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IMPLICATIONS OF COGNITIVE-BEHAVIORISM FOR VOCATIONAL EVALUATION:  
Assessing Cognitive and Emotional Components of Performance

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Abstract

Recent theories of behavior describe a multi-dimensional, mediational model of human functioning. This cognitive-behavioral model presents behavior occurring on a continuum, with cognitive and emotional/physiological responses preceding motoric performance. Many effective counseling and training techniques used in all areas of rehabilitation today are based on this model, yet traditional vocational evaluation methods do not adequately target the kinds of preliminary diagnostic or baseline data needed to plan and implement such techniques. This paper presents some implications which a cognitive-behavioral model holds for assessment of rehabilitation clients and provides examples of cognitive and psychophysiological assessment methods which might be beneficially utilized in the vocational evaluation process.

One of the more recent models of human functioning to evolve from behavioral science is cognitive-behaviorism (Bandura, 1977; Meichenbaum, 1977; Beck, 1976). According to this model, individual behavior consists of a sequence of responses proceeding from stimulus perception to evaluative cognitions, to emotional/physiological responses, and finally to motoric performance. The behavioral response chain described in this model appears as follows:

PERCEPTION→COGNITION→EMOTION→MOTORIC PERFORMANCE

Though functionally related, cognitive, emotional/physiological, and motoric responses may be governed by different controlling stimuli. Studies have shown that these components of behavior do not always correlate with one another (Lang, 1971). For example, an individual may motorically perform very well on a task if he or she believes it is possible, while another equally capable individual who does not believe that he or she can perform the same task, will consistently fail to do so (Gatchel, 1983; Heider, 1958). Thus, full understanding of an individual's behavior or performance under a specific set of conditions, such as a work situation, requires careful assessment of all three dimensions of behavior: cognitive, emotional/physiological, and motoric.

Vocational assessment methods in rehabilitation have traditionally focused primarily on the measurement of overt motoric performance through the use of techniques such as work samples, situational assessment, and dexterity tests (Pruitt, 1977). Certain types of cognitions are routinely assessed using interest and intelligence tests, personality inventories, achievement and aptitude tests, and other self-report instruments. However, relatively little attention has been devoted in vocational rehabilitation to the measurement of client's on-going mediating cognitions or "self-talk" (Ellis, 1963). This class of cognitive behavior includes an individual's immediate appraisals, expectancies, attributions, beliefs, and other covert self-statements. According to cognitive-behavior theory, such cognitions mediate between a specific situation and the individual's emotional/physiological and motoric responses (Mahoney, 1974). The emotional/physiological dimension of behavior is even less frequently evaluated in a systematic way. Vital elements of individual behavior, therefore, remain unmeasured in most vocational rehabilitation assessment situations. Since the cognitive and emotional/physiological components represent critical transitional and even causal links in the individual response chain, they should be systematically measured as part of a comprehensive or "holistic" vocational behavior assessment.

The relevance of cognitive behavioral strategies to a broad range of rehabilitation interventions is documented in recent rehabilitation

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literature (Farley, 1985; Sawyer & Crimando, 1984; Farley, Means, Akridge & Rice, in press). Gathering the preliminary diagnostic data required to effectively plan and implement cognitive-behavioral training and counseling necessitates identification of the specific cognitive and emotional/physiological components of a problematic behavior (Kanfer & Grimm, 1977; Beck, 1976). In certain cases, the measurement of the cognitive and/or emotional/physiological aspects of disability behavior can yield the most useful information gathered in a vocational assessment. For example, it is now believed that many disabling conditions are closely related to life stress (Pelletier, 1977; Selye, 1974). Rehabilitation clients experience varying degrees of stress resulting from the pressures of rapid life changes, alterations in physical functioning, loss of financial security, or disruption of family roles. Such stress is expressed through negative cognitions and anxiety, as well as through psychophysiological symptoms such as headaches, muscle tension, pain, or gastrointestinal and sleep disorders (Bishop, 1980; Shontz, 1974). The many adaptations occasioned by disability and illness create an escalating burden of daily frustrations that are capable of producing additional sources of stress for the individual. This secondary stress can lead to even greater psychophysiological dysfunction, physical damage, and complicating medical conditions. The potential for prevention or elimination of these secondary stress-induced disorders in vocational rehabilitation clients makes attention to their identification and measurement of immediate importance.

#### Cognitive Assessment

Measurement of cognitive functions is especially useful in evaluating depressed clients, anxious clients, or persons who appear to experience repeated failures in spite of having adequate intelligence and training to perform successfully. Other rehabilitation clients who could benefit from attention to their cognitive behavior characteristics include persons with poor self-concepts, unrealistic attitudes, inadequate self-monitoring, and those whose performance dysfunctions are not overtly identifiable (Kanfer & Grimm, 1977; Beck, 1976; Mahoney, 1974). Despite the need for additional research, many of the approaches already developed to measure behavior mediating cognitions can be utilized in vocational rehabilitation. Examples of such instruments include the Irrational Beliefs Test (Jones, 1968); the Assertiveness Self-Statement Inventory (Schwartz & Gottman, 1976); and the Automatic Thoughts Questionnaire (Hollon & Kendall, 1980).

Direct evidence of the value of cognitive assessment in vocational rehabilitation comes from a study conducted by Drake (1985). In this study involving 100 vocational rehabilitation clients from a state agency, Drake used the Health Attributions Test (HAT) to predict rehabilitation progress of the subjects. The HAT (Lawlis & Lawlis, 1980) measures the degree to which individuals perceive themselves as having control of their own health, or whether they

attribute their physical well-being to external factors such as luck or powerful others. The test can provide indications of a client's motivation and willingness to work toward recovery or rehabilitation. Using principles of locus of control, the HAT renders scores in three areas: Internal (how much responsibility individuals take for their own health), Powerful Others (the degree to which individuals abdicate control of their health to others), and Chance (the degree to which individuals believe that fate controls what happens to their health). The test consists of 24 statements which are rated on a range from strongly agree to strongly disagree. The HAT may be administered individually or in groups. It takes approximately ten minutes to complete and less than five minutes to score.

Drake used 50 rehabilitation clients classified as disabled due to back pain and 50 clients classified with alcohol/substance abuse disabilities. He found that clients who scored higher on the Internal factor of the HAT were more successful in their rehabilitation programs. Correlations between HAT Internal scores and rehabilitation status after 60 days in the VR program were .3751 ( $p < .007$ ) for the alcohol clients and .2995 ( $p < .03$ ) for the back pain clients. A discriminant analysis showed that this simple HAT measure of client attributive cognitions could predict the alcohol client success in the VR program 96.3% of the time and their failure rates 100% of the time. It predicted success of the back pain clients with 83.3% accuracy and had an accuracy rate of 90% for the unsuccessful ones. Therefore the HAT Internal score was predictive of success in a rehabilitation program at a probability level of .0001. Drake concluded that clients who have more internal health attribution, i.e. tell themselves that they are primarily in control and responsible for their own lives and health, are more successful in a rehabilitation program because they have a stronger personal commitment to success and a willingness to work harder to achieve their goals.

#### Psychophysiological Assessment

Advances in the field of psychophysiological assessment provide a new and challenging dimension to vocational evaluation. The methods of emotional/physiological or psychophysiological assessment have been developed to the point which would allow vocational rehabilitation personnel to gather direct and specific information on many forms of client psychophysiological responses in a work setting. This kind of measurement can be performed using the monitoring devices marketed for use in biofeedback training. Although the appropriateness and relative ease of use of biofeedback techniques in vocational rehabilitation has been described (Bodenhamer, Bodenhamer & Evenson, 1984; Knight, 1980), biofeedback has been underutilized in the rehabilitation field. Few rehabilitation professionals have received training in the identification, measurement, and definition of strategies for disabilities related to the emotional/physiological aspects of behavior. In order to encourage the use of biofeedback for psychophysiological assessment in vocational

evaluation, the remainder of this paper focuses on providing information on how a psychophysiological assessment approach might fit into the evaluation process.

Diagnostic biofeedback, psychophysiological profiling, and screening procedures have already been developed for the evaluation of client's pre-training emotional/physiological functioning levels, under both resting and task performance conditions (Fuller, 1977; Montgomery & Wood, 1983). Similar assessment procedures can be used in vocational evaluation settings to identify clients who have dysfunctional physiological responses that interfere with vocational task performance (Bodenhamer & Bodenhamer, 1983).

Some clients might show elevated muscle tension or perhaps heightened autonomic reactivity to specific types of work or to certain working conditions, such as noise, close supervision, or small work spaces. Compact portable biofeedback instruments are now available which can be worn unobtrusively by clients as they move around a workshop or evaluation center and perform in a variety of actual work environments.

Two types of biofeedback instruments which are relatively inexpensive and easy to operate and maintain include the electromyograph (EMG) and temperature or thermal unit. An EMG measures the electrical microvoltage which emanates from the contraction of muscle fibers. Small sensors attached to a subject's skin above the monitored muscle groups pick up electrical signals from these muscles. The signals are then converted to visual and/or auditory readings by the machine. The readings can be "fed back" to the subject, who may be able to use this information to regulate the signal and, consequently, his or her own muscle activity. For example, in a biofeedback psychophysiological assessment, EMG measurements could be made of the upper body muscle tension levels of an industrial-accident client who appears physically tense and guarded when performing tasks requiring the use of his or her hands and upper body. Such an assessment could tell the rehabilitation professional and the client if there is excessive tension in the client's upper body during task performance, and even which particular muscle areas are involved. If the extent of muscle tension measured indicates that such contractions may be interfering with the client's execution of desired work tasks, then biofeedback or other relaxation techniques to reduce tension could be made a recommended part of the client's rehabilitation program.

A thermal biofeedback instrument measures the temperature of the skin surface produced by blood flowing through vessels serving the skin area. When blood vessels dilate, allowing more blood to enter a skin area, the skin temperature rises. Anxiety level and other psychophysiological functions controlled by the autonomic nervous system appear to produce fluctuations in skin temperature caused by vasodilation and constriction. The temperature changes can be detected by a small thermistor, which can be taped to a subject's finger tip. Using temperature biofeedback, subjects have learned, among other things, to reduce migraine headaches (Wickramasekera, 1973) and hypertension (Green, Green, &

Norris, 1980). The rehabilitation client might be a former housewife who, at age 53, following a divorce and subsequent stroke, must learn to support herself. She reports that the prospect of going to work terrifies her, and she manifests numerous signs of anxiety, such as emotional lability, motor agitation, and verbal expressions of self-doubt. Along with an assessment of the client's self-talk cognitions, a biofeedback psychophysiological assessment could be performed as part of her vocational evaluation. This assessment could assist in identifying the specific physiological patterns of the client's anxiety, thus helping to focus her attention on the need to reduce anxiety and the physiological symptoms associated with it. It would provide her with the essential first criterion for self-managed behavior--the ability to self-monitor the problematic response (Kanfer, 1980). Her energies would then be freed for investment in the rest of her rehabilitation program. The biofeedback psychophysiological assessment data would provide justification for including relaxation or biofeedback training in this client's rehabilitation plan.

Biofeedback technology is being used by professionals and paraprofessionals from a wide variety of disciplines (Schwartz & Fehmi, 1982). Rehabilitation personnel are learning to utilize biofeedback equipment for both assessment and training purposes. At the very least, increased understanding of biofeedback methods allows rehabilitation counselors, evaluators and adjustment specialists the option of appropriately referring clients for biofeedback training. The use of biofeedback devices is not difficult to learn, as evidenced by the growing trend toward teaching clients to attach, read, and record their own biofeedback instruments in self-directed biofeedback training programs (Bodenhamer & Coleman, 1983). A systematic relaxation and stress management training curriculum package, which utilizes both cognitive restructuring and physiological relaxation training methods, is currently available for use in vocational rehabilitation programs (Akridge, 1985). Plans are currently underway at North Texas State University's Center for Rehabilitation Studies to offer continuing educational training for vocational rehabilitation personnel in both the cognitive and the emotional/psychophysiological assessment and training techniques referred to in this paper.

#### Summary

The increased use of a cognitive-behavioral counseling and training model by rehabilitation service providers will create a growing need for the evaluation and specific identification of the cognitive as well as the emotional/physiological aspects of problematic disability behaviors. Now that more cognitive assessment methods and psychophysiological assessment techniques are available, tested, and ready for application within vocational rehabilitation settings, it is time for vocational evaluation and other rehabilitation professionals to make better use of these methodologies for the benefit of rehabilitation clients.

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