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Computerized Simulation of Case Management with Deaf Clients: Tools for Instruction and Evaluation of Information Gathering Strategies

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COMPUTERIZED SIMULATION OF CASE MANAGEMENT WITH DEAF CLIENTS: TOOLS FOR INSTRUCTION AND EVALUATION OF INFORMATION GATHERING STRATEGIES

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Abstract

Many counselors and case managers working with individuals who are deaf have incomplete knowledge about the complex factors that affect case management, learning primarily through trial-and-error what information is really necessary to develop effective rehabilitation plans. Computer-based training using simulations of cases involving management of deaf individuals allows trainees to try out various strategies and receive expert feedback about "best practices" for the simulated cases without harming actual clients. A brief description of simulations currently utilized in rehabilitation training is presented, the development of a deafness-specific case is described, and current training applications using that simulation are discussed. The development, validation, and dissemination of a library of cases by the Northern Illinois University Research and Training Center on Traditionally Undeserved Persons Who Are Deaf is in progress. Possible future directions for case management simulation with clients who are deaf are discussed.

People who are deaf in the United States are commonly unemployed or underemployed. MacLeod-Gallinger (1992) reported that individuals who are deaf experience significantly more unemployment than do those who are hearing (more than double the unemployment rate). The rate among traditionally undeserved people who are deaf is expected to be even higher. There is also a substantial difference between the wages earned by deaf and hearing workers. Among employed individuals who are deaf, the average wages earned have been estimated to be only 72% of the average earned by employees who are hearing (Watson, 1983). MacLeod-Gallinger (1992) reported weekly earnings of individuals who are deaf, stratified by educational level, with wages ranging from 73% to 83% of those earned by their similarly educated peers who are hearing.

Unemployed and underemployed clients who are deaf present a serious challenge to vocational rehabilitation counselors. To work effectively with these clients, counselors must have a comprehensive understanding of the multitude of factors that contribute to successful placement. As Schlesinger and Meadow (1972) explained, deafness "is more than a medical diagnosis; it is a cultural phenomenon in which social, emotional, and intellectual patterns and problems are inextricably bound together" (p. 1).

Specific examples of factors to consider for successful case management with individuals who are deaf include attention to the possibility of functional illiteracy and the incidence of additional,

often "invisible," disabilities. Nash (1991) reported a great deal of functional illiteracy among a sample of students taking the Stanford Achievement Test in 1990, stating that "only 19% of the deaf hispanic, 22% of the deaf black, and 52% of the deaf white population read at or above the fourth grade level" (p. 32). Additional disabilities could include visual impairments, specific learning disabilities, cardiac problems, mental illness, mental retardation, or mobility impairments. Often deafness will mask diagnosis of additional disabilities. Yet Schildroth, Rawlings, and Allen (1989) found the proportion of students with hearing impairments in the United States who had multiple disabilities in 1987-1988 to be almost 30%. Professionals involved in the rehabilitation of individuals who are deaf must understand how these factors will affect successful case management and lead to positive rehabilitation outcomes for their clients.

Ideally, rehabilitation counselors should learn effective case management techniques for work with clients who are deaf not only through formal education but through supervised experience working with a variety of such clients. Expert consultation should be available to assist these counselors determining the best practices in case management, including consideration of what information is essential to collect in order to develop effective rehabilitation plans, for the individual requirements of each case. Unfortunately, this ideal model of training is not available to most rehabilitation counselors. Given that deafness is a low-incidence disability, and that people who are deaf are widely scattered geographically, many counselors are exposed to only a few clients who are deaf. Usually, these counselors have limited knowledge about deafness and no access to expert consultation to provide guidance for effective case management. Their case management skills in this area are developed through trial and error, resulting in inefficient use

of resources and potentially detrimental effects for the clients.

An alternative method of developing case management skills for working with clients who are deaf is by interacting with computerized case management simulations. These simulations would cover a variety of cases and allow counselors to try out different information gathering strategies without causing detriment to actual clients or wasting funds. In addition, these simulations would provide feedback to counselors based on best practices identified by expert consultants.

Computer-Aided Instruction

Computer-based training, including the use of case simulations, is increasingly used in a variety of settings. Weal (1990) reported that the use of such training in the business world "saves money, reducing learning time and the number of hours trainers and employees must spend in a central classroom," that "students who use computer-based training master the material twice as quickly as those taught in a classroom," and that "retention for computer-based training was 85 percent, compared with 30 to 40 percent for materials presented in a traditional classroom setting" (p. 1, 3).

Computer-aided instruction (CAI) has been an effective teaching technique for nearly two decades (Braun, 1980; Frenzel, 1980; Gerhold, 1978; Office of Technology Assessment, 1979). Features of CAI include the individualized instruction, automatic interaction, and immediate feedback possible though the use of computers (Frenzel, 1980). In the past, the use of CAI was limited by the high cost of computing on large mainframe computers, but with the expanding use of personal microcomputers, the cost of CAI is no longer prohibitive, and there has been a resurgent interest

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in the application of computers in professional education (Berven, 1985a; Chubon, 1986; Frenzel, 1980).

Case Management Simulations in Rehabilitation

The advantages of computer-based case management simulations in rehabilitation have been discussed by Chan, Berven, and Lam (1990). Through simulations, individuals are exposed to a wide variety of types of disabilities and functional limitations with varying complexities and service needs within a relatively short period of time. Inappropriate actions can be corrected through computerized feedback without detrimental effects to actual clients. Chan, Parker, Lam, Mecaskey & Malphurs (1987) described how such simulations may be used to improve counselors' problem-solving skills based on modeling of successful strategies used by expert counselors.

Berven & Scofield (1980) first reported developing a single case management simulation in rehabilitation counseling. This program simulated case management (through the point of state vocational rehabilitation eligibility determination) for a client with a seizure disorder due to a head injury. The simulation provided the results of actions chosen (of the 21 possible), including ten medical and specialist actions, psychological evaluation, contact with a past employer, social services evaluation, educational history, vocational evaluation, and up to six interviews with the client. Counselors were then asked to determine eligibility for vocational rehabilitation services following criteria such as: (a) whether the simulated client had any disabilities; (b) whether the disabilities resulted in a handicap to employment; and (c) whether vocational rehabilitation services were likely to increase the client's employability. Counselors were then provided with feedback about their "proficiency" in selecting appropriate

actions and their "efficiency" in selecting only the necessary actions.

Later simulation programs focused on increasing the possible alternatives for actions, proceeding through the entire rehabilitation process from intake through service completion (Berven, 1985b) and developing multiple case management systems (Chan & Rosen, 1988). Validation studies of these simulations have focused on discriminating between the actions chosen by inexperienced individuals (such as undergraduate students) and experienced counselors. Proposed areas of future research (Chan, Berven, & Lam, 1990) include more sophisticated validation and development of useful norms, increased variety and complexity of simulations available and development of libraries of such cases, increased fidelity (extent to which the simulation approximates reality), and eventually, research focusing on the use of case management simulations in training applications and as assessment tools.

Deaf Case Simulation Development

Computerized case management simulation has been utilized at Northern Illinois University to teach both graduate and undergraduate students about rehabilitation case management, giving inexperienced students an opportunity to learn "what it's like" and to develop their case management skills without risking harm to actual clients. Case management simulation was introduced to the curriculum in 1989 with the Wisconsin Rehabilitation Casework Simulator (WRCS), a personal computerized version of Berven and Scoffield's initial simulation of work with a client who had a seizure disorder. [Development and other applications of this personal computer version are described in Chan, et al. (1990); Chan, et al. (1987); Chan, Rosen, Wong, Lam, Parker, & Carter (1989); and

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Mecaskey, Chan, Wong, Parker, Carter, & Lam (1989); Although some students were initially apprehensive about working with the computer, they all reported that interacting with the simulation was worthwhile. Some even requested copies of the program to work on refining their case management skills at home. When discussing their experiences with the simulation, students evidenced an increased awareness of not only what knowledge they would need to have, but what skills and personality characteristics would enhance their work in this area. Yet, students were understandably perturbed that the case presented did not relate to the primary focus of their coursework, which was rehabilitation of individuals who are deaf. The most common feedback was a request for the development of a simulation involving a client who is deaf.

In 1990, the Committee for Improvement of Undergraduate Education at Northern Illinois University provided funding for the development of a computer program that simulates case management with a client who is deaf (Reid, 1990). Practicing rehabilitation counselors were consulted to generate data for a typical case. Where available, data from actual cases were used to create composite "client" files. Any identifying information was removed from each file to protect the client's rights to confidentiality. Types of data utilized included educational and social histories, notes from counseling interviews, results of medical and audiological exams, results of psychological and vocational testing, etc. The simulation program itself was generated using an authoring program developed by Chan and Reid, (1990). DEAFSIM (Reid, 1990) provides a list of possible case management actions from which students may choose, simulates the results (reports) of the actions chosen, and provides feedback to the student. Specific examples of available choices include General Medical Examination, Audiological Report, Hearing Aid Evaluation, Cardiovascular Report, Communication

Evaluation, Educational History, Gastrointestinal Report, Psychological Report, Visual Report, Comprehensive Vocational Evaluation, Reading Evaluation, Social Worker's Report, Employer's Evaluation, and others. Up to six interviews may be chosen, and case note summaries of each chosen interview are presented. After making their final choice from the list of options, trainees are presented with questions to evaluate the impact of the disability and to determine eligibility for services. Feedback at the end of the simulation addresses the student's proficiency (degree to which essential actions were chosen) and efficiency (degree to which nonessential actions were avoided). Initially, the degree to which each action was considered "essential" was determined subjectively by the author of DEAFSIM. As additional experts provide their opinions, these indices will be revised to reflect a more broad-based perspective.

Current Developments

As a result of feedback from students and deafness rehabilitation counseling professionals, DEAFSIM has been revised and is serving as the prototype program for the development of a library of simulated cases to teach students and practitioners how to collect effectively, relevant case information when working with traditionally underserved ("low functioning") clients who are deaf. The development, validation, and dissemination of the programs as a training package is one of the projects of the Northern Illinois University Research and Training Center on Traditionally Undeserved Persons Who Are Deaf (NIU-RTC). The training package will include a pre-test and a post-test simulation program as well as two training programs, which will add instructional feedback about what experts in deafness rehabilitation case management believe is the best practice in working with each case. The package will also include a glossary of terms (medical, psychological, etcetera) found within the

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reports that may be unfamiliar to inexperienced rehabilitation case managers.

Future Directions

For the immediate future, improvement is needed in the format of feedback provided to trainees who interact with the simulations. The current feedback indices, based on those utilized in medical training simulations, are far from ideal. There is a negative correlation between the indices, which makes it difficult to score "above average" on both proficiency and efficiency at the same time. Perhaps feedback about styles of response, based upon cluster analysis, would be more meaningful than the current proficiency and efficiency indices. For example, feedback indicating that when a trainee utilized a "shotgun" style, collecting much more irrelevant information than needed and wasting time or resources, might be more meaningful than indicating that the proficiency index is "above average" while the efficiency index is "below average."

Another potential area for the use of computerized simulation is in training rehabilitation counselors to gather effectively, needed information in interviews with clients who are deaf. An experimental version of an intake interview with a client who is deaf, INTERACTIVE INTERVIEW (Reid & Peterson, in progress), is an initial step in the development of this type of training. Careful attention to finding the best ways to phrase relevant questions for individuals who are deaf is needed for this kind of simulation to become an effective training tool. Ideally, such simulation should involve interaction with video images of people who are deaf signing their responses to questions instead of typed English summaries of clients' responses. Given the increasing availability of videodisc technology, the development of such simulations is becoming much more feasible.

The development of cases to address special needs within the deaf population is also an important area for future simulation work. Computer based training with cases of deaf individuals with additional handicapping conditions and other special needs will be important. Through interaction with the simulations, students and professionals can gain exposure to a wide range of special needs within the deaf population.

The development of computer programs that simulate multiple cases at the same time, including consideration of the costs and time expended for each action chosen, could be useful for teaching trainees how to balance the competing needs of gathering needed information for work with clients who are deaf and serving a great number of clients within limited budgetary constraints. Single case simulations focus on ideal information gathering strategies, but multiple case simulations could be more useful for helping trainees learn how to utilize effectively, the available resources.

The development of extensive norms and a comprehensive study of the validity of simulations to assess the competence of trainees could pave the way for computer simulations to become effective assessment tools. The simulations could tap into dimensions of behavior behind paper-and-pencil tests of knowledge about case management. For example, as assessment tools, simulations could be utilized within credentialing processes, within graduate training programs, as screening tools for hiring rehabilitation counselors, and as measures of the effectiveness of in-service training.

For Further Information

If you would like more information about the use of computerized case management simulation in deafness rehabilitation counseling, please contact the Research and Training Center on Traditionally Undeserved Persons Who Are Deaf, Department of Communicative Disorders, Northern Illinois University, DeKalb, IL, 60115, 815/753-8687 (voice), 815/753-6520 (TDD), 815/753-1545 (FAX), or NIU.RTC (Deaftek).

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