydas & Barros-Bailey, 2010) and CRCC Ethics Committee advisory opinions (Shaw & Lane, 2008), along with literature in the field. A critical component of the Forensic Ethics workgroup was the sharing of practice experiences among subject matter members in areas pertaining to unique situations and ethical dilemmas not adequately addressed by the *Code* or where it was altogether silent. The potential contribution of standards from other codes was studied and consensus was developed among the workgroup members regarding recommendations to be made to the Code Revision Taskforce at large for treatment of forensic ethics in the revision of the *Code*.

Discussion and debate regarding the changes and additions recommended by the Forensic Ethics workgroup was held at the taskforce level before the development of a draft *Code*, which underwent further review by the Ethics Committee before being released for public comment from April through November 2008. Comments received from the public were reviewed and integrated into the final workgroup and taskforce recommendations for Section F. The Ethics Committee reviewed and enhanced the final draft before coming to final review and approval by the full Commission in June 2009. What emerged was a Forensic and Indirect Services section that is thorough and instructive to the forensic rehabilitation counselor when she or he is faced with a particularly challenging situation or an ethical dilemma. The section includes areas of primary obligations, informed consent, dual roles, indirect service provision, confidentiality, objectivity, qualification to provide expert testimony, conflict of interest, validity of resources consulted, foundation of knowledge, duty to confirm information, critique of opposing work product, case acceptance and independent opinion, termination and assignment transfer, payments and outcome, and fee disputes.

Definition Differences: Who Is the Client in Forensics?

Who is the client in forensics? The question must be answered before the new *Code* section is reviewed because understanding the definition orients the reader to this specialized area of practice. Historically, this simple question has proven to generate anything but a simple answer. It has been the source of much disagreement and debate among professionals who work as practitioners and expert witnesses. Adding to the confusion was that various professional organizations and professional bodies did not ascribe to the same definition. The profession was left with a different definition of *client*, depending on certifications, practice settings, scope of practice, and type of case (Barros-Bailey et al., 2008). For example, the client was often considered to be either the individual with disabilities who received services from rehabilitation counselors (CRCC, 2002) or the referral source (American Board of Vocational Experts, 2007). Such a dichotomy of opinion and operational definition was controversial among the forensic rehabilitation specialty and among those retaining the services of rehabilitation counselors or vocational experts. Within the forensic specialty, the practice of expert witness testimony is not restricted to members of any specific organization. Without belonging to any regional, state, or national organization, one can be retained by an attorney or other referral source to testify in court (Barros-Bailey et al., 2008). After many years of impasse on the subject, leaders from the American Board of Vocational Experts, CRCC, and International Association of Rehabilitation Professionals engaged in a historic meeting during the November 2007 conference of the association in an effort to develop a unified definition. The goal was also to provide the professional with a concise explanation of how to treat this topic. Barros-Bailey et al. (2008) provided a blueprint of conduct and authored a white paper that was unan-

imously ratified by the boards of the participating professional and credentialing entities and, at this writing, has since been republished in seven peer-reviewed journals within the rehabilitation profession.[1]

What is the definition? The person who is the subject of an objective and unbiased evaluation is called the *evaluee*. Coincidentally, forensic psychiatrists use the same term in their profession (Candilis, Weinstock, & Martinez, 2007). The *referral source* is the individual who referred the case to the expert witness; this person can also be the evaluee, in the case of a self-referral. Finally, the *payer* is the individual paying for the services rendered by the forensic rehabilitation counselor; this person may also be the evaluee or another person or entity. The new definition of the client in forensics has become integrated into the 2010 *Code*, starting with the preamble, which states, "Rehabilitation counselors do not have clients in a forensic setting. The subjects of the objective and unbiased evaluations are evaluees." Reference to the new definition is also found in Standard F.1.c (Forensic and Indirect Services): "In a forensic setting, rehabilitation counselors who are engaged as expert witnesses have no clients. The persons who are the subject of objective and unbiased evaluations are considered to be evaluees." Finally, the nomenclature is included in the glossary to the 2010 *Code* and throughout Section F.

It is anticipated that forensic rehabilitation counselors will become conversant with the changes in the revised *Code* (2010) regarding the treatment of the client/evaluee in a forensic setting. It is incumbent on the forensic rehabilitation counselor to become educated in this area quickly, to better educate those who retain their services, as well as those who are the subject of the objective and unbiased evaluation performed by the expert—their evaluees.

Forensic Ethics in the 2010 *Code*: Standards Related to Forensic and Indirect Services

Section F of the 2010 *Code* offers guidance specifically on forensic issues. The 17 standards and four categories of this section alert rehabilitation counselors to questions to consider to avoid ethical pitfalls when providing services in forensics. Key areas of Section F are highlighted below.

Standard F.1 (Client or Evaluee Rights) identifies the rehabilitation counselor's primary obligation to "produce unbiased, objective opinions and findings that can be substantiated by information and methodologies appropriate to the evaluation, which may include examination of individuals, research, and/or review of records" (F.1.a). Furthermore, Standard F.2 (Rehabilitation Counselor Forensic Competency and Conduct) directs rehabilitation counselors to restrict their services to areas of competence, as evidenced within the parameters of "knowledge, skill, experience, training, and education" (F.2.b). Standard F.2 further obligates rehabilitation counselors to "maintain current knowledge of scientific, professional, and legal developments within their area of claimed competence" (F.2.f) and, where circumstances reasonably permit, "to seek to obtain independent and personal verification of data relied upon as part of their professional services to the court or to parties to the legal proceedings" (F.2.g).

Conversely, Standard F.2.h (Critique of Opposing Work Product) directs,

> *When evaluating or commenting upon the professional work products or qualifications of other experts or parties to legal proceedings, rehabilitation counselors represent their professional disagreements with reference to a fair and accurate evaluation of the data, theories, standards, and opinions of other experts or parties.*

Section F of the new *Code* makes the distinction between counselor and forensic evaluator and argues for avoidance of dual roles. As a general practice, the *Code* directs that rehabilitation counselors

do not evaluate current or former clients for forensic purposes except under the conditions noted in A.5.f [Role Changes in the Professional Relationship] or government statute. Likewise, rehabilitation counselors do not provide direct services to evaluees whom they have previously provided services in the past except under the conditions noted in A.5.f. or government statute. (F.1.c)

The *Code* recognizes that although dual roles should be avoided, there may be circumstances where dual roles are inherent in the jurisdiction in which rehabilitation counselors practice, or there may be situations where those dual roles are beneficial to the evaluee; therefore, the *Code* refers the rehabilitation counselor to appropriate behavior and procedure in these circumstances. Standard F.2.d (Conflict of Interest) further requires rehabilitation counselors providing forensic services to be mindful of potential conflicts of interest that may "interfere with their ability to practice competently."

Drawing from the role distinction set out in the preamble and the earlier discussion about the role of the client in forensics, Section F emphasizes that "rehabilitation counselors do not have clients in a forensic setting." Instead, the "persons who are the subject of objective and unbiased evaluations are considered to be evaluees" (F.1.c); thus, the rehabilitation counselor's primary obligation is to "provide unbiased, objective opinions and findings that can be substantiated by information and methodologies appropriate to the eval-

uation" (F.1.a). This is consistent with the literature in the field regarding the primary role of the forensic rehabilitation counselor as expert witness (Woodrich & Patterson, 2003). This distinction carries forth the concept introduced by Blackwell, Martin, and Scalia (1994) that the only advocates in the courtroom are the attorneys representing each side of the case. The forensic rehabilitation counselor's role is only to advocate for the truth of the opinion based on the facts of the case coupled by the expert's professional experience.

As in the counseling relationship, rehabilitation counselors who provide forensic services are responsible to protect the welfare of the evaluees. Standard F.2.c (Avoid Potentially Harmful Relationships) requires "rehabilitation counselors who provide forensic evaluations avoid potentially harmful professional and personal relationships with individuals being evaluated." In addition, Standard F.4.b (Fee Disputes) establishes that "rehabilitation counselors have the ability to discontinue their involvement in cases as long as no harm comes to evaluees," further translating into the duty to protect the welfare of the evaluees.

Although the principle of confidentiality, as defined in the counseling relationship, is not offered the same protections under the forensic relationship, Section F of the *Code* requires rehabilitation counselors to clarify in advance the nature of the evaluative relationship and how the information from this process will be shared (F.1.b, F.1.e). This provision is consistent with the disclosure and informed consent literature in the profession (Blackwell & Patterson, 2003; Shaw, Chan, Lam, & McDougall, 2004; Shaw & Tarvydas, 2001) and with other sections of the 2010 *Code* guiding rehabilitation counseling practice. However, "when there is no in-person meeting or other communication, disclosure by rehabilitation counselors is not required" (F.1.d). When feasible, rehabilitation counselors are obligated to obtain a written informed consent from the individual being evaluated or the individual's legal representative/guardian. In cases where a written consent cannot be obtained, the rehabilitation counselor is directed to "document verbal consent and the reasons why obtaining written consent was not possible" (F.1.b).

The requirements in Standard F.3.a (Case Acceptance and Independent Opinion) delineate reasons for declining involvement in a case. Similarly, Standard F.3.b (Termination and Assignment Transfer) directs rehabilitation counselors to "make reasonable efforts to assist evaluees and/or referral sources in locating another rehabilitation counselor to take over the assignment" should they withdraw from the case after being retained.

Finally, Standard F.4 (Forensic Business Practices) emphasizes that rehabilitation counselors "do not enter into financial commitments that may compromise the quality of their services or otherwise raise questions as to their credibility" (F.4.a). Furthermore, the *Code* asserts that payment is not linked in any way to case outcome or award.

Conclusions

In the decade between the last revisions of the *Code of Professionals Ethics for Rehabilitation Counselors*, the specialty of forensic rehabilitation counseling and indirect service provision has come into its own within the scope of practice of rehabilitation counseling. The development of a stand-alone section within the *Code*, Section F, crystallizes a recognition—namely, that this specialty area, which has been evolving for about four decades within rehabilitation counseling, holds idiosyncratic characteristics that leave certified rehabilitation counselors vulnerable to ethics risks; as such, the *Code* provides guidelines in terms of ethical behaviors and expectations. As with the related disciplines of psychology, psychiatry, and social work, which have likewise established independent guidelines or codes to guide forensics (Candilis et al., 2007), the field of rehabilitation counseling now has the enhanced ability to guide and enforce ethical behavior within this specialty area of practice at the credentialing level.

Although forensics has existed in practice for a generation of certified rehabilitation counselors, the treatment of ethical codes specific to the kind of services, relationships, and behaviors typical of the practice is relatively new. Therefore, there are many areas for potential research. The field is open. By the time of the next revision, the literature will tell what the development of Section F stimulates to help further evolve the living document called the *Code of Professional Ethics for Rehabilitation Counselors*.

Endnote

[1] Barros-Bailey, M., Carlisle, J., Graham, M., Neulicht, A. T., Taylor, R., & Wallace, A. (2008, 2009). Who is the client in forensics? [White paper]. Published in: (2008). *Estimating Earning Capacity, 1*(2), 132-138; (2009). *Journal of Forensic Vocational Analysis,* 12(1), 31-33; (2009). *Journal of Life Care Planning, 7*(3), 125-132; (2009). *Journal of Rehabilitation Administration, 33*(1), 59-64; (2008).*The Rehabilitation Professional, 16*(4), 253-256; (2008). *Rehabilitation Counselors & Educators Journal, 2*(2), 2-6; (2009).*Vocational Evaluation and Career Assessment Professionals Journal, 5*(1), 8-14.

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