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Rehabilitation Psychology

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Rehabilitation psychology practice is a specialty within the domain of professional health-service psychology that applies psychological knowledge and skills on behalf of individuals with physical and cognitive impairments and chronic health conditions; the purpose is to maximize their health and welfare, independence and choice, functional abilities, and social role participation and to minimize secondary health complications. Because chronic health conditions place the greatest demand on health-care services and the percentage of persons with chronic conditions is increasing (Hoffman, Rice, & Sung, 1996), rehabilitation psychology is increasingly relevant to many of today's important health care issues.

Rehabilitation psychology is based upon a distinctive body of theory and research (Shontz & Wright, 1980). It has existed as a formally organized specialty for over 50 years in the United States, although it is developing or not yet developed in other countries. In Europe and Australia, rehabilitation psychology is not generally recognized as a specialty by that name, and many psychologists working with persons with disabilities are called clinical psychologists, health psychologists, or neuropsychologists, even though they do specialized work that would be called rehabilitation psychology in the US. Stevens and Wedding (2004) describe that in India, Japan, Iran, Turkey, and Israel there are areas of psychology practice called rehabilitation psychology which are similar in focus to the US and Canada. In Russia, China, Egypt, and Pakistan activities related to what is called "rehabilitation psychology" have to do with prisoners, but may also include substance abuse rehabilitation, as in Poland, Indonesia, and the Philippines. In some cases, the word "rehabilitation" is used in regard to persons with primary mental health problems.

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Historical Overview

Although the roots of psychological study can be traced back almost to the beginning of recorded history, in the Western world during the 1800s there began to be developed specialized areas of inquiry, such as social psychology, personality, and abnormal psychology, as well as psychological practice. Psychology practice was broadly thought of as clinical psychology in the early 1900s, although psychologists began working with specialized populations and problems, and began developing specialized techniques to do so.

In the 1940s, surrounding the time of World War II, health professionals in the US developed specialized concepts and practices to optimize the application of their professions to various traumatic injuries sustained as part of the conflicts. Physicians developed the concepts and practices of rehabilitation medicine, psychologists developed the concepts and practices of rehabilitation psychology, and nurses developed the concepts and practices of rehabilitation nursing. As rehabilitation psychologists worked alongside the emerging fields of rehabilitation medicine and nursing, early theorists and practitioners studied persons with physical and cognitive impairments, and conducted the early research on individual, interpersonal, and social reactions to persons' appearance and functional capacity, as well as the social psychology of stereotyping and prejudice related to disability (e.g., Barker, Wright, & Gonick, 1946; Barker & Wright, 1952; Dembo, Levitron, & Wright, 1956).

Definition and Scope of the Field

Rehabilitation psychologists provide services to individuals with traumatic, chronic, or congenital injuries or illnesses, as well as to their families, and to rehabilitation teams and programs. Rehabilitation psychologists help individuals with a wide variety of physical, sensory, cognitive, emotional, or developmental impairments improve, cope with, compensate for, and adjust to these conditions, so that they may maximize affective, cognitive, and behavioral functioning, as well as social, educational, vocational, and recreational participation. Such impairments and chronic health conditions may include spinal cord injury, brain injury, stroke, amputations, burns, work-related injuries, chronic pain, cancer, heart disease, multiple sclerosis, neuromuscular disorders, developmental disorders, and other conditions. Disability is a function of a person–task–environment interaction, so consideration is given to the network of biological, psychological, social, cultural, physical, and political environments in which the individual exists, and to the means of addressing barriers in each of these areas.

Rehabilitation psychologists work in hospitals and clinics, inpatient and outpatient rehabilitation centers, assisted living and long-term care facilities, and community agencies. Rehabilitation psychologists may also teach and conduct research at universities or colleges, consult to business and industry, and perform administrative or legal evaluations,. They may work for private or government programs. The broad field of rehabilitation psychology also includes development and management of

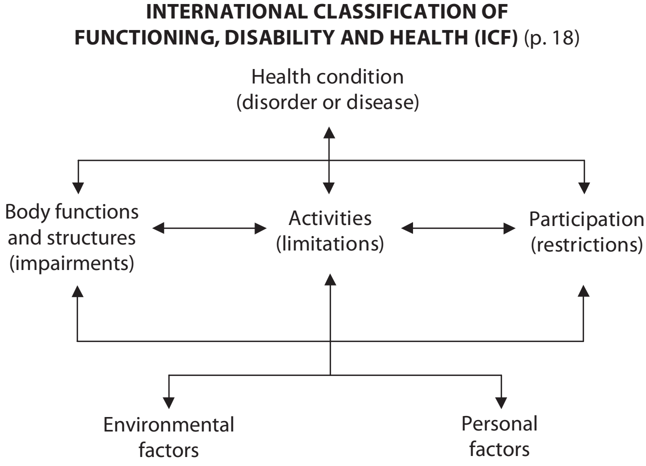

Figure 24.1. Concepts of disability

rehabilitation programs, policy development and public education related to injury prevention and health promotion, and advocacy for persons with disabilities and chronic health conditions.

Key Research Findings and Applications

Useful concepts

The concepts with which psychologists work define the approaches they take to particular issues. In rehabilitation psychology, there are a number of important concepts which lead to useful approaches to working with persons experiencing disability. The World Health Organization's International Classification of Functioning, Disability, and Health describes a model of disability as shown in Figure 24.1. (WHO, 2001).

This model replaces older terminology with newer terminology that reflects new concepts, and these new concepts have practical applications. Rather than the older terms *impairment*, *disability*, and *handicap*, the concepts of *body function and structure*, *activity*, and *participation* reflect new ways of thinking. *Disability* is a person–task–environment interaction, rather than something inherent in an individual, and it arises from the individual's condition, the task in which they are engaged, and the environment in which they engage with the task. For example, wheelchair users are less disabled in communication tasks than in mobility tasks, less disabled in physical environments with paved sidewalks and ramps than in physical environments without, and less disabled in social environments with acceptance of variations in body functions and structures than in social environments without.

Research supporting these concepts shows practical applications for reducing disability and secondary health conditions. Identical types of impairments may result in widely different levels of activity and participation. For example, an individual with pre-existing depression and poor coping skills may have low activity and participation following an injury, while an individual with the same injury who has significant optimism and good coping skills may have better outcomes. Therefore, even if the body functions/structures cannot be improved, it is still possible to improve activity and participation through the application of psychological knowledge and skills in working with individuals (Radloff, 1977). However, it is also true that systemic interventions involving the family and community to modify the physical environment, social environment, and public policy environment can also significantly increase activity and participation, and thus reduce disability (Farmer & Muhlenbruck, 2000; Farmer, Clippard, Luehr-Wiemann, Wright, & Owings, 1996; Rosenthal & Young, 1988). Because activity and participation are the strongest factors affecting quality of life, fundamental life satisfaction can be improved for the individual, and the community can benefit from the productive engagement of all its members.

Practical interventions

Changes in physical functioning, task functioning, and social functioning disrupt previously established personal, family, and community equilibriums. Changes in physical functioning often result in changes in body image, self-perceived attractiveness and value, and self-concept. Changes in task functioning and activity often result in changes in self-control, autonomy and privacy, and personal choice. Changes in social functioning and participation often result in disruption of established intrapersonal and interpersonal systems, including psychological, family, social, and vocational role sets. Norms, obligations, and responsibilities shift. Social status related to role functioning from which individuals derive self-esteem may be disrupted. In addition, individuals with disabilities and chronic health conditions may face negative stereotypes and prejudice from others.

At the individual level, persons experiencing disability can benefit from psychotherapy focused on shifting their emotional, cognitive, and behavioral emphasis from impaired sources of self-esteem to unimpaired sources, such as less reliance on physical abilities and more reliance on cognitive abilities and personality characteristics (Keany & Glueckauf, 1993; Wright, 1983). At the family and community level, such emotional, cognitive, and behavioral shifts in emphasis can also significantly reduce disability by helping develop accommodations in the physical and social environments.

There are substantial data showing that activity and participation behaviors are controlled through the well-known principles of classical and operant conditioning, and that behavioral approaches which increase task and social engagement, reduce the maintenance of disabling behaviors, and reduce psychophysiological symptoms can significantly improve function (Fordyce, 1976; Ince, 1980). The use of quota systems for quantifiable and observable behaviors, with baseline measurement and then gradual increases to build capacity and tolerance, are especially helpful in improving activity and participation, even when impairment does not change (Patterson & Ford, 2000).

Such processes are also helpful in rehabilitation of occupational injuries. For example, it has been shown that delivering health and rehabilitation services to injured workers in the workplace environment instead of in community care settings results in significantly fewer days away from work and reduced Worker's Compensation costs (Wegener, Kuhlemeier & Mitchell, 2002). The process of getting up, getting dressed, and going to the work site to participate in an on-site rehabilitation therapy clinic reduces length of time of disability.

In disability and chronic illness, coping and problem-solving behaviors are associated with better outcomes (Elliott, Godshall, Herrick, Witty, & Spruell, 1991; Elliott, Witty, Herrick, & Hoffman, 1991), both because these behaviors are associated with hope and empowerment, and because these behaviors can lead to mastery and enhancement of personal control (Gonzalez, Goeppinger & Lorig, 1990: McLaughin & Zeeberg, 1993). The focus on positive psychology, including post-traumatic growth has found that people experiencing acute onset of disability, such as spinal cord injury, report greater appreciation of family relationships, meaningful engagement, and appreciation of life (Chun & Lee, 2008), and often describe that their experience of disability has resulted in some positive changes in their life.

Developments in coping effectiveness training with persons with spinal cord injury (Kennedy, Duff, Evans, & Beedie, 2003; King & Kennedy, 1999; Mohr, Hart, & Vella, 2007) have shown that cognitive behavioral therapy techniques significantly reduce depression and anxiety by increasing the perceived manageability of SCI and decatastrophizing appraisals about SCI, and also increase adaptive coping through shared discussion and problem solving about living meaningful and satisfying lives. Positive emotions, cognitions, and behaviors are associated with increased activity and participation, and increased quality of life.

One specific aspect of coping effectiveness is that of sexuality. Sexuality is a normal part of peoples' lives, including persons experiencing disability. There has been significant attention to assessing sexuality with persons experiencing disability and to assisting them to express their sexuality as do people without disabilities, although with activity and environmental modifications as necessary (Richards, Lloyd, James, & Brown, 1992).

Self-management

In addition to direct work with individuals and caregivers, important work has been done to develop disease self-management strategies to improve disease-specific control and decrease secondary health complications (Lorig et al., 2008; Marks, Allegrante, & Lorig, 2005a; Marks, Allegrante, & Lorig, 2005b). These interventions have been shown to decrease symptoms, improve health behaviors, self-efficacy, and satisfaction with the health care system, and reduce health care utilization. There have been effective models that involve internet-based educational materials to deliver services to geographically distributed populations who are distant from medical facilities and providers. In addition, the use of peer educators can extend the effect of disease self-management strategies, and the use of internet-based matching can help patients locate near-by peers with similar health conditions. Educational interventions and peer networking can also be used to increase disease-management expertise in caregivers and to increase care giver self-care.

Cognitive rehabilitation

Rehabilitation psychology has developed specialized psychological and neuropsychological assessment instruments and procedures for persons experiencing physical disabilities that do not allow standardized test procedures (Caplan & Shechter, 1995; Dowler et al., 1997; Richards et al., 1988). These involve tests of intellectual and cognitive function that do not require usual motor or speech abilities and that are standardized for populations with physical impairments.

Rehabilitation psychologists have also developed many of the principles and practices of cognitive rehabilitation (Ben-Yishay & Diller, 1993; Cicerone et al., 2008). For example, it has been shown that comprehensive rehabilitation involving integrated treatment of cognitive, interpersonal, and functional skills within a therapeutic environment resulted in greater improvements in self-regulation of cognitive and emotional processes, community integration, employment, and quality of life compared with standard discipline-specific neurorehabilitation treatment. Community-based transitional living programs and community teams are especially effective in improving long-term social integration of persons with brain injury (Malec & Ponsford, 2000).

Meta-analyses has shown that some types of cognitive deficits respond better to restorative efforts to improve the underlying function, while other types of cognitive deficits respond better to compensatory efforts to accommodate the problem (Cicerone et al., 2000; Cicerone et al., 2005). There can be substantial benefit from cognitive-linguistic therapies for people with aphasia after left hemisphere stroke and substantial benefit from visual-spatial therapies for people with impaired visual awareness after right hemisphere stroke. It appears that these underlying abilities can be substantially improved through rehabilitation. However, more generalized problems with attention and memory do not respond well to therapies focused on remediation. Although there may be improvement in attentional or memory tasks with training, these improvements are often limited to the training tasks and do not generalize well to other, even similar, activities. However, strategy training to compensate for the underlying ability problems using cognitive orthoses appears to work better.

Cognitive orthoses can be considered in three categories. Internal orthoses include the use of contextual self-cueing to initiate behavior, mnemonics to organize behavior, associative memory to link behavioral steps, and repetition to develop procedural learning. Environmental orthoses include the use of visual flags to direct and engage attention, written labels to identify objects and locations, pill boxes to organize medications, and written instructions to guide task functioning. External orthoses include the use of timer alarms to cue behavioral initiation or cessation, calendars to organize and cue activities, and memory books to record and retrieve important information. One technological improvement in external prompting and guidance is the use of text messages delivered by cell phones or pagers at predetermined times. This can be done internally within some cell phones or personal digital assistants or by internet computer services which send specified messages at specified times.

Physical rehabilitation

Injury and disuse can lead to learned nonuse, where, for example, individuals immediately following stroke learn that they are paralyzed on one side of their body, and that they must use the less impaired side to accomplish activities. This then becomes a habit, and this nonuse can continue even after there has been some recovery, and they could begin to use both sides of their body. Constraint-induced therapy, where the more functional limb is restrained, and individuals are forced to use their less functional limb, can result in dramatic increases in function, even years after initial injury (Taub & Uswatte, 2000), by generating use-dependent cortical reorganization, where uninjured areas of the cerebral cortex develop new connections to take over control of important functions from injured areas (Celnik & Cohen, 2004).

Rehabilitation teams

Rehabilitation psychologists have also developed specialized knowledge and practices in regard to working with rehabilitation teams and programs (Malec & Ponsford, 2000; Farmer et al., 1996; Frank, 2001; Rohe, 1998), and the concept of team has been broadened to include family caregivers, as well as community, school, and work interactions (Farmer, Marien, Clark, Sherman, & Selva, 2004; Farmer, Clark, & Sherman, 2003; Farmer & Muhlenbruck, 2000). Family members who provide care are at risk for numerous physical, mental, emotional, social, and financial problems. Angry outbursts and incontinence are the most difficult problems for caregivers to deal with, and helping caregivers obtain and utilize social supports, and educating them about the causes of the negative behaviors is helpful in maintaining caregiver health and well-being (Elliott & Pezent, 2008; Grant, Elliott, Weaver, Bartolucci, & Giger, 2002; Lim & Zebrack, 2004). Addressing caregivers' needs improves the care given to the person experiencing chronic illness or disability, and, thus, improves outcomes (Holicky, 1996).

Ethics and disability

There is a tendency in the general population to assume that persons experiencing disability cannot have meaningful quality of life. However, many persons experiencing disability do have satisfactory quality of life, and they may even find positive personal growth through the experience of disability (Chun & Lee, 2008). There is also a tendency in the general population to equate disability of any type with diminished decision-making capacity. This is often a misconception, but even when decision-making capacity is reduced, it is important to recognize that decision-making capacity is context-dependent. Rehabilitation psychologists have developed specific ethical principles related to persons with disability and chronic health conditions, including persons with diminished decision-making capacity (Hanson, Guenther, Kerkhoff, & Liss, 2000; Kerkhoff, Hanson, Guenther, Ashkanazi, 1997), which acknowledges their independence and choice, and does not impose biased and inaccurate assumptions by persons who are outsiders to the disability experience.

Assistive technology

Assistive technology (AT) refers to anything that is used to maintain or increase functional capabilities. AT can include (a) mobility devices such as walkers and wheelchairs, (b) self-care devices such as extended reachers/grabbers, (c) dressing aids such as sock donners, button hooks, or holding clamps, (d) environmental control devices to operate lights, doors, and telephones, (e) reminder and alarm systems for eating, taking medication, and other daily activities, and (f) computer hardware, software, and peripherals that assist in use of computer-based products. More recent assistive technology includes direct auditory and optic cortex stimulation, computer-controlled muscle activation, and even computer-detected cortical activity to trigger muscle activation.

However, although there are numerous types of assistive technology, matching a person with an assistive device is complex. Person–technology mismatches can waste resources, frustrate and disappoint users and providers, and continue functional limitations, all of which can be addressed through psychological science (Scherer, Sax, Vanbiervliet, Cushman, & Scherer, 2005). The best match of consumer and device is based upon understanding users' physical, sensory, and cognitive abilities, as well as their needs, expectations, preferences, motivation, and reactions to technologies (Scherer et al., 2005). Consumer education about the device and its proper use is also critical, as are the perceptions and attitudes of others—attitudinal and cultural factors are a key component of a technology user's perspective (Scherer & Cushman, 2002).

Rehabilitation psychologists study perceptions and attitudes of users and others toward particular technologies, how technologies fit within their activities and contribute to their abilities to perform particular activities in daily life, and users' judgments of whether and how much particular technologies benefit them. Individuals are more likely to use AT when (a) the device meets their personal preferences and expectations, (b) they were involved in the selection, (c) they have realistic expectations, (d) the device provides perceived value and benefit, and (e) there is informed caregiver support. Given the uniqueness of the disability experience for any given individual, it is crucial that rehabilitation psychologists be included on the AT selection team.

Future Developments, Challenges, Opportunities

The biggest challenge in reducing disability for persons with physical and/or cognitive impairments is to change the social environment that restricts participation, that is, to increase the acceptance of variations in body functions and structures, and reduce negative stereotypes and prejudice. There is a need for additional research on how to effectively provide systemic interventions involving the family and community that can lead to modifications of the physical, social, and public policy environments to increase activity and participation and reduce disability. Further research on the assessment and treatment of caregivers is important in reducing health care costs.

There is also a need for additional research focused on shifting individuals' emotional, cognitive, and behavioral emphasis from impaired sources of self-esteem to unimpaired sources. Part of this may be through the use of classical and operant conditioning, where improved behavioral approaches could increase task and social engagement, and reduce disabling behaviors. However, further research on the most effective interventions to achieve this shift is needed.

It is clear that delivering health and rehabilitation services in normal community environments, including workplaces and other naturally occurring sites, can help reduce disability, and lessen the artificial distinction between "able-bodied" or "well" and "disabled" or "sick." Disability is a normal part of the human experience, whether due to injury or illness, or because of normal aging. Further research is needed to understand the best way in which to incorporate health care and rehabilitation into normal daily environments, instead of segregating it as if these were abnormal in some manner. Community-based transitional living programs and community teams are an important part of this research and development.

Additional research could help illuminate the way in which adversity can lead to post-traumatic growth, and how coping and problem solving behaviors can be developed, enhanced, and supported. Cognitive behavioral therapy and coping effectiveness training can assist with this, but the specific manner in which these are most effective has not yet been determined. Further development is also needed in ways to generate use-dependent cortical reorganization, and to develop cognitive orthoses that can best enhance daily functioning.

In rehabilitation psychology, as in all areas of professional health-service psychology, issues of education and training are fundamental to the conceptualization and development of the specialty. However, to date there has been a lack of consistency among programs, and a lack of coherence within some programs, in regard to the structure and process of rehabilitation psychology practitioner training. Research about training practices and outcomes is needed.

Public Policy Implications

It is estimated that 10% of the world's population, or approximately 650 million people, experience some form of disability, and this number is growing as a result of population growth, aging, a rise in chronic diseases, a rise in car crashes and violence, and medical advances that sustain life (WHO, n.d. a, n.d. b):

- It is estimated that each year there are 160 million work-related injuries worldwide (WHO, n.d. c);
- Global war injuries are estimated to be over 2 million per year (Peden, McGee, & Krug, 2002; WHO, n.d. d), and many of these injuries involve long-term disabilities such as limb injuries or loss, brain injuries, and spinal cord injuries (Henigsberg, Lagerkvist, Matek, & Kostovic, 1997). In some conflicts, mutilation in the form of cutting off limbs has been systematically used to demoralize opposing forces (Krug, Dahlberg, Mercy, Zwi, & Lozano, 2002);

- Landmines are also a major contributor to disability. Many mines remain from World War II; in addition, since the 1960s as many as 110 million mines have been spread throughout the world into an estimated 70 countries. An estimated 15,000–25,000 people a year are maimed or killed by landmines. Victims may have injuries to lower extremities, genitals, arms, chest, face and eyes, as well as suffering the psychological trauma of the incident and their injuries (Krug et al., 2002). Perhaps only a quarter of the persons with amputation due to landmines receive appropriate rehabilitative care (Walsh & Walsh, 2003);
- Earthquakes result in large numbers of individuals with amputations and spinal cord injuries (Rathore, Farooq, & Muzammil, 2008). Given that earthquakes also disrupt transportation and basic government and private services, this makes it especially challenging to help large numbers of people with newly acquired disabilities. In addition, it is difficult to discharge such patients to their home communities when these communities may be partially destroyed;
- Worldwide, the number of people killed in road traffic crashes each year is estimated at almost 1.2 million, while the number injured could be as high as 50 million. The total number of road traffic injuries worldwide is forecast to rise by 65% between 2000 and 2020, and road traffic crashes are the ninth leading contributor to the burden of disability worldwide (Peden et al., 2001).

In many countries, medical care and rehabilitation services for people with disabilities are less than optimal or simply do not exist (WHO, n.d. e). Rehabilitation teams from countries with greater medical specialization and infrastructure can assist by helping develop educational curricula for health professionals, helping develop rehabilitation teams, identifying local technological capacity which can be used to make sustainable prosthetics and orthotics (Meier & Smith, 2002), integrating the concept of rehabilitation into the general population (Raissi, 2007), and promoting rehabilitation psychology services.

It is also important to recognize that children and adults with disabilities are more likely to be victims of sexual and physical abuse than are individuals without disability (Grossman & Lundy, 2008; Sanghera, 2007; Oliván Gonzalvo, 2005; Smith & Strauser, 2008). The rate of abuse may be from 3 to 10 times more than in the general population (Kvam, 2000; Waldman, Swerdloff, & Perlman, 1999). They are more likely to be abused by family members, attendants, and health care providers, are more likely to suffer injury, and are more likely to experience repeated abuse. Higher levels of disability are associated with increased risk of sexual abuse, and less likelihood of disclosing the abuse (Hershkowitz, Lamb, & Horowitz, 2007; Kvam, 2000). Clearly public policies need to be implemented to protect persons experiencing disability.

Disability is the common outcome of many chronic health conditions, and disability is closely related to increased health care costs, which makes it important to maximize self-care for persons with disabilities and chronic health conditions, prevent secondary complications, and enhance caregiver functioning. Rehabilitation psychologists have developed models of assessment and treatment to address these issues (e.g., Crewe, 1991; Elliott and Shewchuk, 2003; Hill-Briggs, 2003). The work of rehabilitation psychologists to improve adjustment, increase function, develop adaptive and compensatory techniques, employ assistive technology and personal assistance, modify the physical environment, reduce social stigma, increase social integration and participation, and advocate for disability rights and consumer participation is important in reducing disability and enhancing quality of life for individuals, families, and communities.

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