The Relationship between Adjustment to Disability and Environmental Factors

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Hanna Jadwisienczak

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This dissertation titled
The Relationship between Adjustment to Disability and Environmental Factors

by
HANNA JADWISIENCZAK

has been approved for
the Department of Counseling and Higher Education
and the College of Education by

__________________________________________
Jerry A. Olsheski
Associate Professor of Counseling and Higher Education

__________________________________________
Renée A. Middleton
Dean, College of Education
The purpose of this study was to investigate the relationship between adjustment to disability and environmental factors. This correlational study examined a set of demographic variables including age, gender, years of education, disability type, and area of residence combined with the Measure of the Quality of the Environment (MQE) to predict adjustment to disability measured by the Adjustment to Disability – Revised scale (AD-R).

The population for this study consisted of individuals with disabilities who were enrolled in the public vocational program. One hundred and nine individuals volunteered to participate in this study. Respondents were asked to complete the survey package including: the MQE measure, AD-R scale, and demographic questionnaire to gather data on individuals with disabilities. Hierarchical regression analysis was used to analyze data. Results revealed that there was a statistically significant relationship between adjustment to disability and environmental factors perceived as obstacles (barriers) while taking into consideration a set of demographic variables. After the effects of demographic variables and the facilitator index were held constant, the analysis indicated that the obstacle index explained 7.9% of the variance in the AD-R scale, making a strong and significant contribution to the prediction model. In addition, in this study a set of demographics variables including age, gender, years of education, disability type, and area of residence did not produce a significant prediction equation, meaning that the above demographic variables cannot alone significantly predict adjustment to disability.
Supplemental analyses were conducted to examine and provide more detailed information on the relationships among the variables in this study. Significant associations emerged between the following categories of the MQE: Social support and attitudes, Income, labor, and income stability, Government and public services, and Equal opportunities and political orientation, and following subscales of the AD-R: Transformation, Containment, Enlargement, and Subordination. The Physical environment and accessibility and Technology categories of the MQE were not related to the subscales of the adjustment to disability instrument.

The finding of the current study supports the position that barriers in the environment clearly influence the lives of individuals with disabilities and obstruct the adjustment to disability process (Badley, 1995; Levasseur, Desrosiers, & Noreau, 2004; Noreau, Fougeyrollas, & Boschen, 2002; Pope & Brandt, 1997). Findings suggest that, in general, individuals who perceived fewer obstacles in their environment reported better adjustment to their disability. This highlights the importance of addressing the environment while working with individuals with disabilities and developing strategies to facilitate better a person-environment fit. The research provides demographic data on individuals with disabilities enrolled in the public vocational rehabilitation program in Ohio. A discussion of the pilot study results, survey instruments, hierarchical regression analysis, supplemental analysis, implications of the study and directions for the future research are presented.

Approved:_______________________________________________________________

Jerry A. Olsheski
Associate Professor of Counseling and Higher Education
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CHAPTER ONE

Introduction

Knowledge about the process of adjustment to disability and variables influencing this process are pivotal in the rehabilitation counseling field. Disability and chronic illnesses are common and life-changing experiences that affect the lives of a significant number of people on a psychological, physical, social, vocational, and economic level (Albrecht, 1992; Badley, 1995; Beresford, 1996; Falvo, 1999; Livneh & Antonak, 1997; 2005; Mukherjee, Heller, & Alper, 2001; Yates, 2003). Based on survey results from 2006, the U.S. Census revealed that approximately 42 (15%) million Americans of all ages reported some type of disability that interferes with daily life activities. Further, the overall percentage of working-age individuals with disabilities ages 21 to 64 was 12.9%. In addition, the literature stressed that over 9 million individuals with disabilities are unable to attend school or maintain gainful employment. Furthermore, disability rates tend to be higher among people with low socioeconomic status, the elderly, and minority groups (Beresford, 1996; Eisenberg, Glueckauf, & Zaretsky, 1999; Fine & Ashe, 1985; Jaeger & Browman, 2005; Livneh & Antonak, 2005).

Eisenberg, Glueckauf and Zaretsky (1993) pointed out that an average person may spend approximately 12 years coping with some acute or chronic condition that limits his or her functioning. Subsequently, data from polls and surveys tend to show that there has been growth in the numbers of individuals who report some type of disability. In part, this may be because of significant gains in the medical field and the ability of professionals to save and prolong the lives of people who were born with or acquired disabilities. Additionally, the numbers of individuals reporting disabilities may increase
because of soldiers returning from a war with life-changing conditions. Fine and Ashe (1988) stated that individuals with disabilities constitute one of the largest minority groups in the United States. This being the case, costs relative to medical care and financial support provided by the government tend to be relatively high (Eisenberg et al., 1993; Livneh & Antonak, 2005).

The onset of a disability or chronic condition usually interferes with daily life activities and it may produce great distress, which has a profound effect on the life of a sizable portion of the population. Therefore, it is important to investigate how people with disabilities adjust to their conditions and what environmental factors influence this process. A variety of studies have indicated that many individuals who struggle to accept or adjust to their disabilities do not follow their physicians’ recommendations or utilize available services and feel dissatisfied with and misunderstood by service providers (Beresford, 1996; Drainoni, Lee-Hood, Tobias, Bachman, Andrew, & Maisels, 2006; Kendall & Buys, 1998; Mechanic, 2002; Yates, 2003). In effect, this may lead to worsening conditions, distress, and overall, a lack of rehabilitation outcomes (Kendall & Buys, 1998; Yates, 2003). Therefore, it is important to investigate adjustment to disability issues and identify factors that become obstacles or facilitators of the adjustment to the disability process. Particularly, identifying environmental factors that create obstacles, functional limitations and limit independence and participation in society will permit rehabilitation professionals to develop appropriate intervention strategies and measures and act on these environmental obstacles and change or modify conditions that create difficulty for people with disabilities. Strategies aimed at modifying the environment may help individuals with disabilities function independently, enhance their quality of life,
prevent secondary conditions, and influence adjustment to disability. Without the assessment of environmental factors it may be difficult to implement social and physical changes to promote independence and inclusion of individuals with disabilities into society.

The literature indicates that there is a need to understand the influence of environmental factors on adjustment to disability. It is important to identify variables that foster independence, participation in society, and adjustment to disability as well as variables that pose barriers to participation and inclusion of people with disabilities into society and hinder the adjustment process. The literature has shown that environmental factors influence quality of life and social participation of individuals with disabilities (Fougeyrollas, 1993; 1995; Fougeyrollas, Noreau, & Boschen, 2002; Gray, Gould, & Bickenbach, 2003; Levasseur, Desrosier, & Noreau, 2004; Whiteneck, Gerbart, & Cusick, 2004; Whiteneck, Meade, Dijkers, Tate, Bussnik, & Forchheimer, 2004; Yates, 2003; Yuker, 1988). Therefore, it can be inferred that these factors can influence adjustment to disability.

While a great deal of study has been devoted to understanding the psychological dynamics of adjustment to disability, researchers tend to have different views on the nature and process of adjustment to disability (Bishop, 2005; Hahn, 1982, 1988; Kendall & Buys, 1998; Livneh & Antonak, 1997; Oliver, 1996). These different views on critical issues pertaining to the process of adjustment to disability have hindered the application of research findings in clinical settings (Bishop, 2005; Parker, Schaller, & Hansmann, 2003). This being the case, rehabilitation counselors have limited resources and
intervention strategies to assist individuals with disabilities in successfully coping with both personal and environmental aspects of their conditions.

In a similar vein, researchers have investigated a number of variables that influence adjustment to disability or chronic illnesses. However, there has been a lack of research concerning the environmental factors that influence or hinder adjustment to disability (Badley, 1995; Fougeyrollas, Noreau, & Boschen, 2002; Mukherjee, Heller, & Alper, 2001; Yates, 2003). Researchers have predominately focused their attention on factors relative to individuals with disabilities and their personal deficits, ignoring or overlooking largely environmental correlates that may significantly enhance or hinder the process of adjustment. For example, a number of studies have examined psychological and personality characteristics of people with disabilities, including self-concept and self-esteem (Kinney & Coyle, 1992; Li & Moore, 1998), perceived locus of control (Gold, Smith, Bales, Lyles, Westlund, & Drezner, 1991), attribution of blame (Taylor, Lichtman, & Wood, 1984), sense of coherence (Lustig, Rosenthal, Strauser, & Haynes, 2000), and coping strategies and styles (Brombardi, D’Amico, & Jordan, 1990; Felton & Revenson, 1984; Livneh & Wilson, 2003). Furthermore, numerous scholars have examined emotional reactions triggered by the onset of disability, including depression, anxiety, hostility, or denial (Havik & Maeland, 1990; Li & Moore, 1998; Rodin & Voshart, 1987).

Given the fact that the majority of studies continue to focus on individual factors, there is a limited body of literature which fully articulates and investigates the multiple characteristics of physical, social or external environments. This is important but often neglected area of research in rehabilitation counseling. Some studies have been
conducted to determine the impact of a few environmental characteristics on the adjustment process (Belgrave, 1991; Li & Moore, 1998). Environmental variables that have received considerable attention in the rehabilitation literature include social supports (Chan, Lee, & Lieh-Mak, 2000; Crisp, 1992; Elliott, Herrick, Witty, Godshall, & Spruell, 1992; Northouse, 1988; Peirce, Frone, Russel, & Mudar, 2000; Primomo, Yates, & Woods, 1990), family supports, and attitudinal barriers (Fine & Asch, 1988; Martz, 2004; Menec & Perry, 1995; Peat, 1997; Schwartz & Armony-Sivan, 2001; Susman, 1994). Results suggest that these factors have substantial impact on the adjustment to disability process. However, none of the existing studies have exhausted all of the important environmental factors. Further, in order to examine the relationship between adjustment to disability and environmental factors, measures of adjustment to disability should be correlated with measures of environmental variables. The review of the literature shows that there is a lack of such studies in the rehabilitation field.

Environmental factors may include social and family support, attitudinal barriers, discrimination, financial resources, and access to health care or rehabilitation services, transportation, physical or institutional resources and barriers, legal systems, laws and regulations, and many other that are external to a person (Badley, 1995; Fougeyrollas, 1995; Livneh & Antonak, 1997). Studies suggest that environmental factors can significantly determine daily functioning, quality of life, and social participation of individuals with disabilities (Whiteneck, Meade, Dijkers, Tate, Bushnik, Forchheimer, 2004; Whiteneck, Gerbart, & Cusick, 2004). Additionally, they may influence changes in personal factors. In effect, this may lead to or prevent the development of secondary conditions and disabilities (Fougeyrollas, Noreau, & Boschen, 2002). Therefore,
researchers have to become more aware of these environmental variables and their potential to influence the adjustment to disability process and emphasize the need for more studies in this area (Badley, 1995; Fougeyrollas, 1995; Livneh & Antonak, 1997; Mukherjee, Heller, & Alper, 2001; Yates, 2003).

Despite the fact that personality, psychological and emotional factors are crucial to understanding and conceptualizing the adjustment to disability process, shifting the focus from the individual and his or her deficits to the environment and society may provide a broader context and additional insights relative to what factors influence or hinder the process of disability adjustment. In addition, data from this line of research may initiate a new way of looking at adjustment to disability. Moreover, this new phase of research could enhance the development of new and relevant strategies that can better assist rehabilitation counselors working with people with disabilities. Consequently, knowing which environmental factors play a significant role in the adjustment process and understanding the relationship between a disability and environment will help service providers better manage environments and remove barriers to full participation in society.

Nagi (1965) suggested that the rehabilitation process should be expanded to embrace the restoration of people with disabilities to the maximum of their physical, mental, social, vocational, and economic functioning. In order to develop strategies for modifying or changing situations that create handicaps and pose barriers to quality of life of people with disabilities, knowledge about the environment needs to be increased. In order to enhance the inclusion of people with disabilities into mainstream society and ensure their independence and equal participation in communities, economic, social and physical barriers have to be better examined and understood so that appropriate strategies
can be developed to modify these factors (Fox & Kim, 2004). To achieve these goals interdisciplinary teamwork may be necessary. By taking a broader view of many environmental variables, researchers and practitioners may be better informed about the influence of these factors on adjustment and realize the necessity of collaboration with other professionals in order to implement environmental changes.

Person-environment Fit

Falvo, Allen and Maki (1982) suggested that the rehabilitation process is both psychosocial and physical because a disability influences not only how individuals interact with their environment but also how elements of this environment influence people with disabilities. The relationship between individuals and their environments has been often described by an ecological model (Coulton, 1979; Scofield, Pape, McCraken & Maki, 1980). According to the International Classification of Functioning, Disability, and Health, interactions among a person, disability and environment is described as participation (World Health Organization, 2001). In practical terms, the concept of person-environment congruence facilitates a better understanding of interactions occurring between people and their environments and highlights the importance of environmental variables in research on adjustment to disability.

In the rehabilitation literature, the interest in a person-environment perspective was initiated by Kurt Levin (1948; 1951) who, in his field theory, described the interdependence of individuals and their environments (Dunn, 2000; Groomes & Olsheski, 2002). Levin believed that behavior is a function of a person and his or her situation or environment. Therefore, in order to understand behavior, all factors affecting people need to be taken into consideration and examined. Despite Levin’s theory and
growing awareness of the environment, the majority of studies continue to focus on individuals with disabilities and downplay the impact of their environment.

The most significant assumption of all person-environment approaches is that they focus on the individual, the environment, and the relationship between them as well as on reaching an adaptive person-environment relationship (Letts, Law, Rigby, Cooper, Stewart, & Strong, 1994). Person-environment fit is generally described as the degree of congruence between a person’s needs, abilities and aspirations and the environment’s resources, demands, and opportunities (Coulton, 1979, 1981; Livneh, 1987). A lack of fit or congruence between persons and their environments may have a negative affect on individuals’ physical and mental health. Similarly, illness or disability may have negative effects on the level of congruence or equilibrium between people and their environments (Coulton, 1979; Fougeyrollas, 1995; Fougeyrollas, Noreau & Bosche, 2002; Letts et al, 1994).

In this model, the environment is broadly conceptualized and embraces physical, social, cultural, and organizational characteristics. Further, the person is an individual with visible and invisible attributes who functions within the social or physical environment. The term adaptation implies a good fit, harmony or a positive relationship between individuals and their supportive environment. Further, the adaptation process is dynamic and continues because the person and the environment are always in flux (Letts, Law, Rigby, Cooper, Stewart, & Strong, 1994).

Many life events, including the onset of chronic illness or disability, may disturb this congruence between a person and his or her environment. Sometimes, this disruption may be temporary and easy to restore. However, in many instances, this lack of
equilibrium and harmony may be more persistent, leading to distress (Coulton, 1981; Livneh, 1987). Researchers noted that there is a great variation among environmental subsystems within which interactions take place. Therefore, they suggested that it may be easier or more beneficial to modify environments than attempt to change people (Letts, Law, Rigby, Cooper, Stewart, & Strong, 1994; Lawton, 1986).

General Predictors of Adjustment to Disability

There has been a growing interest to understand the process of adjustment to disability and identify factors that facilitate or hinder this process. Researchers have attempted to examine adjustment issues within various disability types, employing a number of different individuals. Despite these attempts there is no simple answer or clear picture concerning the nature of the adjustment process and what variables influence this process. To advance research on adjustment issues, Livneh and Antonak (1997) proposed four classes of variables that need to be examined and described in order to better understand the adaptation process and develop strategies that will adequately address problems raised by individuals with disabilities as they cope with their conditions. Further, the authors believe that many intervening variables contribute to this complex process of adjustment. After their thorough review of the research, Livneh and Antonak identified variables that should be included in studies to better inform practitioners and researchers as well as stimulate further research efforts in this very important area of rehabilitation studies.

The first class of variables that the authors identified is associated with disability itself. This group includes factors directly related to disability including the cause of the condition, type of disability, type of onset, extent of disability, degree of functional
involvement, body areas affected, age at symptoms’ onset and diagnosis, visibility, and lethality. The second class of variables includes sociodemographic characteristics of individuals, including sex, chronological age, life or developmental stage, ethnicity, socioeconomic status, level of education, marital status, occupational status and work history, and existing vocational skills and potential. Subsequently, the third group includes variables associated with personality characteristics such as coping strategies and defense mechanisms used, perceived control, locus of control, personal meaning of a disability attitudes toward health, personal values and beliefs, self-concept, body image, and premorbid functioning. Finally, the last class of variables embraces characteristics of the physical and social environment. In this group, the authors recommended examining such variables as social support systems, economic and institutional support (community support groups, available medical care, political and religious groups, and occupational organizations), physical settings (urban versus rural areas, living arrangements, physical and architectural accessibility to community activities and work settings), attitudinal barriers (stigma), and stressful life events (Livneh & Antonak, 1997).

Environmental Factors

Environmental factors have received more attention in the rehabilitation literature following the growing popularity of an emerging sociopolitical model of disability and the development of a new taxonomy of health and functioning which was developed in 2001 by the World Health Organization. Most notably, the Americans with Disabilities Act acknowledged the importance of the environment and its influence on independent functioning of individuals with disabilities. Moreover, the disability movement and individuals with disabilities were critical and dissatisfied with research, laws, policies,
and regulations that were heavily based on the existing medical model of disability which failed to take into consideration external factors influencing the experience of disability. This revised International Classification of Functioning, Disability and Health (ICF) was largely influenced and informed by the social model of disability which was widely used for case conceptualization in rehabilitation counseling (Peterson & Rosenthal, 2005).

Environmental factors “make up the physical, social and attitudinal environment in which people live and conduct their lives” (WHO, 2001, p. 171). Indeed, the World Health Organization created the ICF “to establish a common language for describing health and health related states in order to improve communication between different users, such as health-care workers, researchers, policy makers, and the public, including people with disabilities” (WHO, 2001, p.5). Formal inclusion of environmental variables into the ICF taxonomy may help better balance or shift the focus from individual characteristics and deficits of people to situational or contextual factors that influence behavior (Homa & Peterson, 2005). The ICF distinguishes five major environmental variables: products and technology; the natural and human-made environment; supports and relationships; attitudes; and service systems. Consequently, this new classification provides a framework for examining interactions between individuals with disabilities and their environments and makes it possible to describe people’s experience of disabilities in a more comprehensive and concise manner (Schneidert, Hurst, Miller & Ustun, 2003).

Researchers in the field of rehabilitation have been suggesting that environmental factors have a significant impact on the lives of individuals with disabilities because of
their potential to significantly deepen functional limitations and increase impairments (Brodwin, Parker, & DeLaGraza, 2003; Bruyere, 2005; De Balcazar, Bradford & Fawcett, 1988; 2005; Vash, 1981). Environmental factors may either influence or hinder the adjustment process because “the environment affects the degree to which a functional limitation is disabling for a person” (Pope & Brandt, 1997, p.152). Recently, researchers have taken greater notice of this fact. Danford and Steinfeld (1999) pointed out that the environment alone may be often a sufficient factor leading to disability, impairment, or handicap. For example, Groomes and Leahy (2002) surveyed 151 individuals with disabilities and found that environmental factors, rather than personal variables, were the source of their distress. Further, the results of studies conducted by Whiteneck, Harrison-Felix, Mellick, Brooks, Charlifue, and Gerhart (2004) suggested that environmental factors are quite predictive of participation and are strongly related to life satisfaction of people with disabilities. Examining environment variables may facilitate the opportunity to identify risk factors of health conditions, prevent secondary conditions, and develop appropriate intervention strategies to mitigate the impact that environmental variables have on health and participation of people with disabilities in society.

Statement of the Problem

The rehabilitation counseling literature has largely focused on intrinsic variables relative to individuals with disabilities and their personal deficits as they relate to adjustment to disability. An assumption exists that environmental factors may significantly enhance or hinder the adjustment process. However, little attention has been given to environmental factors in the literature. Therefore, this study explored and
examined environmental factors identified in the literature as potential predictors of acceptance of disability.

Purpose and Significance of the Study

The purpose of this study was to investigate and describe environmental variables that influence adjustment to disability. Further, this study contributed additional information on the impact of environmental factors in the adjustment to disability process. In addition, data obtained from this study may serve to inform rehabilitation service providers and policy makers about changes that need to be made in environments in order to enhance physical, psychological, social, vocational and economic functioning of individuals with disabilities. In effect, identifying environmental variables that influence adjustment to disability may shift the focus from individuals and their deficits to the environment and its appropriate management. Results of this investigation may serve rehabilitation professionals in developing new intervention strategies that will address issues important to clients with disabilities and improve rehabilitation outcomes. Finally, there has been little research relative to the environmental characteristics that impact the adjustment to disability. Therefore, this study helped fill the gap in the rehabilitation literature and expand our knowledge of factors influencing the adjustment process. Providing empirically-based results may better inform practitioners and researchers and contribute to the improvement or development of new treatment strategies.

In addition, numerous researchers have noted that studies tend to sample within disability types instead of across disability types (Lindsey, 1995; Strauss & Corbin, 1998). This study did sample across disability types to enhance the data and provide an
opportunity for further studies to incorporate these results and capture similar characteristics across all disability types.

In light of scientific advancements, variables affecting the adjustment process need to be constantly re-evaluated. Particularly, advances in medicine, technology and rehabilitation engineering as well as social, attitudinal and cultural changes in society may influence and alter the lives of individuals with disabilities. Therefore, research is needed to examine the impact of these changes on the lives of people with disabilities. Most notably, sharing or exchanging data with professionals from other disciplines may facilitate the opportunity to investigate important subjects from different and unique perspectives, leading to advancement and expansion of the scientific knowledge base. In addition, the resources needed to implement environmental changes are often out of individuals’ and practitioners’ control (Steinfeld & Danford, 1999). Results of this study may be used to inform appropriate agencies or professionals to give more attention to certain environmental issues or negotiate necessary services.

Every day a number of causes including accidents, disease, war, and birth defects necessitate changes that people must make in their “taken-for-granted” lives. Assisting individuals with disabilities to cope with their conditions requires attention to a wide array of issues, including environmental factors. By studying environmental variables, some characteristics that consistently influence the adjustment process may be identified for future study. Similarly, the results of this investigation could help individuals with disabilities and their advocates to negotiate environmental changes and influence policymakers. Most notably, disabling environments may cause many functional limitations. According to Hahn (1982, 1988), in order to change these environments,
public polices must be changed. Unfortunately, in light of current research trends, little is known about how these factors in the adjustment process inform researchers, practitioners, and policy makers about required environmental changes. Therefore, from both theoretical and practical points of view additional research is needed to investigate the contribution of environmental variables to the acceptance of disability process.

Research Hypotheses

The following questions guided this study:

Does individuals with disabilities perception of environmental factors influence adjustment to disability? Can individual scores on the Measure of the Quality of the Environment instrument predict the score on the Acceptance of Disability scale? What is the relationship between adjustment to disability and environmental factors? What is the relationship between adjustment to disability and a set of demographic variables?

Null Hypothesis I (H₀): A set of demographic variables including age, gender, years of education, disability type, and area of residence will fail to contribute significantly to an overall prediction equation that will predict the dependent variable of adjustment to disability.

Alternative Hypothesis I (H₁): A set of demographic variables including age, gender, years of education, disability type, and area of residence will contribute significantly to an overall prediction equation that will predict the dependent variable of adjustment to disability.

Null Hypothesis II (H₀): Environmental variables combined with the set of demographic variables, including age, gender, years of education, disability type, and
area of residence, will fail to yield a statistically significant prediction equation for the dependent variable of adjustment to disability.

Alternative Hypothesis II (H₂): Environmental variables combined with the set of demographic variables, including age, gender, years of education, disability type, and area of residence, will yield a statistically significant prediction equation for the dependent variable of adjustment to disability.

Variables

Independent Variable

Scores produced by the Measure of the Quality of the Environment instrument: facilitator and obstacle scales; and the demographic variables including age, gender, years of education, disability type, and area of residence.

Dependent Variable

A score produced by the Acceptance of Disability-R (AD-R).

Limitations and Delimitations of the Study

There were some limitations involved in this study that need to be addressed and taken into consideration when interpreting the data. One of the limitations of this study was that it was a one agency study, employing only consumers of the Ohio Rehabilitation Services Commission. These subjects may or may not be representative of all people with disabilities. In addition, these participants were eligible for vocational rehabilitation services, meaning that they were willing and had some potential to return to the work force. Therefore, individuals with little or no employment potential may be under-represented.
Another limitation of this study was the reliance on the participants’ self-reported information. Data obtained this way may raise some questions if subjects’ answers were truly reflective of their experiences or biased and self-serving attributions. Furthermore, probably all of the possible environmental factors related to adjustment to disability were not included in this study.

Moreover, it should be mentioned that the Acceptance of Disability Scale which was implemented to measure acceptance of disability was originally developed and only normed on individuals with physical disabilities. Research and services recipients have since expanded to embrace not only people with physical disabilities but also those with psychiatric, developmental, or emotional conditions. However, Keany and Glueckauf (1993) concluded that nonphysical disabilities, including psychiatric and emotional conditions, also comprise value losses and may lead to devaluation.

Another challenging issues facing researchers studying environmental variables is that these factors are more difficult to experimentally control and manipulate (Tate & Pledger, 2003). All of the variables affecting adjustment to disability may not be independent. The cultural composition of the sample (e.g. white, black, ethnicity, economic status, or male, female) may also play an important role while generalizing findings of this study. Similarly, this study focused only on individuals with disabilities who are involved in the public vocational rehabilitation process in Ohio. Therefore, generalizability of results should be done with caution because of different strategies and practices used in other states and in the private sectors of service delivery systems.
Definition of Terms

In the rehabilitation literature terms such as disability, impairment, and handicap tend to be frequently used interchangeably, even though they describe various levels of functional limitations (Livneh & Antonak, 1997; World Health Organization, 1980). For the purpose of this study terms are defined as follows:

Disability

The World Health Organization defines disability as “any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being” (WHO, 1980, p.47). In other words, a disability is “a limitation of function that results directly from an impairment at the level of specific organ or body system” (Wright, 1983, p.11). In addition, Brandt and Pope (1997) defined broadly disability as “a function of the person within the environment” (p.64). Consequently, Pope and Tarlov (1991) concluded that disability is “the expression of a physical or mental limitation in a social context, the gap between a person’s capabilities and the demands of the environment” (p. 1).

A Person with a Disability

According to The Americans with Disabilities Act, a person with a disability is defined as (a) having a physical or mental impairment that substantially limits one or more major life activities, (b) having a record of such an impairment, or (c) being regarded as having such an impairment (ADA, 1990).

Impairment

Impairment is defined as “any loss or abnormality of the psychological, physiological, or anatomic structure or function” (WHO, 1980, p.47).
Handicap

The World Health Organization defines handicap as “a disadvantage for a given individual, resulting from an impairment or disability that limits or prevents the fulfillment of a role that is normal (depending on age, sex, and social and cultural factors) for that individual” (WHO, 1980, p.180). In practical terms handicap refers to “actual obstacles the person encounters in the pursuit of goals in real life, no matter what their source” (Wright, 1983, p.11).

Adjustment to a Disability

The adjustment to disability process is “an evolving, dynamic, general process through which the individual gradually approaches an optimal state of person-environment congruence” (Livneh & Antonak, 1997, p.8). For the purpose of this study, adjustment to disability was conceptualized as a final phase describing specific reactions of set of experiences of a person with a disability. In practical terms this assumption suggests that people with disabilities may be able to (1) reach and maintain psychosocial equilibrium; (2) achieve a state of reintegration; (3) positively strive to reach life goals; (4) demonstrate positive self-esteem, self-concept, self-regard; and (5) exhibit positive attitudes toward oneself, other people, and a disability (Jacobson, Hauser, Lavori, Wolfsdorf, Herskowitz, Milley, Bliss, Gelfand, Wertlieb, & Stein, 1990; Livneh & Antonak, 1995; Livneh, 1986, Wright, 1983).

Adjustment to disability is conceptualized as the degree of congruence or fit between individuals’ needs, capacities, and aspirations and their environments’ resources, demands, and opportunities (Coulton, 1981). The adjustment process involves continuous
interaction between people and their environment. Generally, this is not a linear process and may be cyclic or irregular.

Environmental Factors

In the rehabilitation literature, environmental factors are those that “make up the physical, social, and attitudinal environment in which people live and conduct their lives” (WHO, 2001, p. 171).

Participation

According to the International Classification of Functioning, Disability, and Health (2001), interactions among person, disability, and environment are described as participation.

The Acceptance of Disability Scale- Revised (AD-R)

This is a 32 item, four point Likert-type, and self-report scale designed to assess acceptance of disability based on the research of Dembo, Leviton, and Wright (1956) that describes the feelings of loss associated with the onset of disability and how individuals experience this loss. The AD-R scale was revised by Groomes and Linkowski in 2004 from the Acceptance of Disability scale developed by Linkowski in 1969 (Linkowski, 1971). The AD-R scale has four subscales, including (a) containment of disability effects, (b) subordination of physique, (c) transformation from comparative to asset values, and (d) enlargement of the scope of value (Linkowski, 1971; Wright, 1983).

Containment of Disability Effects of the AD-R

This subscale assesses individuals’ ability to contain or decrease the effects of their disabilities so that they do not interfere with functioning in other areas such as
social, intellectual, or emotional domains. Individuals focus more on these domains than on their limitations or shortcomings (Wright, 1983).

Subordination of the Physique Relative to Other Values of the AD-R

This subscale measures an individual’s ability to realize that although his or her physique does not fit existing in society norms or standards of physical perfection, there are other important aspects of life such as friendships, employment, education, or wisdom. An individual realizes that other values and aspects of life are important and can provide satisfaction (Wright, 1983).

Transformation of Comparative Values to Asset Values of the AD-R

This subscale assesses individuals’ ability to avoid comparing themselves and their limitations to individuals without disabilities and to be able to recognize and acknowledge their unique values and assets.

Enlargement of the Scope of Values of the AD-R

This subscale assesses individuals’ ability to acknowledge, focus, and appreciate the existence of other values in life, and enlarge their scope of values.

The Measure of the Quality of the Environment (MQE)

The MQE is a self-administered questionnaire that assesses the influence of multiple environmental factors, including physical and social on individuals’ performance of daily activities, social roles, and overall their participation in society (Boschen, Noreau, & Fougeyrollas, 1998). This instrument consists of 109 items that are grouped in six categories, including social support and attitudes (14), income, labor and income security (15), government and public services (27), equal opportunities and political orientation (10), physical environment and accessibility (38), and technology (5).
(Levasseur, Desrosiers, & Noreau, 2004). The MQE is a 7-point Likert type scale where each item is scored from (-3) indicating “major obstacle” to (3) meaning “major facilitator.”

**Obstacles**

Obstacles are defined as environmental factors or situations that hinder the accomplishment of daily activities or tasks.

**Facilitators**

Facilitators are defined as environmental situations or factors that assist the accomplishment of a daily activities or tasks.

**Summary**

This chapter provided an introduction to adjustment to disability and variables that influence this process. Examining environment variables may facilitate the opportunity to identify risk factors of health conditions, prevent secondary conditions, and develop appropriate intervention strategies to mitigate the impact that environmental variables have on health and participation of people with disabilities in society.

This study utilized quantitative methods to examine the relationship between adjustment to disability and environmental factors. In addition, this study employed a cross-sectional design with hierarchical regression analysis.

The research questions and null hypothesis were presented. The significance of pursuing this study was addressed in relation to adjustment to disability. The delimitations and limitations of this research study were provided. Additionally, the variables were operationally defined.
The literature review in chapter two will further emphasize the importance of examining the relationship between adjustment to disability and environmental factors.
CHAPTER TWO
Review of the Literature

This chapter reviews the relevant literature pertaining to theories of adjustment to disability and the research relative to environmental variables influencing the process of acceptance of disability. Because of the scarcity of literature focusing specifically on environmental factors, studies examining at least one environmental variable will be included.

It should be noted that the presented theories and studies use the terms disability and chronic illness interchangeably. In a similar vein, acceptance, adaptation, and adjustment to disability are used interchangeably to describe the same process. For the purpose of this study, the aforementioned terms will be used interchangeably, as well. However, Smart (2001) suggested using such words as a response or a reaction instead of terms such as adjustment, adaptation, or acceptance. According to Smart, the latter words do not consider the meanings people ascribe to their disability, ignore the importance of social and occupational issues, imply that adjustment is a one-time event rather than a continuous process, and pathologize the experience of disability. The final section of this chapter summarizes and critiques the literature and presents the theoretical framework for this research.

Disability

Disability and chronic illness impact the lives of millions of individuals. Scotch and Schriner (1997) suggested that disability is an integral part of the “natural, physical, social, and cultural variability of the human species” (p. 154). Jaeger (2005) pointed out that the world population of people with disabilities is estimated to be 550 million.
Further, this number tends to grow because people live longer and the advancements of medical science and rehabilitation technology have helped save and enhance the lives of millions of individuals who have acquired a disability. Therefore, disability is one of the experiences that many individuals are likely to encounter. Although disability is a common experience, it has not been regarded as a societal problem in a systematic and humane way Jaeger (2005).

There have been significant differences relative to how disability is understood and defined. This lack of agreement has led to obstacles which hinder a full understanding of the ramifications of the disability experience. Earlier views and conceptualizations of disability reflected and relied heavily on the medical model of disability. This model is noteworthy for its focus on individual characteristics, deficits, and pathologies. According to this model, disability is viewed as a problem or deficit within a person that needs medical attention and treatment (Goering, 2002; Pledger, 2003). Underlying the medical model is the assumption that a person with disability is viewed as sick. Therefore, he or she is excused or excluded from fulfilling common social obligations such as working, going to school, or taking on family responsibility (Kaplan, 2000). In contrast, Silvers (1998b), in her formal justice model, argued that individuals with disabilities should not receive special treatments that may be self-defeating. Instead, they should have an equal opportunity to participate in the environment and society. Oliver (1990) concluded that the “medical approach produces definitions which are partial and limited and which fail to take into account wider aspects of disability” (p. 5).
Some authors believe that disability is a socially constructed category and evolves from interpretations and definitions of individual behaviors and activities in the environment or society (Albrecht, 1981; Higgins, 1992; Stone, 1985). Higgins (1992) concluded that “we make disability. Disability is not a natural quality of people or of their individual traits” (p. 6). Instead, people in the context of interpersonal, organizational, political, and economic activities create the differentiation and categorize people, defining and giving meaning to groups and behaviors. In addition, Albrecht (1992) argued that “a person’s position in society affects the type of physical disability one is likely to experience and more importantly the likelihood that he or she is likely to receive rehabilitation services” (Albrecht, 1992, p.14). Further, he elaborated that the political economy of communities may influence the type of conditions that will commonly occur and in which context they will be recognized as disabling.

More recently, disability has been conceptualized as a social issue, resulting in a new classification and definition (Jaeger, 2005; Oliver, 1990; Pledger, 2003; Pope & Brandt, 1997; Silvers, 1998b). Brand and Pope (1997) suggested that disability is a function of the interaction of an individual with social and physical environments. A similar conclusion was reached by Schneidert, Hurst, Miller and Ustun (2003), who argued that disability should not be understood as a feature of the person. Instead, the authors proposed that disability should be viewed as “the outcome of an interaction of the person with a health condition and the environmental factors” (Schneidert, Hurst, Miller & Ustun, 2003, p. 588). Furthermore, Goering (2002) suggested that “disability is not a state of the body, but a lack of fit between the body and the social/physical/attitudinal environment that leads to social limitation or disadvantage” (Goering, 2002, p. 374).
Therefore, the amount of disability that individuals experience will be determined by
the existence of a particular condition and the environment in which they live (Pope &
Brandt, 1997).

The social model, which describes disability in terms of person-environment
congruence and locates individuals’ problems or difficulties mainly in the environment,
focuses predominantly on external factors that are outside the body structure. DeJong and
Hughes (1982) pointed out that problems pertaining to disability and rehabilitation are
often associated with the physical and social characteristics of the environment and not
with the individuals with disabilities. In addition, individuals with disabilities have been
constantly postulating that their main obstacles lie in environmental barriers rather than in
their disabilities (Higgins, 1992). The social model views the experience of disability in a
broader sense and considers a wide array of factors and conditions, including housing,
employment, income and financial support, family situation and support, transportation,
access to education, and the like. Therefore, in order to reduce the impact of disability on
a person, changes in society and environment, rather than in the individual, need to occur.
For example, attitudes and social structures may be modified to facilitate acceptance,
 inclusion, and participation of individuals with disabilities in the society and environment
(Goering, 2002). Similarly, Goldberg (1977) suggested that the social stigma, which
frequently accompanies disability, may pose far greater adjustment problems than the
severity of a person’s disability. Further, Hahn (1986) argued that assigning a minority
group status to people with disabilities was based on negative and discriminatory
attitudes rather than the functional limitations.
On the other hand, some authors argue that social and environmental changes may indeed limit, to some degree, the extent of disability, but may fail to completely eliminate or correct some limitations, suggesting that a medical model may be appropriate in some cases (Goering, 2002; Wendell, 1996). Similarly, Vasey (1992) cautioned that a social model should not be exaggerated because not all conditions may be compensated by environmental accommodations or modifications. Instead, this model shows that everyone “has the right to a certain standard of living and to be treated with respect” (Vasey, 1992a, p. 44).

Disability and the Environment

A review of the literature suggested that researchers and rehabilitation professionals have become more aware of environmental influences on the quality of life, rehabilitation outcomes, and the independence of people with disabilities. (Dunn, Brown, & McGuigan, 1994; Fougeyrollas, 1993; Keysor, 1997; Letts et al., 1994; Noreau, Fougeyrollas, & Boschen, 2002; Teel, Dunn, Jackson, & Duncan, 1997; Whiteneck, Gerbart, & Cusick, 2004). Research has demonstrated that elements of the environment may exacerbate impairments, increase functional limitations, exclude people from social situations, prevent equal opportunity, and lead to the creation of secondary conditions (Fougeyrollas, 1995; Fougeyrollas, Noreau, & Boschen, 2002; Keysor, 1997; Pope & Brandt, 1997; Rich, Erb, & Rich, 2002; Suarez De Balcazar, Bradford, & Fawcett, 1988; Yates, 2003). The passage of the Americans with Disabilities Act of 1990 validated the concerns of people with disabilities relative to the disabling impact of the environment on their participation and functioning in daily life. Despite the theoretical emphasis and enhanced understanding of the fact that the environment creates barriers and has a
profound impact on the quality of life of individuals with disabilities, little empirical evidence exists documenting the disabling and enabling aspects of the environment. Research is even more limited concerning the influence of the environment on the adjustment to disability process.

Steinfeld and Danford (1999) pointed out that the physical environment influences a person’s degree of independent functioning and defines the status of individuals with disabilities in society. Pope and Brandt (1997) argued that “the amount of disability is not determined by levels of pathologies, impairments, or functional limitations, but instead is a function of the kind of services provided to people with disabling conditions and the extent to which the physical and built environment is accommodating or not accommodating to the particular disabling condition” (1997, p.147). In practical terms, for any given disability type, the amount of disability that people encounter will be determined by the nature of the environment. In effect, the environment may be positive or enabling, meaning that it will decrease or compensate limitations and enhance functioning. On the other hand, the environment may become disabling and unfavorable, leading to a deterioration of the condition and an increase in limitations (Pope & Brandt, 1997). Overall, Pope and Brandt concluded that “the environment affects the degree to which a functional limitation is disabling to a person” (1997, p. 152).

As people with disabilities became more aware of environmental barriers that limited their participation in various personal and social roles, they began to realize that political changes were necessary to improve their position in society. Thus, the disability rights movement was fueled, in part, because of this increased level of awareness (Jaeger,
Byproducts of the disability rights movement include the passage of the Rehabilitation Act, the Americans with Disabilities Act, and the Fair Housing Act. Despite the interest that the environment has received from people with disabilities, professionals, and policymakers, this issue is still overlooked by some researchers and practitioners (Steinfeld & Danford, 1999; Whiteneck, Gerbart & Cusick, 2004).

Evidence suggests that the environment may be either disabling or enabling for individuals with disabilities (Gray, Gould & Bickenbach, 2003; Keysor, 1997; Pope & Brandt, 1997). Recent research has taken greater notice of the environment surrounding people with disabilities. One of the important factors leading to the shifting focus from a personal deficits perspective to the environment was the emergence of the sociopolitical model of disability (Albrecht, 1992; Goering, 2002; Higgins, 1992; Jaeger, 2005; Kaplan, 2000; Oliver, 1990; Pledger, 2003). Prior to this, mainstream rehabilitation literature was based on a medical perspective that focused heavily on individuals and their deficits. Subsequently, the World Health Organization (2001) changed its conceptual framework for research, practice and policy pertaining to disability studies from the International Classification of Impairment, Disabilities and Handicaps (ICIDH) to the International Classification of Functioning, Disability and Health (ICF). This new classification distinguishes five categories of environmental factors that should be included in practice and research efforts in the realm of disability issues.

In the rehabilitation literature, this relatively narrow focus of research on the personal characteristics and deficits of individuals with disabilities has limited further investigation and the development of knowledge pertaining to the relationship between a disability and the environment. By taking a broader view of the environment, researchers
and practitioners may be better informed about how the environment either exacerbates or minimizes the functional limitations of individuals and their overall adjustment to the disabling condition. In effect, the narrow view of the medical model restricts the precise assessment of clients and the identification of optimal interventions for consumers (Steinfeld & Danford, 1999).

Steinfeld and Danford (1999) concluded that environmental and contextual interventions may be as important as medical interventions in the rehabilitation process. Health conditions do not always lead to an impairment; however, they may result in functional limitations. On the other hand, an impairment may result in restrictions in social functioning without necessarily causing any functional limitations. For instance, the authors used the example of the stigma that is associated with mental illness which affects not only an individual, but also people who are closely related to him/her. However, in the case when functional limitations are present, environmental support is necessary to facilitate social participation and functioning (Pope & Brandt, 1997). A lack of environmental support may create a discrepancy between people’s ability and the demands of life. Therefore, the evidence suggests that considering disability in an environmental context allows for greater attention to all of the important aspects that may influence the lives of individuals with disabilities (Badley, 1995; Fougeyrollas, 1993, 1995; Fougeyrollas, Noreau, & Boschen, 2002; Gray, Gould, & Bickenbach, 2003; Levasseur, Desrosiers, & Noreau, 2004; Pope & Brandt, 1997; Rochette, Desrosiers, & Noreau, 2001; Steinfeld & Danford, 1999; Yates, 2003).

Fine and Asch (1988) argued that disability is a situational phenomenon experienced within a certain context. Focusing solely on individual traits and ignoring
their environment is likely to reinforce the stereotype of helplessness relative to disability. Further, this narrow focus on individual traits implies that disability is given and remains an integral part of an individual’s identity. Conversely, by giving more attention to environmental factors, it is acknowledged that disability is also socially constructed.

The physical and social environments include factors that are external to people. The physical environment may be divided into the natural (climate, terrain, humidity, and snow) and built environment (ramps, lighting, Braille signage) (Pope & Brandt, 1997). The physical environment needs to be available and accessible in order to support and enhance human performance. The impact of the natural environment on a given condition varies, depending on its context. Even though the physical conditions are present, they in one environment can be enabling and in others disabling (Pope & Brandt, 1997). For instance, for an individual with a mobility problem, a hilly terrain may be disabling, but another flat environment may not be. The built environment is comprised of objects that are made, modified and constructed to enhance human performance and functioning (Pope & Brandt, 1997). For example, assistive technology devices are constructed to compensate or decrease functional limitations.

The social model of disability recognizes both the disabling and enabling aspects of the environment. Individuals’ participation or activities may be limited because of social barriers, including stigma, attitudes, or discrimination, as well as the physical environment and barriers in a community, school, home, or work place. Indeed, Suarez De Balcazar, Bradford, and Fawcett (1988) found that there are still multiple social and physical barriers that prevent people with disabilities from finding suitable jobs, housing,
accessible transportation, and other necessary services. For example, the poverty or unemployment of people with disabilities may be attributed to their disability rather than to employers’ attitudes and stereotypes or other obstacles. Hahn (1999) and Gray, Gould and Bickenbach (2003) suggested that the source of environmental obstacles and barriers that people with disabilities encounter evolves from the social attitudes of nondisabled individuals. These social and physical barriers may overshadow the abilities, skills, and desires of individuals (Steinfeld & Danford, 1999). However, there is still a lack of knowledge and research pertaining to the relationship between the environment and impairment that, in effect, leads to disability (Whiteneck, Brooks, Harrison-Felix & Gerhart, 2004).

Consequently, rehabilitation professionals need to acknowledge and address both the social and physical aspects of the environment that individuals with disabilities may encounter if their services are to be effective. Research has demonstrated that modifying or creating the appropriate environment may help people with disabilities function more independently and participate more fully in their communities (Gray, Gould & Bickenbach, 2003; Imrie, 2004; Noreau, Fougeyrollas & Boschen, 2002; Rochette, Desrosiers & Noreau, 2001; Whiteneck, Meade, Dijkers, Tate, Bushnik, & Forchheimer, 2004; Whiteneck, Gerbart & Cusick, 2004; Yates, 2003). In effect, this is likely to enhance the quality of lives of people with disabilities and better facilitate their adjustment to disability.

Adjustment to Disability

One of the obstacles to understanding the adjustment to disability is the lack of a uniform theoretical framework that could guide research efforts and rehabilitation
practice. Numerous studies have been conducted to understand and describe the nature of the adjustment process and intervening factors. Despite these efforts and proposed theories and models, there is still little consensus among researchers regarding the nature of this process (Falvo, 1999; Kendall & Buys, 1998; Livneh & Antonak, 1997). Nevertheless, researchers and practitioners believe that adjustment to disability is a principle factor influencing the rehabilitation process and its outcomes, vocational adjustment, perceived well-being, and quality of life of individuals with disabilities (Livneh, Martz & Wilson, 2001). Indeed, some authors primarily conceptualize the adjustment process in terms of perceived quality of life and well-being (Bishop, 2005; Livneh, 2001).

Falvo (1999) and Bishop (2005) suggested that adjustment is complex, multidimensional and a highly individual process that evolves over time and is influenced by multiple factors. Further, they understood that adjustment is a process that individuals undergo while trying to deal with the psychological stress caused by the onset of a disability. In this process, people try to comprehend, deal with, and come to terms with their condition. Moreover, people attempt to develop a new outlook for their future and acquire additional skills that will help them regain control over the myriad factors influencing their lives (Falvo, 1999).

In contrast, Linkowski (1969) and Wright (1960), based on Dembo, Leviton and Wright’s (1956) concept of acceptance of loss, described acceptance of disability as a series of value changes. Wright (1960) identified four major changes in an individual’s value system that influence acceptance of disability: (a) enlargement of the scope of values, (b) subordination of physique relative to other values, (c) containment of
disability effects, and (d) transformation from comparative to asset values. In addition, Dembo and his collaborators viewed disability as a misfortune that may lead to the underestimation of remaining abilities or the devaluation of the whole person.

Furthermore, Livneh and Antonak (1997) viewed adaptation to disability as an evolving and dynamic process through which people gradually attempt to reach an optimal state of person-environment congruence as shown by (1) active participation in social, vocational, and avocational pursuits; (2) successful negotiation of the physical environment; and (3) awareness of remaining strengths and assets as well as existing limitations. However, the authors described adjustment to disability and chronic illness as a final phase of this process where individuals are able to reach and maintain psychosocial equilibrium, achieve a state of reintegration, strive to reach life goals, exhibit positive self-esteem, self-concept, and self-regard, and demonstrate positive attitudes toward oneself, others, and the disability. Therefore, adjustment to disability may be viewed as a process and outcome of the onset of disabling conditions.

Some researchers have emphasized an ecological or person-environment model for promoting adjustment to disability and conceptualized the adjustment process as the degree of congruence or fit between individuals’ needs, capacities, and aspirations and the resources of their environmental demands and opportunities (Coulton, 1981). The adjustment process involves continuous interaction between people and their environment (Scofield, Pape, McCraken & Maki, 1980). Similarly, Roessler and Bolton (1978) stated that reaction to disability is a very individualized process which is a function of individuals and their environments.
Despite different ways in which the adjustment to disability process is conceptualized, authors agree that some functional, psychological, and social changes are experienced by people following the onset of disability (Bishop, 2005; Livneh & Antonak, 1997). The literature suggests that there are significant variations in how people respond to these changes that are not necessarily associated with the types or severity of conditions (Bishop, 2005; Kendall & Buys, 1998). Recently, researchers have suggested that this variation may be facilitated by the perplexing and multifaceted interactions of the person, the disability and environmental factors (Bishop, 2005; Livneh & Antonak, 1997).

Theories of the Process of Adjustment to Disability

Because of its central role in the rehabilitation process, adjustment to disability has been studied and conceptualized from different viewpoints and across the wide array of disability types. As a result, several models or theories have been presented. Despite these efforts, little consensus has been reached concerning the nature and process of adaptation to disability, implying that there is no uniform or consistent theoretical framework to study the process of acceptance of disability. Most notably, the lack of a commonly accepted theoretical framework makes it challenging to compare and contrast reported results. Moreover, most of these models emerged on the grounds of clinical impressions, and therefore, there is limited empirical support, verifying their effectiveness and accuracy. Further, the application of these models in clinical practice still remains controversial (Parker, Schaller, & Hansmann, 2003).

There is a diversity of views with regard to models of adjustment to disability. Roessler and Bolton (1978) concluded that a model for adjustment to disability should
possess certain characteristics. First of all, a model should emphasize the process of person and situation fit and the ways that disability interrupts this fit. Additionally, a model should focus on an individual’s abilities and not so much on limitations. Finally, attention must be given to skills and behaviors that individuals need to learn in order to contain the effects of disability, enlarge their scope of values, and refrain from the restriction of behavioral opportunities (Roessler & Bolton, 1978).

*Stage Models of Adjustment to Disability*

Stage theories constitute the bulk of existing models relative to the adjustment to the disability process (Falvo, 1999). Despite the fact that models described the adaptation process on the grounds of clinical observation and impressions, stage models provide substantial contribution and value to the understanding and conceptualization of adjustment to disability. However, one of the greatest weaknesses of stage models is that they do not adequately address the unpredictability, perplexity and recurrent nature of the adaptation process (Kendall & Buys, 1998; Rosenthal, 1996; Yoshida, 1993). Nevertheless, stage models are an important part of the rehabilitation literature because they establish a framework for research that may answer pressing or relevant questions. The following review of stage models includes the most popular models or frameworks of adjustment to disability.

Stage theories assume that following the onset of disability or chronic illness, individuals pass through a sequence of phases or stages in order to reach the final stage of “adjustment” to their conditions. A number of stage theories emerged based on Elizabeth Kubler-Ross’s (1969) stage theory of grief concerning death and dying. Her theory consists of six stages, including shock, denial, anger, bargaining, depression, and
acceptance. Similarly, Roessler and Bolton (1978), among others, proposed on the grounds of the theory of grief, a five-stage theory of adjustment to disability, also known also as a behavioral-coping approach. This model begins with the denial stage which is characterized by defending one’s self against the trauma by denying its existence. Subsequently, mourning takes place where an individual is grieving for the loss. In the next stage of this model, the depression stage, people tend to question “why me?” and come to conclusions such as “I will never be the same.” In the next stage theory, anger typically follows depression. This stage is characterized by hostility that is directed at the world and other people because of perceived injustice and inability to comprehend the situation. Positive coping is considered the final stage of this model where a person begins reviewing major tasks and goals that need to be completed.

In Roessler and Bolton’s model, maladjustment is indicative of problems in living, while successful adjustment suggests that people have the ability to manage their environments and can effectively use problem-solving skills. In other words, adjusted individuals are able to restore the disrupted person-environment fit and achieve harmony. This process is very individualized and is a function of the person-environment interaction. Adjustment is not a permanent state that once achieved will remain indefinitely. Rather, adjustment is a continuous process where people respond to various situations and learn new skills.

Livneh and Antonak (1990; 1997) proposed a stage model of adjustment to disability, consisting of reactions or responses to the disabling conditions that unfold in a stable sequence. This model involves eight phases such as shock, anxiety, denial, depression, internalized anger, externalized hostility, acknowledgment, and adjustment.
This model begins with shock caused by overwhelming experiences stemming from the onset of a disability or traumatic event. Shock is characterized by psychic numbness, depersonalization and cognitive disorganization frequently affecting speech, thinking, processing information, or mobility (Livneh & Antonak, 1990, 1997; Livneh & Evans, 1984). The next stage of this model, anxiety, is regarded as panic-driven reactions once individuals begin to sense and recognize the magnitude of the traumatic event. In addition, anxiety is often associated with waiting for results of medical tests, procedures, or treatments modalities; fear of the unknown future; and necessary lifestyle changes. During this phase individuals may experience restlessness, confused thinking, or physiological symptoms such as problems with breathing, rapid pulse, sweating, or purposeless activities.

Subsequently, people move to a denial phase. Denial is viewed as mobilization of defenses against the painful realization of the extent, duration, and implication of the disability. In this stage, individuals may minimize or negate the seriousness of their condition, attempt to maintain a pre-disability lifestyle, and have wishful or unrealistic hopes for recovery. Subsequently, depression follows denial. Depression is regarded as bereavement for lost body parts or functions and is frequently observed among individuals with the traumatic and sudden onset of disability. In the depressive stage, individuals become fully aware of their physical, social, and behavioral limitations imposed by the onset of disability. It is not uncommon that individuals experience feelings of helplessness, hopelessness, despair, isolation, distress and self-depreciation. Depression is followed by internalized anger, where individuals tend to blame themselves and feel guilty for the onset of conditions. Further, they show self-directed resentment
and bitterness, leading sometimes to suicidal ideations, suicidal attempts or self-injury. In the next stage, externalized hostility, people tend to blame others or objects for their conditions and limitations. As a result, they may act aggressively toward other people and make inaccurate accusations, while being highly demanding and critical of other people. Subsequently, individuals move to the acknowledgment stage which is considered to be the first sign that they have cognitively recognized, processed, and accepted their disability and its implications for the future. During this stage, people accept themselves as having a disability, gain a new sense of self-concept, reexamine their values, and attempt to establish new meanings and goals in their lives. Finally, the last stage of this model, the adjustment phase, reflects the person’s emotional, cognitive, behavioral, and social adaptation to disability. During this time, individuals show the ability to assimilate the limitations imposed by the disability, reestablish positive self-worth, recognize their remaining potential, initiate attempts to pursue social and vocational goals, and successfully cope with difficulties and obstacles while realizing their goals (Livneh & Antonak, 1990; 1997).

The stage models received some but not universal support. Despite the fact that these frameworks may convey a general trend toward the adjustment process (Davis, 1987; Linkowski, 1971), numerous researchers have concluded that stage models do not explain adequately the process of adjustment to disability and its correlates, and therefore, are of little assistance for professionals working with people with disabilities (Kendall & Buys, 1998; Parker, Schaller & Hansmann, 2003; Trieschmann, 1980, 1988, Yoshida, 1993; Wortman & Silver, 1989, 1991). Further, some researchers argued that
reactions to disability are not universally experienced and do not follow an orderly sequence of stages (Trieschmann, 1980, 1988; Wortman & Silver, 1989, 1991).

Subsequently Kendall and Buys (1998) and Yoshida (1993) pointed out that stage models do not adequately mirror the complexity of the adjustment process or match the subjective experiences of individuals with disabilities. In line with these findings, Glass, (1994) indicated that many individuals with disabilities are of the opinion that they may never accept their conditions because it would mean that they are accepting circumstances that are entirely unacceptable. Similarly, Falvo (1991) noted that many people may never accept their disability, remaining in the state of maladaptation and nonacceptance. On the same note, Wortman and Silver (1989) concluded that stage models tend to normalize such experiences as distress, depression, or denial suggesting that a lack of these experiences may imply some type of abnormality.

Trieschmann (1988) noted that individuals have inner abilities, considerable strengths and a coping capacity to deal with difficulties that appear to be underestimated by many researchers. In addition, sociologists stressed that stage models may be viewed as a form of social oppression, suggesting that adjustment may be perceived as a process of socialization into the role of a “disabled” individual which imposes some limitations and restrains available choices (Albrecht, 1976; Kendall & Buys, 1998).

*The Recurrent Model of Psychosocial Adjustment*

Some authors have suggested that adjustment is a chronic and recurrent process, involving gradual changes in identity and cognitive schemas through which people redefine themselves and learn to accept difficult set of circumstances (Charmaz, 1995; Davis, 1987; Kendall & Buys, 1998). This assumption of adjustment to disability
underlines the recurrent model of adjustment to disability. According to the recurrent model, adjustment is a continuous process where individuals tend to reevaluate, modify and reconstruct their self-identity and cognitive schemas whenever they encounter unfamiliar or challenging situations or new losses (Charmaz, 1995; Kendall & Buys, 1998). Moreover, changes in schemas are guided by three themes: the search for meaning in the disability and post-disability life; the need for a sense of mastery and control over the environment, the disability, and the future; and the effort to protect and enhance the self and post-disability identity (Kendall & Buys, 1998).

In addition, Yoshida (1993) suggested that the adjustment process may be viewed as a pendulum motion that progressively shifts between two extremes before reaching a balance or central point between them. For instance, following the onset of disability, people may oscillate between pre-disability self and post-disability identity or between such schemas as self-rejection and self-acceptance. These shifts or swings may involve different themes and are accompanied by confusion and uncertainty relative to which extreme is more important to an individual. When time progresses, these swings between the two extremes become less and less intense as new schemas emerge and people begin to appreciate their present self with a disability. Consequently, at some point this pendulum will briefly stop moving. It is impossible to determine the exact time intervals and duration of this pendulum process (Yoshida, 1993). When the pendulum is at rest, individuals are able to acknowledge and process their experience of disability as they recognize their limitations imposed by the disability and their remaining assets. According to Charmaz (1995), individuals alter their lives and themselves to accommodate losses and regain a sense of wholeness in the face of loss.
According to Kendall and Terry (1996), people vary in terms of the speed and quality with which they progress through the adjustment process. Therefore, adjustment is a very individual process. However, it is believed that this process may be influenced by available personal resources, including coping skills, self-esteem, or social skills; and environmental resources involving support systems or financial security (Kendall & Buys, 1998; Lazarus & Folkman, 1984).

Coping with Disability Theory

Based on the theory of acceptance of loss described by Dembo, Leviton, and Wright (1956), Wright (1983) proposed a coping with disability theory. Dembo and his collaborators understood loss as the absence of something valuable that was perceived as a misfortune. Kelly and Glueckauf (1993) argued that disability, viewed as a misfortune, may lead to weakening or damaging of remaining abilities or even devalue an individual. Acceptance of disability was conceptualized as a transformation of values in a way that does not devaluate the person. Wright (1983) suggested four major changes within an individual’s value system that facilitate acceptance of disability in a nondevaluating manner. These modifications in a value system involve: enlarging the scope of values; subordinating values related to physique; containing disability effects; and transforming comparative-status values into assets values.

Following the onset of disability, individuals experience the period of mourning over values that are lost. When the person’s preoccupation with loss is intense, the first value change, known as the *enlarging the scope of values*, takes place. In other words, people begin to emotionally notice and appreciate the existence of other values than those that are considered lost. It is worth noting that the other three value changes do not
necessarily have to follow the sequence of stages. In addition, people realize that
despite losses and disability, there is a meaning to life. This recognition is influenced by
many other factors such as the need to manage activities of daily living and the need to
have some relief from overwhelming grief. Consequently, when individuals are able to
find some meaning in activities, events, or their goals, they are engaging in the process of
enlarging their scope of values.

The next stage of the coping with disability model refers to the subordination of
*physique* relative to other values. In this stage, individuals further recognize and expand
their meaningful values. More specifically, people refocus their attention from physical to
psychological or personality aspects of their lives that bring them satisfaction and
meaning. Individuals begin to see and appreciate other assets and aspects of life other
than outward appearance; values such as intelligence, wisdom, friendships, effort and
work become more important than physical traits. When these non-physical qualities,
over which individuals have more control, become central for them, their sense of
devaluation will greatly diminish.

Subsequently, the containment of the disability effects stage is associated with the
concept of *spread* introduced by Dembo and her coworkers (1956). The concept of the
effect of spread means that a single characteristic of a person, usually a personal
shortcoming, may inappropriately affect other areas of his or her life and evoke negative
inferences. Further, containment of spread is dependent on how this single characteristic
or shortcoming is perceived. It may be viewed as a possession or as a personal
characteristic (Wright, 1983). If the shortcoming is perceived as a possession, spread may
be minimized or avoided because the person and disability are viewed separately. On the
other hand, if this single characteristic is considered as a personal characteristic, spread is more likely to occur because this characteristic is viewed as inseparable or central to a person. Therefore, feelings of devaluation of a whole person are more likely to occur and hinder coping skills. Overall, Wright (1983) expressed essential features of the contamination of disability effects in these sentences: “A disability involves certain limitations in certain situations. The source of limitation is due to barriers imposed by society and not only to personal incapacity” (Wright, 1983, p. 178).

The final value transformation stage occurs when the individual is able to shift attention from comparative-status values to asset values. This means that individuals discontinue comparing their abilities and qualities to other people or standards and value and appreciate their personal assets and strengths that otherwise may have been unnoticed or devalued because they do not meet certain standards.

The Ecological Adaptation Model

Scofield, Pape, McCracken and Maki (1980) suggested that the process of psychosocial adaptation involves continuous interactions between individuals with disability and other people and institutions in the environment. Further, during the adaptation process individuals attempt to modify their behaviors in such ways that their personal needs and environmental demands are met and satisfied. People vary in terms of how they meet their needs and satisfy environmental demands. The onset of disability certainly introduces additional variables that influence or hinder this process. Scofield et al. (1980) concluded that adjustment to disability implies that people are able to embrace, in a realistic manner, their disability and stemming from it, limitations as personal characteristics which do not impede their successes.
The ecological adaptation model assumes that there are constant interactions between individuals and their environments. These environmental components, known also as “agents in the environment,” may include other people or groups of people, family, friends, employers, laws, regulations, or policies that provide input and send some messages to individuals about their condition. The next component of this model refers to “normative standards” that describe behaviors recognized by the agents in the environment as important in order to meet certain demands of this environment. Further, these normative standards, for example, achievement, independence or competition, constitute the frame of reference that is used to evaluate people and their behaviors. Regarding people with disabilities, these normative standards may present significant barriers and hinder the adjustment process. Environmental agents may respond to people with disabilities in a number of ways, some of which include negative messages. Negative messages may interfere or may make it challenging for individuals with disabilities to accept their conditions as a single personal characteristic that does not interfere with successes. Moreover, when people possess characteristics that are incongruent with normative standards, this may result in stigmatization, labeling, or even segregation. On the other hand, agents in the environment (people, agencies, regulations) may establish lower expectations and standards for people with disabilities, reinforcing “sick role behavior.”

These messages or stimuli are received and interpreted by individuals with disabilities. The process of adjustment and meeting environmental demands will be either influenced or hindered, depending on the content of these messages and their interpretation. Because adjustment is a continuous process, individuals with disabilities
are constantly confronted with new and often confusing, negative, or contradictory messages. In addition, the interpretation process is influenced by people’s frame of inferences and other internal stimuli such as maturation, world view, self-concept, pain or previous experiences. Overall, individuals’ responses serve as stimulus for environmental agents. They may either support existing in the environment normative standards or advocate for change of those that seem inappropriate for people with disabilities. In effect, the ecological adaptation model suggests that in order to understand and promote adjustment of individuals with disabilities, agents in the environment and their interactions need to be considered.

Environmental Variables

Current research has taken greater notice of environmental variables. The first environmental variable, products and technology, includes “any product, instrument, equipment or technology adapted or specifically designed for improving functioning of a disabled person” (WHO, 2001, p. 173). In other words, this variable may embrace any general or assistive product for personal use in the home, work or social environment; food and medication; design, construction and building products to make them accessible to people with disabilities; and assets such as money, goods, property, clothing, knowledge and skills.

The second group of environmental variables, the natural environment and human-made changes to environments, relates to the natural and physical environment. In this setting, the components have been modified for people with disabilities (WHO, 2001). For example, it may be important to discuss any demographic changes in the
environment or population density, including a number of people who live in one unit or household.

Subsequently, the next variables, support and relationships involves “people or animals that provide practical, physical or emotional support, nurturing, protection, assistance and relationships to other persons, in their home, place of work, school or at play or in other aspects of their daily activities” (WHO, 2001, p. 187). Numerous studies have been conducted to determine the importance of this variable in the adjustment process (Chan, Lee, & Lieh-Mak, 2000; Crisp, 1992; Elliott, Herrick, Witty, Godshall, & Spruell, 1992). Results suggest that support and relationships play an extraordinary role in the adjustment to disability.

The next variable, attitudes, tends to influence a person’s behavior on all levels. Attitudes are defined as “the observable consequences of customs, practices, ideologies, values, norms, factual beliefs and religious beliefs” (WHO, 2001, p.190). The attitudes of individuals with disabilities about themselves are not included in this category. The literature suggests that attitudes of others, including family, friends, peers, colleagues, neighbors, community members, and society, toward people with disabilities may lead to negative or discriminatory practices, stigmatization, stereotypes or marginalization (Berry & Meyer, 1995; Brostrand, 2006; Dunn, 2000; Fine & Asch, 1988; Livneh & Antonak, 1997; Tak-fai Lau & Cheung, 1999; Weisel & Florian, 1990; Wright, 1983; Yazbeck, McVilly, & Parmenter, 2004; Yuker, 1988). Therefore, this variable plays an important role in the adjustment process.

The last environmental variable included in the ICF pertains to services, systems and policies. Services may include structured programs, benefits and operations in
different sectors of society that are designed to meet the needs of people. Further, systems are designed to organize, control and monitor provided services in different sectors of society. Finally, policies constitute rules, regulations and standards that manage systems that organize, control and monitor services in different sectors of society (WHO, 2001). This category may include housing services such as shelters, dwellings or lodging for individuals; utilities services such as public transportation; economic services; general social support services for people who need assistance in such areas as shopping, transportation, self-care and housework; health services at a local, community, regional, state and national level to enhance individuals’ physical, psychological and social well-being; education and training services; labor and employment services; and political services, including access to voting and elections (WHO, 2001).

Noreau, Fougeyrollas and Boschen (2002) grouped environmental variables into six themes, including (a) support and attitudes of family and friends; (b) income, job, and income security; (c) governmental and public services; (d) physical environment and accessibility; (e) technology; and (f) equal opportunity and other political priorities. This classification serves as the Measure of the Quality of the Environment instrument that will be used in this study.

Adjustment to Disability and its Correlates

Numerous studies have been conducted to determine what factors influence the adjustment process. Most studies have concluded that a host of interacting factors play a critical role in this process. As Livneh and Antonak (1997) and the World Health Organization (2001) suggested, such factors may embrace disability-related, sociodemographic, personality, and environmental characteristics, including family and
social support, attitudinal barriers, and physical and socioeconomic environments. However, while a number of studies have addressed how individuals’ characteristics and their deficits influence the adaptation process, research on how environmental variables impact this process has been very limited. Fine and Asch (1988) pointed out that when people with disabilities encounter difficulties, it is assumed that impairments create them. While this may be true to some extent, Mukherjee, Heller and Alper (2001) argued that a number of these problems may be clearly viewed as environmental or institutional barriers that enhance and compound these difficulties, reducing opportunities for inclusion and integration of people with disabilities into mainstream society. Further, factors extraneous to people, such as financial resources, access to information, health care or other services, social support, attitudes toward disability, or transportation, may be equal or even important in the adjustment process. However, this remains to be investigated. People with disabilities report the presence of obstacles in their environments; however, it is not well examined how environmental factors influence adjustment to disability because measures of the environment has not been correlated with measures of adjustment of disability.

Nevertheless, following the development of the new WHO’s classification, more researchers have started acknowledging the impact of environmental factors on disability experiences, including their role in the adjustment process. Environmental factors have been associated with quality of life, participation in society, rehabilitation outcomes, and life satisfaction after the onset of disability (Badley, 1995; Baker, Jodrey, & Intagliata, 1992; Beresford, 1996; Brandt, & Pope, 1997; Coulton, 1979; Drainoni, Lee-Hood, Tobias, Bachman, Andrew, & Maiselle; Evans, Bishop, Matlock, Stranahan, Smith, &
Therefore, it may be assumed that environmental factors will be associated with adjustment to disability.

The environment may be either disabling or enabling for individuals with disabilities (Pope & Brandt, 1997). Several studies have shown that environmental factors can pose barriers and restrict participation of individuals with disabilities in society (Fougeyrollas, 1993; Levasseur, Desrosier, & Noreau, 2004; Mechanic, 2002; Mukherjee, Heller & Alper, 2001; Schwartz, & Armony-Sivan, 2001; Suarez De Balcazar, Bradford & Fawcett, 1988; Yates, 2003). Individuals with functional limitations may be able to participate in society only when their environment is supportive. Therefore, identifying and acting on environmental factors that create handicaps is one of the important aspects of the rehabilitation counseling profession.

The literature indicates that people with disabilities continue to experience significant difficulties with accessing services and activities and encounter numerous barriers that prevent them from inclusion and participation in society (Frank & Bellini, 2005; Jaeger & Browman, 2005; Mukherjee, Heller & Alper, 2001; Rich, Erb & Rich, 2003; Suarez De Balcazar, Bradford & Fawcett, 1988; Yates, 2003). Barriers are documented in the built environment, technology, social attitudes, social institutions, and cultural norms (Keysor, 1998). These various barriers are likely to hinder the adjustment process and interfere with the recovery and outcome of the rehabilitation process. In line with these findings, research has also pointed out the importance of environmental factors
such as positive attitudes, social support, available technological devices, and accessible transportation that can enhance the quality of lives of individuals with disabilities and facilitate positive adjustment to disability (Meyers & Anderson, 2002; Noreau & Fougeyrollas, & Baschen, 2002).

For example, Mukherjee, Heller and Alper (2001) conducted a longitudinal case study of a 43-year old working-class White man who had a 12th grade education to demonstrate that social and institutional factors play a critical role in adjustment to brain injury. This individual sustained a traumatic brain injury in a motor vehicle accident, resulting in limited cognitive, language and memory functioning. The authors maintained contact with their subject and his family for ten months and supplemented their information with data obtained from medical records, neuropsychological assessment, observation, and interviews. Results of this case study showed that adjustment to brain injury may be a complex and multidimensional process, influenced by a number of environmental variables that create functional limitations in daily activities and lead to exclusion in certain instances or create a lack of opportunities. Further, based on this case study, the authors reported several social and institutional barriers interfering with the subject’s recovery from injury and ability to accept his disability.

First of all, findings suggest that despite the lack of physical limitations, individuals with brain injury need an advocate or someone who can help them complete the required paperwork to receive necessary benefits, manage their finances and housing issues, provide information and legal assistance, arrange transportation, and assist in securing appropriate services. Because of the subject’s limited ability to manage his life independently, his sister obtained legal guardianship of him. Further, this case study
revealed that people with disabilities may encounter significant financial problems because of a lack of disability benefits or difficulties receiving services because of a lack of medical insurance, leading to obstacles in recovery, and distress and frustration. In this case, the client had to apply three times for Medicaid before he was approved for benefits. In addition, the lack of affordable housing and information about available services were reported. Furthermore, the authors reported that the subject’s lower social status confounded difficulties that he experienced following the onset of disability. Stereotyping and labeling of a certain group of people may raise suspicions concerning the necessity of services in the absence of visible disability.

Another study conducted by Suarez De Balcazar, Bradford and Fawcett (1988) investigated common concerns and problems experienced by individuals with disabilities. The authors surveyed 13,000 individuals with disabilities in 319 communities in 10 states and provided qualitative as well as quantitative information about common concerns expressed by people with disabilities. Results suggest that individuals with disabilities were concerned with affordability and availability of assistive devices, and cost of services and repair. This issue received high importance ratings; approximately 80% of individuals believed that assistive devices play significant roles in their lives. Further, participants were of the opinion that assistive devices are very expensive, not covered by most insurance companies, and are not affordable for most people with disabilities.

Another concern expressed by individuals with disabilities pertained to accessibility and availability of commercial services. Participants indicated that in many businesses and restaurants, the restrooms were inaccessible. Further, people with disabilities pointed out that despite the fact that most of them were on very low fixed
incomes, they did not receive any discounts or shopping privileges such as those provided to senior citizens.

Results of this survey suggested that the community support and responsiveness category received consistently high importance and relatively low satisfaction ratings. Individuals with disabilities reported that their families and communities do not encourage them to be independent. Further, participants felt that communities generally do not provide opportunities or assistance to facilitate independent living. In addition, a lack of support groups for individuals with disabilities and their families was noted. Finally, participants were of the opinion that local governments were unresponsive to concerns associated with disability, particularly when financial investments were needed or anticipated. People with disabilities noted that they were discouraged from registering and voting because of inaccessible registration and polling places, as well as a lack of transportation to such sites.

Furthermore, disability rights and advocacy participants reported that, in general, people with disabilities are unaware of their rights and do not now how to form advocacy organizations. The authors found that individuals with disabilities had little or no knowledge about legislation at state or national levels.

The next category that emerged from this study, employment accommodations, disincentives, and training, suggested that many businesses do not provide reasonable accommodations in the work setting. In addition, results suggested that people with disabilities often do not know where to go for assistance with finding a job, obtaining training, or basic job seeking skills. Further, participants felt that there are disincentives within the Social Security system that lead to loss or reduction of economic benefits,
medical benefits, housing subsidies, food stamps, and other services. The authors also found that individuals with disabilities believed that they are discriminated against because of their disability and that they do not have the same opportunities as other people in society. Similarly, they reported that there are very few job opportunities for people with disabilities and that employers generally prefer to hire people without disabilities.

Subsequently, people with disabilities reported concerns related to affordability and availability of health care, including acceptance of Medicaid and Medicare by hospitals and health providers, as well as sensitivity of service providers to clients. Participants indicated that some doctors refused to accept Medicaid or Medicare because of difficulty with receiving reimbursement for provided services. Further, results suggest that individuals with disabilities experienced problems with filling their medications or paying for nonemergency medical visits because of limited financial resources. In addition, this study showed that people with disabilities often had difficulties with transportation to medical appointments, especially in rural areas. Similarly, individuals with disabilities reported that service providers tended to be insensitive while dealing with people with disabilities and demonstrated a lack of knowledge about medical or physical assistance required by people with disabilities.

In line with the above findings, people with disabilities reported concerns related to affordability, availability, and accessibility of housing. This study revealed that there is a shortage of accessible and affordable housing for individuals with disabilities, and eligibility requirements pose significant challenges to obtain appropriate housing.
Further, architectural designs leave much to be desired in terms of complying with existing laws and making housing accessible for people with disabilities.

The evidence from this study suggests that individuals with disabilities struggle to afford insurance for health, automobile, life, and liability insurance. Participants reported that they experienced difficulty buying health insurance because of their pre-existing conditions and lack of financial resources. Moreover, many health insurance companies do not cover equipment, supplies, medications, and necessary therapies to maintain appropriate health status. Regarding vehicle insurance, life, and liability insurance, participants reported that premiums are too high for them to afford and insurance companies tend to discriminate based on disability.

Grey, Gould, and Bickenbach (2003), using focus groups, investigated barriers and facilitators to full participation of people with mobility disabilities in major life activities. A sample of 122 individuals was divided into seventeen focus groups that consisted of individuals with mobility impairments, their significant others, healthcare professionals, and professionals who build the environment. The authors found that individuals with mobility impairments and their significant others felt that the built environment poses substantial barriers to their participation. Conversely, individuals who built the environment viewed it more favorably than people with disabilities. Tools, products or personal support were considered by the majority of participants to positively influence participation. However, authors reported that social institutions and cultural norms posed noticeable barriers to participation. Additionally, themes that emerged from the focus groups suggest that people with disabilities would like to be consulted on how to adapt or make changes to the environment. On the other hand, the built environment
professional focus groups were of the opinion that changes to the physical environments pose restrictions and barriers to the creativity of their profession, and cause challenges, including financial constrains. Most notably, they believed that legislative mandates, codes and guidelines are restrictive and based only on a certain group of people with disabilities. Clearly, architects, designers and city planners may not be able to recognize that people with disabilities have the civil right to access the environment in order to fully participate in the life of a community.

In a sample of 650 individuals with spinal cord injury, Richards, Bombardier, Tate, Dijkers, Gordon, Shewchuk, and DeVivo (1999) examined the relationship between access to the environment and life satisfaction at one or two years post-injury. Results of this study suggest that access to the environment is an important factor in predicting life satisfactions following spinal cord injury. As the authors hypothesized, access to the environment was positively associated with greater life satisfaction. A positive linear relation between access to the environment and a life satisfaction measure was detected even after other independent measures were accounted for. Individuals with less neurologic impairment were most able to access the environment and showed greater satisfaction with life. Access to the environment as a predictor variable added significantly to the variance of satisfaction with life.

Rochette, Desrosiers, and Noreau (2001) examined the influence of environmental factors on the creation of handicap situations following a stroke. Handicap situations interfere with performing daily activities, social roles and pose a barrier to self-actualization, meaning that they have potential to influence adjustment to disability. This study employed 51 individuals aged 40-97 who initiated post-stroke rehabilitation. The
evidence suggests there is a relationship between environmental factors and the occurrence of handicap situations. Environmental factors that are perceived as barriers or obstacles lead to greater occurrence of handicapped situations. Similarly, environmental factors recognized as having a favorable impact on participation were associated with a lower degree of handicap situations. In this study most associations between environmental factors and handicap situations were in the same directions, meaning that environmental factors perceived as barriers were associated with greater handicap and factors recognized as facilitators led to increased social participation. However, one negative association was detected between the subcategory “personal care” of the handicap measure (LIFE-H), and the subcategory “technology” found as a facilitator of the measure of the environment. This indicates that when the environmental factor, technology, was recognized as facilitator, there was a greater handicap situation in personal care. Individuals who used adaptive aids or other devices to carry out daily activities experienced fewer handicap situations that they would normally have had without these devices.

In a large sample of 2726 individuals with spinal cord injury, Whiteneck, Meade, Dijkers, Tate, Bushnik, and Forchheimer (2004) found the evidence suggesting that environmental factors play important roles in the lives of individuals with disabilities. The authors investigated the influence of environmental factors on participation and life satisfaction following the onset of a disability. The results of this study suggest that 80% of participants reported some types of environmental barriers that interfered with their activities. Additionally, individuals with spinal cord injury identified the natural environment, transportation, help at home, health care, and government policies as the
most problematic factors in their lives. This research revealed that more environmental barriers were reported by middle-aged individuals, women, minorities, unmarried, those with more substantial injury levels, and those with more activity limitations. Interestingly, this study found that environmental factors that were measured by the Craig Hospital Inventory of Environmental Factors (CHIF-SR) did not influenced participation. This finding is incongruent with conceptual assumptions, theories, and research describing the relationship between disability and the environment. However, this study found that environmental factors, as measured by CHIEF subscales, were significant predictors of life satisfaction, accounting for 10% of the variance.

Whiteneck, Gerbart, and Cusick (2004) conducted a study to identify environmental variables that influence the outcomes of individuals with traumatic brain injury. This study employed 73 people with traumatic brain injury who participated in Craig Hospital’s TBI Model Systems program. To examine environmental factors, the authors used the Craig Hospital Inventory of Environmental Factors (CHIEF) measure that assesses the impact of 25 barriers on individuals’ participation. The results of this study suggest that transportation, the surroundings, government policies, attitudes, and the natural environment were frequently reported barriers to participation in society and life satisfaction among people with traumatic brain injury. Further, results suggest that more reported barriers in attitudes and services were related to less cognitive independence, adding to more disability difficulties. Similarly, physical and policy barriers were associated with occupation and mobility subscales of the Craig Handicap Assessment and Reporting Technique (CHART) measure. Individuals with milder injuries tended to report more barriers because they were more involved in their
community and had more opportunity to experience environmental barriers. In addition, people who require physical assistance reported more work or school barriers. Individuals who needed cognitive assistance reported overall more obstacles as well as policy barriers. Limited participation in society and lower quality of life were associated with experiencing and reporting more environmental barriers. Overall, this study supports the assumption that the environment plays an important role in the lives of individuals with disabilities. Elements of the environment may prevent full participation of people with disability in society and add to activity limitation.

Another study, which lends further credence to the fact that environmental factors influence disability was conducted by Badley, Rothman and Wang (1998). The authors, in a cross-sectional population-based research, surveyed 16,017 individuals with arthritis-associated disability in order to examine the influence of the environmental factors on disability and physical dependence. Results suggest that there is a strong relationship between disability and dependence that can be at least partially explained by environmental factors. This study found that individuals who had some modifications to their kitchen reported less personal and domestic activities dependence. However, environmental adaptations, including modified bathrooms, the use of a cane or other aids and assistive devices were associated with increased physical dependence in personal and domestic areas. Overall, environmental adaptations led to higher scores on disability measures, meaning greater reported disability. Although environmental factors accounted only for 8 percent of the variance in dependence, the combination of environmental obstacles and functional limitation explained significantly more variance in reported
disability than the combination of functional limitations with personal or sensory variables.

Shumway-Cook, Patla, Stewart, Ferrucci, Ciol, and Guralnik (2003) examined the relationship between the components of the physical environment and community mobility among 54 older adults with and without physical disability. The authors found that older individuals with mobility limitations reported less encounters with and greater avoidance of elements of the physical environment and challenges associated with long-distance travel, walking on curbs or uneven surfaces, or crossing busy streets. Results suggest that there were no major differences between older individual with and without disability in terms of encountering challenging elements in the environment, including walking, going outside when it was dark; cold or snowing; crossing streets, and overall level of participation. However, people with mobility difficulty tended to avoid uneven surfaces and were more prone to use elevators. Both individuals with and without functional limitations were likely to attend places that were less physically challenging. However, older adults with disabilities showed greater avoidance of locations that were likely to pose some challenges to their mobility. Overall, results of this study provide considerable support to the assumption that mobility limitations result from interactions of individuals and components of the environment.

Similar study was conducted by Levasseur, Desrosiers, and Noreau (2004). In a sample of 46 older adults with physical disabilities, the authors investigated the relationship between the environment and quality of lives of participants. In this study the environment was measured by the Measure of the Quality of the Environment (MQE) and quality of life was measured by the Quality of Life Index (QLI). Although the
authors did not find a statistically significant relationship between global scores on the measure of the environment and quality of life, there were significant associations between subscales of both measures. What is evident from these results, however, is that the environment is perceived by older individuals more as a facilitator than a barrier. Moreover, participants were of the opinion that the environment enhances daily activities and participation in society. Particularly, such subscales of the MQE measure as the technology, physical environment and accessibility, and government and public services were frequently reported as facilitators. However, most barriers were reported in the physical environment and accessibility category of the MQE. The evidence from this research suggests that quality of life tends to be related more to the social than physical environment. Social support and attitudes domain of the MQE was strongly associated with most of the QLI subscales. Similarly, the socioeconomic domain of the QLI was the most related to the MQE.

A randomized controlled trial conducted by Mann, Ottenbacher, Fraas, Tomita, and Granger (1999) provided additional evidences of the relationship between a disability and environment. In a sample of 104 older individuals the authors examined the effectiveness of assistive technology and environmental interventions in maintaining independence and reducing home care costs. Participants of this study were assigned to one of two groups, a treatment or control group. Individuals who were assigned to the treatment group received assistive technology devices (e.g. canes or walkers) or home environmental interventions (addition of ramps or lowering of cabinets). The control received only standard services. Results showed that both groups declined in their functioning over time. However, there was definitely more decline observed in the
control group as evidenced by scores on the measure of functional independence. Similarly, both groups demonstrated decline in the area of social integration. In addition, there were no significant changes in the physical independence or occupation domains. However, on the mobility subscale the control group showed significant decline. Although there was no significant difference in terms of total costs between two groups, findings suggest that the control group had noticeably more expenses for nurse visits and care manager visits. Overall, this study found that assistive technology devices or environmental interventions are important factors in maintaining independence.

\textit{Income and Employment}

A significant number of individuals with disabilities have limited ability to earn living and participate in workforce. There is strong support in the literature that low income has been associated with an increased susceptibility to psychosocial conditions, level of disability experienced and poor health (Bradley, Rothman & Wang, 1998; Drainoni, Lee-Hood, Tobias, Bachman, Andrew, & Maisels, 2006; Kennedy & Erb, 2002). Individuals with disabilities are almost twice more likely to live below the federal poverty level than others (Rich, Erb & Rich, 2003). Because of that, they have generally limited opportunities to access other services or obtain assistive technology devices. Low income is associated with vocational difficulties, including unemployment, underemployment, or limited opportunities or choices. The literature indicates that financial stressors along with vocational difficulties may exacerbate medical conditions, and overall negatively influence mental health, leading even to suicidal incidents and higher admission rates to hospitals (Hermann, Whitman, Wyler, Anton, & Vanderzwagg, 1990). Employment and income are two main factors describing a person’s
socioeconomic status in community or society. Although mechanisms causing this association are not well known, socioeconomic status has been strongly related to health (Gething, 1997). People with higher socioeconomic status typically enjoy better health whereas individuals with lower social position have higher rates of mortality and morbidity (Adler, Boyce, Chesney, Cohen, Folkman, Kahn, & Syme, 1994). This being the case, it can be anticipated that vocational and financial difficulties have the potential to influence the adjustment to disability process.

Beresford (1996) pointed out that individuals with disabilities tend to experience more economic difficulties than other individuals in society. Individuals with disabilities commonly face poverty. Additionally, people experiencing economic problems are often perceived as dependent, ignored, devalued, and are excluded from participation in society. Further, the Social Security benefits generally reinforce poverty by keeping people at or below poverty levels (Beresford, 1996). Poverty is generally associated with unemployment of people with disabilities who have restricted access to the labor market and fewer opportunities to obtain and retain gainful employment, or increase their education and acquire new skills. However, people with disabilities need higher incomes so that they can comply with medical regimens and meet their needs imposed by their disabilities. Poverty has direct effect on the availability and quality of medical care, nutrition, and living arrangements (Adler, Boyce, Chesney, Cohen, Folkman, Kahn, & Syme, 1994). In addition, Gething (1997) noted that limited employment opportunities tend to isolate individuals with disabilities from society. These factors are likely to influence individuals’ quality of live and adjustment to their disabilities.
Several studies have demonstrated that financial and vocational issues may interfere with well-being and lead to psychopathology. For example, Hermann, Whitman, Wyler, Anton, and Vanderzwagg (1990), in a sample of 102 adults with epilepsy, examined psychosocial predictors of psychopathology. The authors found that adjustment to epilepsy \( (r = 0.38, P = 0.001) \) and financial stress \( (r = 0.34, P = 0.001) \) independently predicted participants’ psychiatric status measured by the General Health Questionnaire. Although a number of other variables may influence psychopathology, it is evidenced that financial stress and vocational problems lead to emotional distress.

Similar findings were reported by Melamed, Grosswasser, and Stern (1992) who in a sample of 78 individuals with traumatic brain injury investigated the relationship between adjustment to disability and work involvement and subjective rehabilitation status. Subjective rehabilitation status was defined in this study as a satisfaction with meeting physical well-being, emotional security, and family, social, economic, and vocational needs. Results of this study demonstrated that psychosocial adjustment to disability was associated with work involvement and perceived economic independence. Individuals who were employed had higher scores on the adjustment to disability measure than unemployed people. In addition, within the employed group, people who were working in the open market appeared to be more satisfied with their rehabilitation process than individuals working under protected conditions who felt less rehabilitated.

In a sample of 337 adults with traumatic brain injury, O’Neill, Hibbard, Brown, Jaffe, Sliwinski, Vandergoot, and Weiss (1998) examined the effect of employment on quality of life and community integration following the onset of a disability. Findings suggest that employment was strongly and consistently associated with perceived quality
of life, social integration within community, and home and leisure activities. Interestingly, this study found that part-time employment was more beneficial than full-time employment for individuals with brain injuries. Individuals who worked part time reported more social integration, were more engaged in home activities, and reported fewer unmet needs. Although this study suggests that employment has positive influence on individuals’ quality of lives, caution is warranted when interpreting and generalizing these findings to other disability groups. Especially, the fact that part-time employment may be superior to full-time employment may be strictly related to a specific type of a disability and needs to be further investigated. Therefore, caution is recommended when generalizing findings of this study.

Services and Health Care

Assess to appropriate services has been a major concern for individuals with disabilities. People with disabilities often find it difficult to gain access to required services, including access to health care, insurance, and housing (Rich, Erb, & Rich, 2003). Research has demonstrated that over 17% of individuals with disabilities, less than 65 years old, do not have any type of insurance despite the fact that they have significantly greater health care needs and expenses than individuals without disabilities. Rich, Erb and Rich (2003) indicated that out of all people who are enrolled in public assistance programs about 50% consist of individuals with disabilities. However, approximately 75% of people with disabilities between ages 22 and 64 do not benefit from any kind of public assistance. Indeed, many individuals with disabilities may be working and having insurance through their employers or other types of private insurance. However, many people could benefit from services but they are not enrolled in
programs because of difficulties relative to qualifying for assistance (Rich, Erb & Rich, 2003). These issues continue to be problematic for people with disabilities and affect their quality of lives. It may be assumed that such issues may simultaneously influence adjustment to disability as well.

A study conducted by Drainoni, Lee-Hood, Tobias, Bachman, Andrew, and Maisels (2006) examined barriers to healthcare access, including problems with communication, transportation, insurance, and physical accessibility. This was a cross-disability research that employed 87 individuals with various disabilities and age groups who were assigned to 8 focus groups. Although participants of this study were able to receive needed medical services, they reported a number of structural, financial, and personal or cultural barriers, delays and challenges associated with access to health care services. Structural barriers were related to health plan and insurance policies and procedures, transportation, the physical environment, communication with professionals, time involved in approving and providing services, and care coordination. The authors found that individuals with disabilities were often confused about their eligibility for a Medicaid service delivery system and “spending down” issues. In addition, participants felt that insurance companies do not have sufficient knowledge about disability and appropriate services. People with disabilities were discouraged by very lengthy insurance authorization procedures that tended to significantly delay the provision of services. Transportation problems were also reported as one of the major obstacles to access health care. Results suggest that the physical environment may cause noticeable barriers. Especially, difficulties obtaining various adaptive devices or inaccessible equipment were noted by participants of this study to interfere with health care services. Further, subjects
reported difficulties relative to communication with service providers, including a lack of appropriate assistive devices and communication style. For individuals with disabilities, physical access is equally important as intellectual access to information. Participants revealed that service providers used communication styles that were incomprehensible and prevented them from understanding their health status or treatment directions. Poor coordination of services among health care providers that significantly delayed services was also noted.

A lack or inadequate insurance coverage may lead to financial distress not only for individuals with disability but also for their families. Frequently reported financial barriers involved paying for services, medications, equipment, repairs, and supplies. Participants reported that a lack of coverage for medications or high co-payments posed significant obstacles to comply with doctors’ recommendations (Drainoni, Lee-Hood, Tobias, Bachman, Andrew, & Maisels, 2006). Moreover, this study showed that a lack of coverage or limited coverage and high fees for dental services led to worsening of individuals’ dental conditions. Finally, people with disabilities reported experiencing significant problems with paying for their medical equipment, supplies, and repairs of equipment that further perpetuated difficulties. Financial constrains led to avoidance of necessary services, worsening conditions or development of secondary conditions, and poorer treatment outcomes.

Finally, personal and cultural barriers played significant roles in health care access. Participants believed that health care providers had insufficient knowledge about disability issues and demonstrated misconceptions about individuals with disabilities. In
addition, focused groups revealed that some of health care providers were insensitive, disrespectful, and reluctant or unwilling to provide quality care to certain individuals.

Kennedy and Erb (2002) surveyed 25805 individuals with disabilities in order to determine medication noncompliance due to cost. Findings suggested that income and insurance status are predictive of noncompliance because of cost. The authors found that approximately 1.3 million individuals with disabilities did not take their medication as recommended by their physicians because of high costs of filling or refilling their prescriptions. This leads to worsening of health conditions and development of additional or secondary health problems because of noncompliance with medical regiments. In addition, costs of medications posed a significant dilemma and challenges for economic security of families who have members with disabilities or chronic illnesses.

Technology

The Technology-Related Assistance for Individuals with Disabilities Act of 1988 (Public Law 100-407) defines assistive technology as “any item, piece of equipment, or product system, whether acquired commercially off-the-shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of an individual with a disability” (Scherer, 2002, p.185). Advances in technology holds the potential for individuals with disabilities to compensate for their disabilities, increase their participation in society and gain access to commercial services and information. According to the Center for Disease Control and Prevention (2002), approximately 17 million individuals with disabilities use some type of assistive devices to enhance their functioning and participation in society. The technology of computers and Internet services greatly enhanced the opportunity of people with disabilities to communicate with
others, shop, learn, and access information. In addition, with the help of assistive technology, many individuals with disabilities are able to engage in home-based employment (Jaeger & Bowman, 2005; Pell, Gillies, & Carss, 1997; Scherer, 2000). Technology not only enables individuals with disabilities to physically access various settings but also fosters intellectual access to information. However, despite the availability of technology, the issue with its accessibility arises because not all people have sufficient means to obtain these assistive devices. It has been well documented that people with disabilities have much lower incomes than the general population (Jaeger & Bowman, 2005). Therefore, many products are beyond the reach of many individuals with disabilities. The National Institute on Disability and Rehabilitation Research revealed that persons with disabilities are only half as likely to possess computer and Internet access as other individuals. In addition, despite the Technology-Related Assistance for Individuals with Disabilities Act, known as Tech Act, many products and technologies continue to be inaccessible to individuals with disabilities, including websites.

Despite the benefits of assistive technology and its influence on participation in society and completion of daily tasks, results of research have not always been consistent. In a sample of 82 people with physical disabilities in Australia, Pell, Gillies and Carss (1997) examined the impact of computer and assistive devices use on the employment status and vocational modes. Three-quarters of participants of this study used a computer in their work settings and 15 used assistive devices. Despite the common perception, results suggested that the use of assistive devices was not a significant predictor of vocational mode. However, the authors reported that assistive technology holds the
potential to significantly increase employability of individuals with disabilities. Half of the participants, who used assistive devices, concluded that they could not engage in employment without the use of these products. In addition, findings suggest that computer training and computer skills were significant indicators of employment status among participants. However, the use of assistive software was not a significant predictor of employment status in this study. This study employed a small sample and focused only on individuals with physical disabilities. Therefore, caution needs to be exercised when making generalizations.

Winn (2006) examined the relationship between wearing hearing aids and employment status among 60 congenitally deaf individuals. The author found that there was no statistically significant relationship between wearing hearing aids and employment status. In addition, this study revealed that only one-third of participants wore their hearing aids in social situations, only one-third of the people with deafness wore their hearing aids at work, and less than half used hearing aids at home. Further, in this study, younger individuals reported wearing their hearing aids at home as compared to older individuals with deafness. Participants in this study believed that their deafness limited their employment opportunity (86%) and promotion opportunity in employment (76%). According to this sample, communication, employers’ attitudes and telephone difficulties significantly interfered with their employment.

A variety of studies have indicated that technology has a positive impact on quality of life of people with disabilities and enhances their participation in society. A study conducted by Levasseur, Desrosiers, and Noreau (2004) revealed that assistive technology positively influenced quality of life of older adults. Similar results supporting
the usefulness and benefits stemming from the use of assistive technology were reported in studies described above (Badley, Rothman, & Wang, 1998; Fougeyrollas, 1993; Mann et al., 2007; Richards et al., 1999; Rochette, Desrosiers, & Noreau, 2001; Shumway-Cook et. al., 2002; Shumway-Cook et al., 2003; Whiteneck, Gerbart, & Cusick, 2004). Given the fact that technology has been linked to quality of life and participation in society, it can be assume that technology can influence adjustment to disability.

**Attitudes**

Attitudes toward people with disabilities can significantly influence the adjustment to disability process, successful inclusion and integration of people with disabilities in communities, unemployment, and quality of life (Berry & Meyer, 1995; Brostrand, 2006; Livneh & Antonak, 1997; Tak-fai Lau & Cheung, 1999; Weisel & Florian, 1990; Wright, 1983; Yazbeck, McVilly, & Parmenter, 2004; Yuker, 1988). The literature indicates that attitudes toward people with disabilities are generally negative and lead to prejudice and stigma of people with disabilities (Berry & Meyer, 1995; Fine & Asch, 1988; Grand, Bernier & Strohmer, 1982; Menec & Perry, 1995; Shakespeare & Watson, 1997; Siller, 1976; Yuker, 1988). Researchers have long been aware that negative attitudes have a profound and undesirable impact on the lives of people with disabilities. Negative attitudes create real barriers for people with disabilities in accessing services, fulfilling their roles, and pursuing and realizing their goals (Antonak & Livneh, 2000; Yuker, 1988). Some researchers noted that attitudes toward people with disabilities create greater handicap than the disabling condition itself (Berry & Meyer, 1995; Furnham & Pendred, 1983; Malcolm, 1997; Shakespeare & Watson, 1997; Write, 1983).
Because negative attitudes create so many barriers in the lives of people with disabilities and lead to their exclusion from the community, attitudes are likely to be negatively correlated with the adjustment to disability process.

Attitudes are defined as latent or inferred psychosocial processes that are elicited by distinctive referents (Antonak & Livneh, 2000). Further, Tregastis (2000) concluded that attitudes are acquired through experience and are socially constructed. They also may be viewed as a learned disposition or subjective biasing system that constitutes a framework for understanding experiences and guiding behaviors (Yazbeck, McVilly & Parmenter, 2004). Moreover, attitudes are composed of affective, behavioral and cognitive components (Berry & Meyer, 1995). Yuker (1988) argued that attitudes involve either positive or negative reactions toward a certain object that are based on unique beliefs and force people to act in certain ways. Further, attitudes are multidimensional and are influenced by many factors (Furnham & Pendred, 1983; Siller & Thomas, 1995).

Unfortunately, negative and nonaccepting attitudes toward people with disabilities are commonly reported in the literature (Fine & Asch, 1988; Shakespeare & Watson, 1997; Siller, 1976; Thomas, 1999; Wright, 1983; Yuker, 1988). Such attitudes guide political, medical, and social actions relative to people with disabilities. In the aftermath of these actions, influenced by negative attitudes, people with disabilities are prevented from exercising equal access to a wide range of services, including health care, education and employment. Barriers to access educational, employment or health services prevent people with disabilities from participating and contributing to the life of society.

In addition, Altman (1981) noted that attitudes toward people with disabilities are considered central in fostering adjustment, dependence on others, self-esteem and self
confidence. Non-disabled individuals may provide support and acceptance of people with disabilities, fostering the adjustment of the person with disabilities. Further, professionals who offer and provide services to people with disabilities may also control these services and, in turn, facilitate dependence. Finally, interactions with non-disabled individuals have a profound impact on the self-confidence and self-esteem of the person with disabilities. Despite the fact that negative attitudes have been considered as barriers to the full participation of people with disabilities in society, research on the influence of attitudes on adjustment to disability is actually quite limited.

Furthermore, the literature indicates that there are multiple sources of negative attitudes toward people with disabilities (Livneh, 1982; Livneh & Cook, 2005; Siller & Thomas, 1982; Wright, 1980; Yuker, 1988). Livneh (1982) and Livneh and Cook (2005) reviewed the literature in the field and identified numerous sources of negative attitudes toward people with disabilities. Findings have shown that sociocultural factors may contribute to the formation of negative attitudes toward people with disabilities. Social and cultural norms, standards, customs or expectations often set the stage for negative attitudes toward people with disabilities. Further, psychodynamic factors may cause the formation of negative attitudes toward people with disabilities. Among these factors are the “halo effect” or “spread phenomenon” pointed out by Wright (1983), guilt by association, attributions of responsibility, attitudinal and perceptual ambivalence, disability as a punishment for sin, and just or unjust world hypothesis (Livneh and Cook 2005).

Another source of negative attitudes pertains to personal fears, anxieties, or threats to one’s body and life. In addition, some socially unacceptable behaviors of
people with disabilities may elicit negative attitudes. Among these behaviors are overdependence on others, seeking secondary gains, withdrawing from social situations, passivity, and feeling insecure (Livneh & Cook, 2005).

Research has pointed out the importance of factors associated with disability itself in the attitudes formation process, including level of severity, degree of visibility, level of severity and cosmetic issues. A variety of studies have indicated that nondisabled individuals respond differently to particular disabilities and not all conditions are viewed equally (Altman, 1981; Antonak, 1980; Furnham & Pendred, 1983; Siller & Thomas, 1995). Results suggest that physical and organic disabilities, including diabetes, asthma or arthritis, elicit more sympathetic attitudes and are more socially acknowledged (Furnham & Pendred, 1983; Livneh & Cook, 2005). There is strong support in the literature that psychiatric and behavioral conditions, including substance addiction and mental illness tend to trigger stronger responses and less favorable attitudes (Furnham & Pendred, 1983; Livneh & Cook, 2005). Furnham and Pendred (1983) conducted a study investigating attitudes toward people with physical and mental disabilities. Results of this research suggest that there is a difference between individuals’ attitudes toward people with physical and mental conditions. Subjects in this study, 48 female and 48 male, showed indeed more favorable attitudes toward people with physical disabilities than toward individuals with mental illness. Further, this study also revealed that the visibility of a disability did not influence attitudes toward individuals with disabilities. In contrast, research conducted by Altman (1981) and Antonak (1980) suggested that the visibility of a disability negatively correlates with attitudes toward people with disabilities.
Subsequently, some demographic variables have been linked to negative attitudes toward people with disabilities (Furnham & Pendred, 1983; Livneh, 1982; Livneh & Cook, 2005; Siller & Chipman, 1964). A variety of studies have provided evidence of a relationship between gender and attitudes. In effect, findings have shown that women tend to exhibit more favorable and positive attitudes toward people with disabilities than men (Livneh & Cook, 2005; Siller & Chipman, 1964). However, Thomas and Thomas (1985), Yazbeck, McVilly and Parmenter (2004), and Furnham and Pendred (1983) conducted studies and found that the sex of respondents did not influence attitudes toward people with disabilities. Further, Weisel and Florian (1990) investigated the gender of people who express attitudes and the sex of individuals with disabilities. This study employed 286 high school students, including 147 boys and 139 girls. Results suggest that attitudes toward females with disabilities were less favorable or positive than attitudes toward males with disabilities. Additionally, these unfavorable attitudes were demonstrated mostly by boys than by girls.

Similarly, age has been found to influence attitudes toward people with disabilities. The literature suggests that younger people demonstrate more positive and accepting attitudes toward people with disabilities (Livneh, 1982; Schwartz & Armony-Sivan, 2001; Sinson, 1993; Tak-fai Lau & Cheung, 1999; Yazbeck, McVilly & Parmenter, 2004). However, Yuker (1994) concluded that age is not an important factor influencing attitudes toward individuals with disabilities.

In a similar vein, studies found that educational and socioeconomic levels are related to attitudes toward people with disabilities. Studies revealed that higher educational level is positively correlated with favorable and accepting attitudes toward
people with disabilities (Livneh, 1982; Livneh & Cook, 2005; Swartz & Arony-Sivan, 2001; Yazbeck, McVilly & Parmenter, 2004). Brostrand (2006) speculated that training may address and clarify some existing myths and misconceptions about people with disabilities. Similarly, higher socioeconomic level, which is generally associated with higher educational level, appears to be positively correlated with more favorable attitudes toward people with disabilities (Livneh, 1982; Livneh & Cook, 2005). Yazbeck, McVilly and Parmenter (2004) investigated attitudes toward people with intellectual disabilities in Australia. This study employed 1100 individuals, including disability services professionals, students, and the general population in Australia. The authors found that more positive attitudes toward people with intellectual disabilities were expressed by younger individuals and those with higher educational attainment. Similar conclusions was reached by Yuker (1994), Tak-fai Lau and Cheung (1999) and Antonak, Mulick, Kobe, and Fiedler (1995). In line with these findings, people with some knowledge about individuals with intellectual disabilities showed more favorable and accepting attitudes and were more likely to support the idea of empowerment, integration and community inclusion of people with disabilities.

In addition, an assumption exists that some personality factors have been associated with attitudes toward people with disabilities. Studies indicated that such factors as ethnocentrism, dogmatism, authoritarianism, aggressiveness, hostility and anxiety tend to elicit negative attitudes toward people with disabilities (Livneh, 1982; Livneh & Cook, 2005; Yuker, 1994). In contrast, variables that are associated with favorable attitudes include positive self-concept, ego strength and ability to tolerate ambiguity and unstructured situations (Livneh & Cook, 2005). Garske and Thomas
(1990) surveyed 80 students in rehabilitation counseling programs and found that self-esteem was positively correlated with attitudes toward people with disabilities.

Moreover, the degree of contact with people with disabilities has been shown to be associated with attitudes toward people with disabilities. Generally, research suggests that closer contacts with people with disabilities generate more accepting and favorable attitudes (Antonak, Fiedler, & Mulick, 1993; Yazbeck, McVilly, & Parmenter, 2004). However, Furnham and Pended (1983) and Garske and Thomas (1990) reported that contact with people with disabilities failed to demonstrate significant differences in attitudes toward people with disabilities.

Furthermore, research has pointed out that responsibility for the disability plays an important role in assessing attitudes toward a disability. Typically, people with some physical and sensory disabilities are viewed as not responsible for their conditions, whereas individuals with mental and behavioral are frequently considered responsible for their condition. Therefore, being responsible for a disability sets the stage for judgments, anger and ignorance (Livneh & Cook, 2005).

The review of the literature found that attitudes may be viewed as a function of disability and context or certain situation in which the assessment takes place (Berry & Meyer, 1995; Grand, Bernier, & Strohmer, 1982). In effect, attitudes toward people with disabilities are affected by the particular disability type and the context (Livneh & Cook, 2005). For example, Grand, Bernier and Strohmer (1982) pointed out that despite a disability type, individuals with disabilities tend to be more accepted within employment settings than within personal relationships such as marriage or dating. In line with this finding, context or situation plays an important role in the attitudes formation process.
Attitudes are likely to be exhibited differently, depending on the situation or context which gives bases for their formation (Grand, Bernier, & Strohmer, 1982; Livneh & Cook, 2005).

The literature holds that attitudes toward people with disabilities are generally nonaccepting, devaluing and negative. Negative attitudes tend to elicit behaviors and responses that exclude people with disabilities from benefiting from various services. In effect, such attitudes negatively influence inclusion and participation of people with disabilities in society, and overall, their quality of life (Livneh, 1982; Oliver, 1983; Wright, 1983). In addition, researchers pointed out that non-disabled people frequently experience discomfort and uneasiness when interacting with people with disabilities (Gething, 1992; Goffman, 1963; Susman, 1993). This discomfort may set the stage for negative reactions toward people with disabilities (Goffman, 1963). However, Simpson (1980) suggested that discomfort reflects anxiety that is experienced by individuals who do not know how to act or what to expect from people with disabilities. Consequently, when interacting with individuals with disabilities, people are self-conscious and try to control their behaviors so that they act in a socially acceptable manner. In doing so, they engage in rigid or fixed behavior patterns, have difficulty concentrating on conversation, and overall, maintaining quality discussions (Goffman, 1963). In effect, they tend to terminate conversations or try to avoid encounters with people with disabilities (Susman, 1993). Similarly, people with disabilities are not sure how they will be received or perceived by non-disable individuals in social situations (Gething, 1992). Research suggests that people with disabilities sense this uneasiness, non-accepting attitudes and awkward behaviors and become anxious as well (Gething, 1992). Therefore, they also
may avoid encounters with non-disable individuals or cut short conversations. Consequently, both people with and without disabilities miss the opportunity to interact and exchange information that can alleviate negative attitudes (Gething, 1992).

Most notably, unfavorable attitudes may elicit behaviors that can create environmental barriers for individuals with disabilities (Jaeger & Browman, 2005; Oliver, 1990; Thomas, 1999). Attitudinal barriers may exclude people with disabilities from community participation as well as limit their participation in the world of work. Therefore, the impact of negative attitudes toward people with disabilities cannot be overlooked in the adjustment process.

**Social Support**

Social support is universally included as predictor of adjustment to disability. The evidence suggests that social support plays an important role in the adjustment process (Berkman, 1995; Cohen & Wills, 1985; Helgeson & Cohen, 1996; Kaplan, 1990; Shontz, 1975; Thoits, 1985; Wright, 1983). In addition, social support is crucial to the well-being and success of any person and individuals with disabilities are no exception. Research has demonstrated that individuals who have friends, significant others, and family who may provide both psychological and material support tend to be in much better health than those with fewer or no support systems (Cohen & Wills, 1985). There is evidence that the absence of social support contributes to poor physical and psychological health, anxiety, depression (Peirce, Frone, Russel, Cooper, & Mudar, 2000), chronic pain (Feldman, Downey, & Schaffer-Neitz, 1999), and may predict higher mortality and morbidity (Berkman, 1995; Cohen, 2004; Sacco & Yanover, 2006). However, researchers continue to investigate what mechanisms link social support to psychological and physical health.
outcomes. Cohen and Wills (1985) suggested that negative psychological experiences may directly affect physical health by influencing physiological processes that increase susceptibility to conditions and illnesses or pose an indirect threat by eliciting behaviors that increase the risk for developing certain conditions. Further, Cohen (2004) concluded that social support may positively impact physical health through buffering consequences of stress on self-esteem and mood. Although the relationship between social support and well-being has been well documented, inconsistencies are reported in the association between support and well-being (Hoth, Christensen, Ehlers, Raichle, & Lawton; Penninx, van Tilburg, Boeke, Deeg, Kriegsman, & van Eijk, 1998; Seeman, 2000). For example, Seeman (2000) suggested that, depending on the context, social relationships may either promote or damage health. Similarly, social support may either facilitate independence or foster dependency.

Because the social environment is one of the most important domains in the study of adjustment, researchers have attempted to define, investigate, and understand the social support concept. Williams, Turner, Hatzakis, Chu, Rodriguez, Bowen and Haselkorn (2004) suggested that social support is “a complex and multifaceted phenomenon. At its most simplistic level, social support refers to interpersonal transactions that include some combination of aid or instrumental assistance, affirmation, and affection” (2004, p. 107). Cobb (1976) viewed social support as individuals’ beliefs that they are loved, esteemed, valued, and belong to a social network.

The literature revealed that there are three types of support including: emotional, informational, and instrumental support (Cohen & Wills, 1985; Helgeson & Cohen, 1996; Thoits, 1985). Emotional support is characterized by caring, concern, empathizing,
reassuring, valuing, empowering, and comforting. It influences self-esteem, validates, and may decrease feelings of inadequacy. In addition, emotional support facilitates the expression of feelings, improves relationships, and may reduce symptoms of distress, anxiety, and depression (Cohen & Wills, 1985; Helgeson & Cohen, 1996). Further, the main aim of informational support is to provide information and advise so that people may be better able to understand, cope, and manage their disabilities. In addition, informational support may enhance individuals’ optimism and outlook for the future as well as decrease the sense of confusion stemming from uncertainty about the future and difficulty sorting information through (Cohen & Wills, 1985; Helgeson & Cohen, 1996). Finally, instrumental support is characterized by providing material goods such as money, transportation, and other services, or helping people to complete their household chores or shopping (Cohen & Wills, 1985; Helgeson & Cohen, 1996). Research has demonstrated that emotional support tends to be the most powerful factor in promoting health and adjustment to disability (Cohen & Willa, 1985; Helgeson & Cohen, 1996). In line with these findings, researchers distinguish and investigate perceived or available support and received support. Numerous studies have found that perceived support tends to be more strongly associated with adjustment to disability than received support (Cohen & Hoberman, 1983; Cohen & Wills, 1985; Kaplan, 1990). A subjective sense of having low levels of perceived support is associated with higher levels of distress (Kaplan, 1990, 1991).

The onset of a disability may lead to unexpected and undesirable changes in peoples’ social status. These changes may have negative impact on adjustment to disability and on rehabilitation outcomes. However, the rehabilitation counseling practice
tends to target more individual clients, overlooking the social environment. Insufficient attention given to the social environment may lead to poor adjustment and noncompliance with rehabilitation recommendations.

In a sample of 36 adults who sustained brain injuries, Kaplan (1990) investigated the relationships among perceived social support, emotional distress, and vocational outcome. Results suggest that individuals’ perceptions of their available social support were associated with the level of emotional distress. Subjects who more negatively evaluated their available social support showed lower levels of emotional stability and self-discipline, insecurity and tension. In addition, individuals who reported stronger social support were more likely to demonstrate positive vocational outcomes.

Similarly, Belgrave (1991) studied adjustment to disability among 170 adult African Americans with disabilities. Subjects were randomly selected from private and public rehabilitation agencies in Atlanta, Detroit, New York, and Washington, D.C. There were 22 disability types identified in this study. The author used a stepwise multiple regression analysis to identify variables predicting adjustment and to determine the total amount of variance accounted for by variables. The results showed that social support was a statistically significant predictor of adjustment to disability (p < .001) and accounted for 50% of the variance in predicting adjustment to disability.

Similar conclusions were reached by Schulz and Decker (1985) who examine long-term adjustment to physical disability among one hundred middle-aged and elderly individuals with spinal cord injury. While controlling for health and income, the authors found that social support variables were predictive of adjustment to disability. In this study, individuals who had high levels of social support, who were satisfied with their
social interactions and who felt that had high levels of perceived control, reported high levels of well-being. It is worth noting that spouses and children were the most important sources of support identified by participants of this study.

Holosko and Huege (1989) investigated the social supports and adjustments to disability in twenty individuals who sustained head injury. Results of this study suggest that social support is an important variable predictive of adjustment to disability after head injury. In addition, subjects revealed positive feelings relative to the supports received from their families and friends. However, the findings showed that respondents were less enthusiastic and positive about supports that they received from their peers. Interestingly, the findings of this study showed that age and age at the onset of the disability were highly correlated with received social support. Generally, individuals who were younger received more social support, including supports from families. Finally, in this study, social support was significantly correlated with life satisfaction, meaning that persons who received more social support reported greater life satisfaction.

In a study of 53 women with type 2 diabetes, Whittemore, Melkus and Grey (2004) investigated factors associated with metabolic control, self-management, and psychosocial adjustment. In this study, psychosocial adjustment was measured as diabetes-related distress. The authors found that support along with confidence in living with diabetes was the most consistent predictor of disability-related distress or adjustment, metabolic control, and dietary self-management in each multivariate analysis. Women, who showed less diabetes-related distress, meaning that they were better adjusted to their condition, were older in age, had overall better mental and physical health, and received more support from their families and friends.
Furthermore, Primomo, Yates, and Woods (1990) investigated multiple aspects of social support in relation to psychosocial adjustment in a sample of 125 chronically ill women. The participants of this study were surveyed concerning their perceptions about who in their network provides what type of support. For the purpose of this study, the authors examined four sources of support: partner, family, friends, and others (health care professionals, counselors, and others). The authors investigated such types of support as affect, affirmation, aid, illness confidant, and reciprocity. Results suggest that there were statistically significant differences in the amount of received support from the above four sources. Participants in this study believed that they received the most support from their partners. Subsequently, the findings suggest that families provided noticeably more affective support than friends. On the other hand, friends provided more affirmation than families and more affective support than other sources. Interestingly, the authors found that women confided about their illness more to health care providers or counselors than to their families or friends. Overall, types of support, including affect, affirmation, and reciprocity from partners and families were related to less depression, higher marital quality, and better family functioning. This inclination was true across all of the adjustment variables, meaning that the above types of support were related to adjustment to chronic illness. However, this study did not find a significant relationship between support from friends and adjustment to disability.

Thoits (1985, 1995) suggested that individuals who successfully faced and dealt with similar stressful situations are the most effective support providers because their experiences allow them to provide support that best matches practical and emotional needs of people who deal with stressful situations. In a sample of 62 individuals with
spinal cord injury, Sherman, DeVinney, and Sperling (2004) investigated the influence of two sources of support, past peer-mentoring and current live-in partner on adjustment to disability. A peer mentor was a person who underwent the same injury and challenges as a support recipient. Results of this study suggest that having a peer mentor was associated with higher occupational activities and life satisfactions. On the other hand, having a partner was related to better mobility and economic self-sufficiency. In effect this led to more positive adjustment to disability.

Furthermore, White, Richter, and Fry (1992) investigated the impact of social support and coping on adjustment to disability. This study employed 193 adult Caucasian women diagnosed with diabetes mellitus. The majority of participants had insulin-dependent diabetes and education beyond high school. The authors found that perceived social support, along with stressful life events, health status, and palliative coping had a direct impact on psychosocial adjustment. Essentially, better health status and more perceived social support were related to better adjustment. In contrast, stressful life events, poor health status, and palliative coping facilitated less successful adjustment. Moreover, the evidence suggests that perceived social support tended to decrease with poorer health in this sample. The authors concluded that poorer health status may be a barrier to develop and maintain social relationships among chronically ill individuals. Consequently, this may led to social isolation that is often observed among people with chronic illnesses. On the other hand, poor health status may stem from the lack of social resources (White, Richter, & Fry, 1992).

In a sample of 1,269, Wethington and Kessler (1986) examined the relationship between perceived and received support and adjustment to disability. Perceived social
support involves a subjective assessment of whether support will be available if necessary. Results suggest that the stress-buffering influence of social support is more strongly associated with individuals’ perceptions that support may be available if needed than with received support. Therefore, perceive support influences more effectively positive adjustment to disability.

Research has demonstrated that social support continues to be an important factor influencing adjustment not only of individuals with disabilities but also of their families’ adjustment to conditions. Northouse (1988) surveyed 50 mastectomy patients and their husbands at 3 days and 30 days after surgery. The author found that social support was associated with both patients’ and their husbands’ level of psychosocial adjustment. Breast cancer patients and their husbands reported less adjustment problems when they received some social support. Results of this study suggest that there was no significant relationship between the size of the participants’ network and their scores on the adjustment to disability measure.

Summary

Although a number of studies have demonstrated that environmental factors either hinder or facilitate a person with a disability’s participation in society and life satisfaction, they rarely provide substantial evidence showing how the environment affects the adjustment to disability process. To address this issue, measures of the environment have to be correlated with measures of adjustment to disability. Currently, there has been a lack of such studies that address the influence of environmental factors on adjustment outcomes.
CHAPTER THREE
Methodology and Research Design

This study was designed to determine and explore the relationship between environmental factors and adjustment to disability of adult individuals with various disabilities. This chapter describes the methods implemented to conduct this study and the rationales for the chosen methods. Further, the sample selection and the participants of this research are described to provide descriptive information about the procedures used to identify participants and the way to approach them. The research procedures and design are explained followed by a description of the instruments, including their validity and reliability, and a discussion of the data collection and the data analysis procedures.

Identification of the Population

The sample was drawn from a population of individuals who were determined eligible for vocational rehabilitation services by the public vocational rehabilitation agency in Ohio, the Ohio Rehabilitation Services Commission (ORSC), and were actively participating in the program. Accommodations were made by the researcher, when requested, for those individuals who could not physically fill out the questionnaire. Individuals with disabilities could obtain research instruments in an alternative format (e.g. Braille or large print) on request. However, rehabilitation clients who could not complete the instrument when provided with reasonable accommodations were excluded from this study.

ORSC is a state agency that provides services to Ohioans with disabilities under federal guidelines and with matching federal funds. In addition, services provided to
people with disabilities by the state vocational rehabilitation agency are often contracted and purchased from other community agencies.

In order to be eligible for public vocational rehabilitation services an individual has to have a physical or mental impairment that constitutes a significant impediment to employment. Further, the individual can benefit from vocational rehabilitation services in terms of an employment outcome. Finally, the individual requires VR services to prepare for, enter, or regain gainful employment (Rehabilitation Services Commission, 2006).

Moreover, Ohio Rehabilitation Services Commission operates under the order of selection, meaning that individuals receiving services are severely disabled or most severely disabled. According to the ORSC guidelines, an individual who has a severe disability is someone for whom physical or mental disability limits one or more functional capacities such as self-care, communication, mobility, self-direction, interpersonal skills, work tolerance, and work skills. In addition, a person who is considered severely disabled is expected to need multiple vocational rehabilitation services over an extended period of time. Similarly, a person’s one or more disabilities cause substantial functional limitation that results from any condition, including amputation, arthritis, autism, blindness, burn injury, cancer, cerebral palsy, cystic fibrosis, deafness, head injury, heart disease, hemiplegia, respiratory or pulmonary dysfunction, mental retardation, mental illness, multiple sclerosis, muscular dystrophy, musculoskeletal disorder, neurological disorders, paraplegia, quadriplegia, other spinal conditions, sickle cell anemia, specific learning disability, or end-stage renal disease.

A person who is considered most severely disabled is a person with a disability who meets the definition of a person with severe disability as described above but
additionally, a person’s disability substantially limits two or more functional capacities instead of one or more (Ohio Rehabilitation Services Commission, 2006).

Sampling Plan

This research was a cross-sectional study. This design assumed a medium effect size ($R^2 = .14$) for a power of .80 and a Type I error rate of .05 (Stevens, 1996). The number of subjects necessary for this study to conduct a statistically significant or valid analysis was $N = 84$ (Sample Power 2 from SPSS, 2000). However, to ensure an adequate response sample, this study included supplemental participants who were employed through a direct personal contact with their counselors or researcher. These additional cases accounted for missing or incomplete data. A convenient sample of 300 individuals was used in this study. The sample in this study was based on an active status of a person with ORSC based on information provided by ORSC. All individuals who agreed to participate in this study and returned the questionnaires in the mail or in person were included for the statistical analysis.

In order to request a list of active members at ORSC, the researcher contacted the Quality Management Unit at ORSC, an office which considers such requests. Following the receipt of the list of active ORSC members, the researcher identified and contacted ten rehabilitation counselors working in the Athens, Portsmouth, and Columbus ORSC office and requested their assistance with collecting data. No specific inclusion/exclusion criteria were used except for distance when selecting ORSC offices.

One drawback to mailed questionnaires is their low response rate (Dillman, 2000; Streiner & Norman, 1994). Therefore, the researcher asked counselors to solicit participants through personal contacts. The researcher requested master lists of
counselors who agreed to assist with collecting data from ORSC offices. Each counselor was asked to identify 30 individuals with disabilities who agree to participation in this study. Rehabilitation counselors marked names of individuals who agreed to participate in this study on their master lists and returned them to the researcher so that a master list of codes and contact information could be made.

The sample was drawn from a population of individuals who were made eligible for vocational rehabilitation services by the ORSC. In order to be eligible for ORSC services an individual has to have a physical or mental impairment that constitutes a significant impediment to employment. Further, the individual can benefit from vocational rehabilitation services in terms of an employment outcome. Finally, the individual requires services to prepare for, enter, or regain gainful employment (Rehabilitation Services Commission, 2006).

Counselors who agreed to assist with collecting data were given a brief description of this study and were asked to distribute survey packages to their clients who agree to complete the instruments. To assure an adequate response sample, this study included supplemental participants who were recruited by direct personal contact with rehabilitation counselors. The sample used for statistical analysis included all participants who returned the questionnaire. It appears difficult to control the actual sample size of those willing to complete the instruments, but efforts were made to ensure that the sample size exceeded the minimum sample size requirements for a valid statistical analysis.
Instrumentation

This study used three instruments: a demographic questionnaire, the Measure of the Quality of the Environment (Fougeyrollas, Noreau, & Boschen, 1999), and the Acceptances of Disability Scale-Revised (Groomes & Linkowski, 2004, Appendix F).

The Acceptance of Disability Scale-Revised

The Acceptance of Disability Scale-Revised (AD-R) was used to assess the level of adjustment to disability among individuals with disabilities enrolled in the VR program. The AD-R instrument is a 32-item, four point Likert-type, and self-report scale designed to assess acceptance of disability based on the research of Dembo, Leviton, and Wright (1956) that describes the feelings of loss associated with the onset of a disability and how individuals experience this loss and enlarge their scope of values. The AD-R scale was revised by Groomes and Linkowski in 2004 from the Acceptance of Disability scale developed by Linkowski in 1969 (Linkowski, 1971). Because of its novelty, there has been a limited number of studies on the psychometric properties of the AD-R scale (Barton, 2005; Groomes & Linkowski, 2007).

In addition, both the AD scale developed by Linkowski and the revised AD-R scale are theory-driven and involve four components of value change theory, including (a) containment of disability effects, (b) subordination of physique, (c) transformation from comparative to asset values, and (d) enlargement of the scope of value (Linkowski, 1971; Wright, 1983). The original scale consisted of a 50-item, 6-point, and self-report summated rating measure. A single score represented changes in a person’s value system after the onset of a disability and was indicative of acceptance of disability. However, the original instrument received some criticism because of its lack of examination of
psychometric data, including construct validity, factorial structure, and bias influences (Livneh & Antonak, 1997, 2005). The revised AD-R scale appeared to address some psychometric concerns and pilot studies undertaken by Groomes and Linkowski showed strong reliability data.

The AD-R scale measures respondents’ adjustment to disability, resulting in a single summative score of Low Acceptance of Disability (scores 0f 28- 60), Medium Acceptance of Disability (scores of 61-93), and High Acceptance of Disability (scores of 94- 124). The four subscales: Transformation, Enlargement, Containment, and Subordination are summed individually, and subsequently, a single AD-R score is calculated.

A pilot study conducted by Groomes and Linkowski to establish psychometric properties for the new scale employed a total of 356 individuals with various disabilities. Results suggest that the AD-R scale maintains high to moderate internal consistency among all four components. The authors reported the following alpha coefficients for the components of this scale: .88 for Transformation, .82 for Enlargement, .88 for Containment, and .71 for Subordination. In addition, overall reliability for the revised AD-R instrument indicates Cronbach’s alpha= .93 (Personal communication, Groomes, 2007).

Barton (2005) in her dissertation study used the revised AD-R scale to investigate the relationship between adaptation to disability and sexual and body esteem in woman with polio. The author reported internal consistency reliability data for the responses in her study for the four components of the instrument: .86 for Containment, .72 for Subordination, .61 for Transformation, and .71 for Enlargement.
The Measure of the Quality of the Environment (MQE)

The Measure of the Quality of the Environment (MQE), version 2.0 was developed by Fougeyrollas, Noreau, St Michel, and Boschen in 1999. The MQE is a self-administered questionnaire that assesses the influence of multiple environmental factors, including physical and social on individuals’ performance of daily activities, social roles, and overall their participation in society (Boschen, Noreau, & Fougeyrollas, 1998; Levasseur, Desrosiers, & Noreau, 2004). In addition, the MQE was designed as a generic measure that may be used to examine people with different disability types.

This instrument consists of 109 items that are grouped into six categories, including social support and attitudes (14), income, labor and income security (15), government and public services (27), equal opportunities and political orientations (10), physical environment and accessibility (38), and technology (5) (Levasseur, Desrosiers, & Noreau, 2004). The MQE is a 7-point Likert-type scale where each item is scored from (-3) indicating “major obstacle” to (3) meaning “major facilitator.” Respondents are asked a question (“Indicate to what extent the following factors or situations influence your daily activities and social roles, taking into account your abilities and personal limits”) to indicate whether each statement facilitates or poses barriers to their social participation.

In order to determine the presence of facilitators and barriers in the environment and assess the extent of their impact (major, moderate, and minor), two indexes are created (facilitator and obstacle). Facilitators are all factors that enhance and support social participation and completion of daily tasks. Barriers or obstacles are defined as factors that interfere with and hinder the accomplishment of individuals’ activities and
their social participation (Noreau, Fougeyrollas, & Boschen, 2002). When respondents believe that a certain item or factor enhances their performance, they mark this factor as facilitator and indicate their degree of agreement with major, moderate, or minor facilitator, assigning a score of 1 to 3 respectively. On the other hand, when respondents perceive a factor as a barrier, they rate this factor as an obstacle and indicate their degree of agreement with major, moderate, or minor obstacle, assigning scores ranging from (-3) to (-1). The MQE has a neutral score (0) that is marked when a particular factor has no impact on individuals’ participation in society. In addition, when items on the scale do not apply to individuals’ performance, they can be indicated as “nonapplicable.” Finally, in a case when people can not clearly indicate if a factor enhances or hinders their participation, they can mark the option “I do not know.” Both responses “nonapplicable” and “I do not know” are not included in the analysis for an individual (Noreau, Fougeyrollas, & Boschen, 2002).

The Measure of the Quality of the Environment demonstrates moderate to high test-retest reliability, with kappa coefficients ranging between .50 and 1.00 (Boschen, Noreau, & Fougeyrollas, 1998). There are two version of this measure, French and English, and they both were reliability tested by the authors. The study conducted with the French version included 28 participants with cerebral palsy aged 17-25 and the study using the English version employed 30 participants. In both studies, the authors excluded individuals with cognitive and sensory disabilities because the measure is mostly intended for independent living (Boschen, Noreau, & Fougeyrollas, 1998). Data analysis conducted after dropping items that were identified by the participants as not applicable showed that 56% and 85%, respectively, of items demonstrated concordance scores of
60% or higher, suggesting a moderate to high level of reliability coefficients (p< .05) (Boschen, Noreau, & Fougeyrollas, 1998; Noreau, Fougeyrollas, & Boschen, 2002).

Demographic Questionnaire

A demographic questionnaire was used to assess participants’ characteristics including: age, gender, years of education, disability type, and area of residence. Collecting this information allowed the researcher to precisely describe the sample. The demographic questionnaire is a 6-item self-report, paper and pencil instrument. It was designed, based on the literature review, for the purpose of this study to obtain important demographic information about participants. The information obtained from this questionnaire was included in data analysis processes.

Pilot Study Results

Upon receipt of IRB approval, the pilot study was conducted as a small scale study to gather preliminary data prior to conducting the actual study. A convenience sample of 25 individuals with disabilities was asked to participate in the pilot study. All participants met the inclusion criteria for this study as they had all been found eligible for the vocational rehabilitation program. Because individuals had disabilities and were participating in the rehabilitation program, their data could help verify the possibility of developing a prediction equation. The survey took approximately 25 minutes to complete. The researcher received 21 completed surveys for analysis. All of the 21 participants completed the demographics, the Adjustment to Disability, and the Measure of the Quality of the Environment instruments. The average age of the participants was 43 (SD = 11), with a range from 20 to 57. Thirteen participants (56.5%) identified themselves as female and eight were male (34.8%). Of the participants, 11 (52.4%)
indicated that they have physical disabilities, 5 (23.8%) stated that they have psychiatric disabilities, and 5 (23.8%) had both physical and psychiatric conditions. In addition, twenty participants (95.2%) considered themselves living in a rural area and one (4.8%) participant indicated living in urban area. The average number of years of education was 14.67 (SD = 2.28), with a range from 12 to 20.

Since the AD-R and the MQE are relatively new instruments, internal consistency reliability statistics were calculated. Results from this pilot study revealed alpha coefficient for the obstacle index of the MQE to be .75 and for the facilitator index .73. The MQE consisted of 109 items. The pilot study data suggests that this measure demonstrated acceptable internal consistency and would be a reliable measure for this study.

The Adjustment to Disability- Revised scale consists of four subscales: the Containment, Subordination, Transformation, and Enlargement subscale. The Containment subscale consisted of 9 questions and alpha coefficient for this subscale was .76. The Subordination subscale contained 5 questions and alpha coefficient was .71. The transformation subscale consisted of 9 questions and alpha coefficient was .61. Finally, the Enlargement subscale consisted of 9 items and alpha coefficient was .76. Given the small number of participants in the pilot study, results suggest that this measure showed acceptable internal consistency and may be a reliable measure for this study.

Data Collection Procedures

Data collection procedures began by contacting the Ohio Rehabilitation Services Commission for permission to use their clients in this study. This researcher received permission from the ORSC to use RSC clients in this study (Appendix B), and
permission from the Ohio University Institutional Review Board (Appendix A) to conduct this research. Subsequently, the researcher contacted rehabilitation counselors by telephone, e-mail, or in person and requested their cooperation with the study. Rehabilitation counselors have a Master’s or higher degree in counseling and related fields, meaning that they have a basic knowledge about research and can assist in collecting data. After counselors agreed to assist in the collecting data process, they were given a brief overview of the instruments, the nature of the study, confidentiality issues, and were asked to solicit volunteers for the study. In addition, counselors were asked to emphasize that the questionnaire is for the research only, participation is voluntary, and that choosing not to complete the questionnaire will have no negative effect on their treatment or services received. Moreover, counselors explained that participants should not put their names on the instruments. Counselors were asked to ensure their clients that they or any member of the Ohio Rehabilitation Services Commission will never see answers. Counselors were asked to communicate the above information to their consumers, in addition to a written description of the study included in the survey packet. Participants who may have had any questions about the study were encouraged to contact the researcher or her academic advisor for further explanation or clarification.

Counselors were provided with survey packets to distribute them to their consumers during their appointments. Participants (rehabilitation clients) were asked to seal the completed instruments in the provided envelope, addressed to the researcher’s address, and return it to counselors to be delivered or mailed. However, if participants preferred to mail the instruments themselves, they could do so. Finally, counselors were asked to state that if participants have difficulty reading or understanding any parts of the
instruments, or if they physically cannot fill them out, counselors or the researcher will make appropriate accommodations and assist in this process.

In a case when participants were contacted by telephone and agreed to participate in the study, the researcher mailed the survey packet, including the Informed Consent document (Appendix C), the demographic questionnaire, the AD-R scale, and the MQE measure (Appendix F) as well as a return stamped envelope.

A master list of codes and contact information was kept by the researcher. The researcher identified individuals who did not return the questionnaire within the two week timeframe. Subsequently, the researcher contacted rehabilitation counselors and requested them to remind their clients about the survey. This was done by phone, e-mail, or during appointments. Additional survey packages were available for those participants who lost their questionnaires. A master list was kept in a locked file cabinet accessible only to the researcher. It was destroyed after the researcher received sufficient number of surveys. In a case when individuals refused participation or if they failed to return the questionnaires following a follow-up telephone call, they were excluded from the study.

Although it was difficult to control the actual sample size of individuals responding to the survey packet, efforts were made to ensure that the sample size was sufficient to conduct a valid statistical analysis.

The above method was used because of a low response rate associated with mail surveys (Dillman, 2000). It was anticipated that direct or telephone contact will increase the response rate. Laforge, Greene, and Prochaska (1994) conducted a study of diet and change theory. The authors were able to obtain an 83.5% response rate using only a random-digit telephone interview.
Data Analysis Procedures

This study followed a correlational design because the independent variables were measured and not manipulated (Tuckman, 1999). This research examined the relationship between characteristics of the environment and adjustment to disability. The hierarchical multiple regression questions investigated how adjustment to disability can be predicted from environmental factors, taking into consideration a set of demographic variables. The predictors were entered in the hierarchical regression equation in three blocks: a set of demographic variables, facilitator index, and obstacle index. The ordering of the predictors was based on the review of the literature. The dependent variable was adjustment to disability. All predictor variables were continuous, as age and years for education, or categorical, as male and female for gender, physical or psychiatric for disability type, rural or urban for area of residence, and facilitator and obstacle for the MQE.

In order to describe demographic characteristics of the sample and analyze the data, descriptive statistics, including means, standard deviations or frequencies and percentages were used according to the type of variables (continues or categorical) using the Statistical Package for the Social Sciences (SPSS, 2000). General data screening procedures were used in SPSS to ensure that there are no profound outliers or incorrect values in the data. The data was tested for normality using the Kolmogorov-Smirnov test of normality and verified visually with histograms. To explore data further supplemental analysis were conducted, including Pearson-Product correlations and an ANOVA.

The statistical procedure utilized for predicting adjustment to disability and testing the research hypothesis was hierarchical multiple regression. This study used
hierarchical multiple regression because of its ability to develop a prediction equation by adding one variable at a time and checking if it significantly improves the prediction (Aron & Aron, 2002). In hierarchical regression analysis, the researcher decides the order in which each predictor variable is added to the analysis. In practical terms, hierarchical regression shows the correlation with the dependent variable after each predictor variable is added to the analysis. This procedure enabled the researcher to determine the variance accounted for (the R²) by each predictor variable after it will be added to the analysis (Aron & Aron, 2003).

This statistical procedure was used based on the researcher’s review of the literature and previous research findings. The evidence suggests that environmental factors influence participation in society and accomplishment of daily activities (Badley, 1995; Fougeyrollas, 1995; Fougeyrollas & Beauregard, 2003; Gray, Gould, & Bickenbach, 2003; Teel, Dunn, Jackson, & Duncan, 1997). Therefore, it can be assumed that these factors will hinder or facilitate the adjustment to disability process.

In this study, the predictor variables had two levels. Thus, this study had the following predictor variables: Age (years), Gender (male or female), Education (years), Disability type (physical or/and psychiatric), Area of residence (rural or urban), and MQE (facilitator or obstacle). There was one dependent or criterion variable: Acceptance of disability.
Statement of the Problem

This study examined the influence of environmental factors on adjustment to disability.

Null Hypothesis I (H₀): A set of demographic variables including age, gender, years of education, disability type, and area of residence will fail to contribute significantly to an overall prediction equation that will predict the dependent variable of adjustment to disability.

Alternative Hypothesis I (Hₐ): A set of demographic variables including age, gender, years of education, disability type, and area of residence will contribute significantly to an overall prediction equation that will predict the dependant variable of adjustment to disability.

Null Hypothesis II (H₀): Environmental variables combined with the set of demographic variables, including age, gender, years of education, disability type, and area of residence, will fail to yield a statistically significant prediction equation for the dependent variable of adjustment to disability.

Alternative Hypothesis II (Hₐ): Environmental variables combined with the set of demographic variables, including age, gender, years of education, disability type, and area of residence, will yield a statistically significant prediction equation for the dependent variable of adjustment to disability.

Summary

This chapter provided a discussion of the methodology used to investigate the impact of the environmental factors on the adjustment to disability process and a discussion of the pilot study results. The procedures necessary for this research were
outlined including a discussion of the research question/ hypothesis, sample selection, instruments and their psychometric properties, descriptive statistics, hierarchical regression analysis, and supplemental analysis. The following chapter presents an analysis of the procedures including description of the participants, sample characteristics, reliability analysis, and descriptive data. The results of the null hypotheses and supplemental analyses are presented.
CHAPTER FOUR

Results

The purpose of this study was to investigate the relationship between environmental factors and adjustment to disability. This study examined a set of demographic variables including age, gender, years of education, disability type, and area of residence combined with the Measure of the Quality of the Environment to predict adjustment to disability measured by the Adjustment to Disability- Revised scale.

This chapter presents an analysis of the procedure described in chapter three. Further, a description of the participants of this study, reliability analyses, and descriptive data are presented. Inferential statistics were conducted to test the null hypotheses. Results of the null hypotheses and supplemental analyses are presented.

The participants in this study were individuals with disabilities participating in the public vocational rehabilitation program. Each participant completed a demographics questionnaire and two instruments: the Adjustment to Disability- Revised scale and the Measure of the Quality of the Environment.

Survey Results

The inclusion criteria for participation in this study were that the individuals were determined eligible for vocational rehabilitation services offered by the Ohio Rehabilitation Services Commission (ORSC), meaning that they have a physical or mental impairment that constitutes a significant impediment to employment. In addition, volunteers must also have been able and willing to complete surveys, with or without appropriate accommodations, designed to assess the impact of the predictor variables on the dependent variable. The participants in this study were identified by vocational
rehabilitation counselors employed by ORSC. Counselors who agreed to assist in the collecting data process were given a brief overview of the instruments, the nature of this study, and confidentiality issues. The researcher issued 300 surveys to counselors who solicited volunteers. Participants who did not return the survey within a month were contacted and reminded about the study by their rehabilitation counselors. Those participants who did not return the survey following the reminder were excluded from the study. Of the 300 surveys, 114 were returned for an overall rate of 38%. Further, of the 114 returned surveys, five were not included in the analyses due to not properly completing the survey. Responses from a total of 109 participants were included for the statistical analyses in this research study. The number of subjects necessary for this study to conduct a statistically significant or valid analysis was N = 84 (Sample Power 2 from SPSS, 2000).

Description of Participants

Descriptive and frequencies analyses were conducted on the demographic characteristics of the sample. Table 1 presents a summary of the demographic variables: age, gender, years of education, disability type, and area of residence. The age of the participants ranged from 18 years to 63 years of age, with the mean being 43 years of age and (SD = 10). Of the 109 participants, 55 (50.5%) were female and 54 (49.5%) were male.

All 109 participants answered the question concerning their years of education. Education of participants ranged from 7 years of schooling to 20 years of schooling, with the mean being 13 years of education and (SD = 2.2).
Of the 109 participants, 50 (45.9%) reported having physical disabilities, 34 (31.2%) indicated having psychiatric disabilities, and 25 (22.9%) of the participants reported having both physical and psychiatric disabilities.

Finally, of all 109 participants, 36 (33%) reported that they live in the urban area. The majority of the participants 73 (67%) indicated that they live in the rural area.

The AD-R was administered to assess adjustment to disability. Scoring procedures of the AD-R were provided by one of the authors along with permission to use the instrument for the purpose of this study. A single score was calculated to provide information about overall adjustment to disability. Subsequently, three levels of adjustment were identified: High Level of Acceptance (scores of 97-128 points), Medium Level of Acceptance (scores of 65-96 points), and Low Level of Acceptance (scores of 32-64 points) (Barton, 2005; Personal communication, Groomes, 2007). Of the 109 participants, 45 (41.3%) scored in the High Acceptance of Disability range, 60 (55%) individuals fell within the scoring range of Medium Acceptance of Disability, and only 4 participants (3.7) scored in the Low Level of Acceptance to Disability. Scores ranged from 50 to 122 with a mean of 91 and SD = 13.9. Table 2 summarizes means, standard deviations, and range for AD-R instrument and its subscales. Table 3 presents frequencies of levels of acceptance.
Table 1

*Demographic Information of Participants*

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>%</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>109</td>
<td>43.0</td>
<td>10.0</td>
<td></td>
<td>18-63</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>55</td>
<td></td>
<td></td>
<td>50.5</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>54</td>
<td></td>
<td></td>
<td>49.5</td>
<td></td>
</tr>
<tr>
<td>Years of education</td>
<td>109</td>
<td>13.3</td>
<td>2.2</td>
<td></td>
<td>7-20</td>
</tr>
<tr>
<td>Disability type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td>50</td>
<td></td>
<td></td>
<td>45.9</td>
<td></td>
</tr>
<tr>
<td>Psychiatric</td>
<td>34</td>
<td></td>
<td></td>
<td>31.2</td>
<td></td>
</tr>
<tr>
<td>Both</td>
<td>25</td>
<td></td>
<td></td>
<td>22.9</td>
<td></td>
</tr>
<tr>
<td>Area of residence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>36</td>
<td></td>
<td></td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>73</td>
<td></td>
<td></td>
<td>67</td>
<td></td>
</tr>
</tbody>
</table>
Table 2

Descriptive Statistics for the AD-R Instrument and its Four Subscales (N = 109)

<table>
<thead>
<tr>
<th>AD-R</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total AD-R</td>
<td>50</td>
<td>122</td>
<td>91.04</td>
<td>13.96</td>
</tr>
<tr>
<td>Containment</td>
<td>9</td>
<td>36</td>
<td>22.89</td>
<td>5.38</td>
</tr>
<tr>
<td>Subordination</td>
<td>5</td>
<td>20</td>
<td>14.00</td>
<td>2.96</td>
</tr>
<tr>
<td>Transformation</td>
<td>12</td>
<td>35</td>
<td>27.15</td>
<td>4.40</td>
</tr>
<tr>
<td>Enlargement</td>
<td>17</td>
<td>36</td>
<td>26.98</td>
<td>4.17</td>
</tr>
</tbody>
</table>

Table 3

Frequencies of Levels of Acceptance

<table>
<thead>
<tr>
<th>Scale</th>
<th>Reported Levels of Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High level</td>
</tr>
<tr>
<td>AD-R</td>
<td>45 (41.3%)</td>
</tr>
<tr>
<td>Transformation</td>
<td>62 (56.9%)</td>
</tr>
<tr>
<td>Containment</td>
<td>28 (25.7%)</td>
</tr>
<tr>
<td>Enlargement</td>
<td>61 (56.0%)</td>
</tr>
<tr>
<td>Subordination</td>
<td>33 (30.3%)</td>
</tr>
</tbody>
</table>
Instrumentation Characteristics

Since the AD-R and the MQE scales are relatively new instruments, internal consistency statistics were examined. The literature indicates that reliability such as Cronbach’s alpha should be at least .7 in order for a measure to be considered useful (Aron & Aron, 2000).

*The Adjustment to Disability- Revised*

The Adjustment to Disability-Revised (Groomes & Linkowski, 2004) demonstrated adequate reliability. Cronbach’s alpha coefficient was used to measure the internal consistency of each subscale. Alpha coefficient for the Containment subscale was $\alpha = .86$ and the mean was 22.12, (SD = 5.36), alpha coefficient for the Subordination subscale was $\alpha = .70$ and the mean was 11, (SD = 2.95), alpha coefficient for the Transformation subscale was $\alpha = .66$ and the mean was 19.5, (SD = 15.22), and alpha coefficient for the Enlargement subscale was $\alpha = .79$ and the mean was 26.95, (SD = 4.17). The authors reported the following alpha coefficients for the abovementioned subscales: $\alpha = .88$ for the Transformation subscale, $\alpha = .82$ for the Enlargement subscale, $\alpha = .88$ for the Containment subscale, and $\alpha = .71$ for the Subordination subscale. These results suggest that the AD-R scale provided reliable results for this research study.

*The Measure of the Quality of the Environment*

The Measure of the Quality of the Environment (Fougeyrollas, Noreau, & Boschen, 1999) demonstrated adequate reliability. Alpha coefficient for the Facilitator index was $\alpha = .86$ and the mean was 11.77, (SD = 2.98), and the alpha coefficient for the Obstacle index was $\alpha = .75$ and the mean was -11.51, (SD = 2.31). The authors reported
kappa coefficients ranging from .50 to 1.00 (Boschen, Noreau, & Fougeyrollas, 1998). These results suggest that the MQE provided reliable results for this study.

### Table 4

**Internal Consistency of the AD-R and MQE with Means and Standard Deviations**

<table>
<thead>
<tr>
<th>Scale</th>
<th>M</th>
<th>SD</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AD-R (32 items, 4 subscales)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transformation</td>
<td>19.50</td>
<td>15.22</td>
<td>.66</td>
</tr>
<tr>
<td>Containment</td>
<td>22.12</td>
<td>5.36</td>
<td>.86</td>
</tr>
<tr>
<td>Enlargement</td>
<td>26.98</td>
<td>4.17</td>
<td>.79</td>
</tr>
<tr>
<td>Subordination</td>
<td>11.00</td>
<td>2.95</td>
<td>.70</td>
</tr>
<tr>
<td><strong>MQE (109 items, 2 indexes)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilitator Index</td>
<td>11.77</td>
<td>2.98</td>
<td>.86</td>
</tr>
<tr>
<td>Obstacle Index</td>
<td>-11.51</td>
<td>2.31</td>
<td>.75</td>
</tr>
</tbody>
</table>

Statistical Analyses to Test Null Hypothesis

Statistical analyses were conducted using the Statistical Package for Social Science (SPSS) for Windows, version 15.0. Hierarchical regression analysis and descriptive statistics were computed to test for assumptions. Supplemental analyses were conducted to further explore relationships among variables used in this study.
Assumptions Testing for Multiple Regression Analysis

The assumptions that underline the significance test for the multiple correlation coefficient are random sampling from the population, multivariate normally distributed variables, and lack of multicollinearity (Green & Salind, 2003). The assumption related to randomness of the sample was addressed by soliciting a random sample of the population of interest. However, it must be noted that not every person who was solicited to participate in this study completed the survey. Therefore, the final sample consisted of volunteers. The second assumption associated with normally distributed variables in the population was tested by examining the kurtosis scores, Kolmogorov-Smirnov tests, and residual plots. Finally, lack of multicollinearity was addressed by analyzing the correlations between the independent and dependent variables as well as examining the tolerance scores.

The normality assumption was established by examining the dependent and independent variable scores on kurtosis, Kolmogorov-Smirnov test, and residual plots. The kurtosis statistics were analyzed for the following distributions: Facilitator index of the MQE (kurtosis = -.58), obstacle index of the MQE (kurtosis = -.61), containment subscale of the AD-R (kurtosis = .02), transformation subscale of the AD-R (kurtosis = .17), enlargement subscale of the AD-R (kurtosis = .25), and subordination subscale of the AD-R (kurtosis = .11). The above values did not differ too markedly from zero indicating that these variables were normally distributed and no evidence of clustering characteristic of non-normal distribution was observed.

Further, the Kolmogorov-Smirnov test of normality was examined for the independent variable, including its subscales, and no violation of the assumption of
normality was identified (p = or > .05). Consequently, the clustering of residuals for the Adjustment to Disability-Revised scale did not deviate noticeably from the normal distribution. Therefore, the above tests showed that the multiple regression analyses were appropriate for this data set.

Multicollinearity was determined by analyzing the tolerance scores. Collinearity tends to generate large coefficients that are not statistically significant. Collinearity diagnostics examined the tolerance scores of the following independent variables: Facilitator index (.766), obstacle index (.676), age (.903), gender (.842), years of education (.921), disability type (.963), and area of residence (.914). The above values were well above zero and did not seem to violate the assumption of multicollinearity.

*Hierarchical Regression Analysis*

Hierarchical regression analyses were conducted to examine the individual and combined ability of a set of demographic variables and environmental variables, including the facilitator index and obstacle index of the MQE to predict adjustment to disability as measure by the AD-R. The linear combination of environmental and demographics factors was significantly related to adjustment to disability. The ANOVA table indicated that the model as a whole was significant, $F (8, 99) = 2.56, p < .02$ and accounted for 18.4% of the variance in the AD-R Scale. After the effects of demographics and facilitator index were held constant, the obstacle index accounted for 8% of the variance in the AD-R Scale. The standardized beta coefficients for the obstacle index ($B = .31, p = .004$) indicated that the obstacle index makes a strong and significant contribution to the prediction model.
Testing for the Null Hypothesis

This study sought to explore the relationship between a set of demographic variables, environmental factors, and adjustment to disability. Two null hypotheses were presented in chapter three:

Null Hypothesis I: A set of demographic variables including age, gender, years of education, disability type, and area of residence will fail to contribute significantly to an overall prediction equation that will predict the dependent variable of adjustment to disability.

Null Hypothesis II: Environmental variables combined with the set of demographic variables, including age, gender, years of education, disability type, and area of residence, will fail to yield a statistically significant prediction equation for the dependent variable of adjustment to disability.

A hierarchical regression analysis was conducted to examine variables predictive of adjustment to disability. The first null hypothesis stated that a set of demographic variables including age, gender, years of education, disability type, and area of residence will fail to contribute significantly to an overall prediction equation that will predict the dependent variable of adjustment to disability. In order to test this hypothesis, regression analysis was computed and the results are shown in Table 5.

Table 5 shows that that all five demographic variables did not produce a significant prediction equation $F (6, 99) = 1.80, p = .10$. Therefore, the first null hypothesis was retained. In effect, this regression analysis revealed that the above demographic variables cannot alone significantly predict adjustment to disability. However, the standardized coefficients show that years of education (Beta = .200, p =
.046) and physical (Beta = .283, p = .027) and psychiatric disability type (Beta = .337, 
p = .016) made a contribution to the variance.

The second null hypothesis was tested with a three model hierarchical regression,
using the following order: a set of demographic variables, facilitator index, and obstacle
index. The combination of these independent variables was found to be statistically
significant (p < .05). Therefore, the second null hypothesis was rejected. The results are
presented in Table 5.
Table 5

*Results of a Hierarchical Regression Analysis with Predictors of Adjustment to Disability*

<table>
<thead>
<tr>
<th>Variables</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>$R^2$ Change</th>
<th>$F$ Change</th>
<th>$p$</th>
<th>$F$ ANOVA</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics:</td>
<td>.104</td>
<td>.047</td>
<td>.104</td>
<td>1.808</td>
<td>.106</td>
<td>1.808</td>
<td>.10</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years of education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disability type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area of residence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilitator index</td>
<td>.105</td>
<td>.037</td>
<td>.001</td>
<td>.062</td>
<td>.803</td>
<td>1.543</td>
<td>.16</td>
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<tr>
<td>Model 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilitator index</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstacle index</td>
<td>.184</td>
<td>.112</td>
<td>.079</td>
<td>8.777</td>
<td>.004</td>
<td>2.561</td>
<td>.01</td>
</tr>
</tbody>
</table>
**Table 6**

*Results of Coefficients of Predictors of Adjustment to Disability*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unstandardized Coefficient</th>
<th>Standardized Coefficients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>β</td>
</tr>
<tr>
<td><strong>Model 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.009</td>
<td>.149</td>
<td>.007</td>
</tr>
<tr>
<td>Gender</td>
<td>-.996</td>
<td>2.859</td>
<td>-.037</td>
</tr>
<tr>
<td>Years of education</td>
<td>1.192</td>
<td>.590</td>
<td>.200</td>
</tr>
<tr>
<td>Physical disability</td>
<td>7.711</td>
<td>3.434</td>
<td>.283</td>
</tr>
<tr>
<td>Area of residence</td>
<td>1.632</td>
<td>3.006</td>
<td>.056</td>
</tr>
<tr>
<td><strong>Model 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.004</td>
<td>.150</td>
<td>.003</td>
</tr>
<tr>
<td>Gender</td>
<td>-1.203</td>
<td>2.992</td>
<td>-.044</td>
</tr>
<tr>
<td>Years of education</td>
<td>1.206</td>
<td>.596</td>
<td>.202</td>
</tr>
<tr>
<td>Physical disability</td>
<td>7.782</td>
<td>3.463</td>
<td>.286</td>
</tr>
<tr>
<td>Psychiatric disability</td>
<td>9.841</td>
<td>4.049</td>
<td>.336</td>
</tr>
<tr>
<td>Area of residence</td>
<td>1.487</td>
<td>3.076</td>
<td>.051</td>
</tr>
<tr>
<td>Facilitator index</td>
<td>-.007</td>
<td>.029</td>
<td>-.026</td>
</tr>
<tr>
<td>Obstacle index</td>
<td>.123</td>
<td>.042</td>
<td>.310</td>
</tr>
<tr>
<td><strong>Model 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.052</td>
<td>.145</td>
<td>.038</td>
</tr>
<tr>
<td>Gender</td>
<td>-2.774</td>
<td>2.921</td>
<td>-.102</td>
</tr>
<tr>
<td>Years of education</td>
<td>1.164</td>
<td>.572</td>
<td>.195</td>
</tr>
<tr>
<td>Physical disability</td>
<td>7.116</td>
<td>3.333</td>
<td>.262</td>
</tr>
<tr>
<td>Area of residence</td>
<td>1.687</td>
<td>2.955</td>
<td>.058</td>
</tr>
<tr>
<td>Facilitator index</td>
<td>-.038</td>
<td>.030</td>
<td>-.139</td>
</tr>
<tr>
<td>Obstacle index</td>
<td>.123</td>
<td>.042</td>
<td>.310</td>
</tr>
</tbody>
</table>
The first block of variables entered into the model consisted of demographic variables, including age, gender, years of education, disability type, and area of residence. Jointly, these predictors did not account for a significant amount of variation in adjustment to disability. This block explained approximately 10% of the variance in adjustment to disability. However, years of education and disability type were found to be significant ($p < .05$). Individuals who reported more years of education adjusted better to their disability. In the presence of other predictors, people who reported both physical and psychiatric disability types were less adjusted to their disability.

The second block of variables entered into the model consisted of only the facilitator index. Adjustment to disability was not related to the facilitator index in the presence of other predictors and this index did not account for a significant amount of variation in adjustment to disability. This model explained approximately 0.1% of the variance in adjustment to disability.

The third block of variables entered into the model consisted of only the obstacle index. This predictor accounted for a significant amount of variation in adjustment to disability. The obstacle index explained approximately 8% of the variance in adjustment to disability. In general, individuals who perceived fewer obstacles in their environment reported better adjustment to their disability. The ANOVA value was significant only for this model and explained for 18.4% of the variance in adjustment to disability. Overall, the combination of demographic variables, facilitators, and obstacles was significantly related to adjustment to disability. The ANOVA value indicated that the model as a whole was significant, $F (8, 99) = 2.56, p < .05$. 

With regard to the individual contribution of the predictors, an examination of the standardized coefficients showed that the statistically significant Beta weight was for the obstacle index (Beta = .310). Adjustment to disability was positively related to the obstacle index. In addition, years of education and the variable “disability type” revealed statistically significant Beta weights. Years of education (Beta = .195, p = .045), physical (B = .262, p = .035), and psychiatric disability type (Beta = .316, p = .021) were positively related to adjustment to disability. Overall, individuals who reported a single disability type adjusted better to their condition than those who reported both disability types.

It may be concluded that although the null hypothesis was rejected at the \( p < .05 \) level with the combined contributions of a set of demographic variables, facilitator index, and obstacle index, only the obstacle index was responsible for the significant prediction equation. However, years of education and the variable “disability type” contributed to the prediction equation.

**Supplemental Analyses**

Supplemental correlations, frequencies, and ANOVA analyses were conducted to explore the data further. A correlation was conducted between the dependent variable and its subscales and demographics variables. The correlation was statistically significant between the containment subscale of the AD-R scale and physical disability \( (r = .20, p < .05) \), indicating that individuals who reported only physical disability have better ability to contain effects of their disability than those who have psychiatric or both disability types. The correlation between the subordination subscale and years of education was also statistically significant \( (r = .24, p < .01) \). This positive correlation means that
individuals with more years of education have better ability to see and focus on other
important areas of their lives than just their disability aspect.

Correlations were conducted between the dependent variable (AD-R) and it
subscales and the independent variable (MQE) and it subscales. Some significant
relationships emerged. The correlation was statistically significant between the global
score of the obstacle index of the MQE measure and the global score of the AD-R scale (r
= .229, p < .05) meaning that the environment is generally perceived as being more of an
obstacle than a facilitator in the adjustment to disability process. Individuals who
perceive fewer obstacles in their environment tend to report better adjustment to their
disability. Similarly, a positive correlation emerged between the global score of the
obstacle index and transformation subscale of the AD-R scale (r = .287, p < .01),
indicating that individuals who perceive fewer obstacles in their environment are better
able to overcome challenges presented by their conditions and tend to focus on their
assets instead of comparing themselves to other individuals without disabilities. Another
correlation was observed between the global obstacle score and the containment subscale
of the AD-R scale (r = .240, p< .05). This positive correlation suggests that fewer
obstacles in the environment help contain the direct effects of disability so that they do
not interfere with functioning in other areas, such as intellectual or social.

Significant correlations also emerged between subscales of the MQE instrument
and subscales of the AD-R. A positive correlation was observed between the facilitator
index of the Social support and attitudes category of the MQE and the enlargement
subscale of the AD-R scale (r = .201, p < .05), meaning that individuals who were able to
enlarge and appreciate the existence of other values in their life, perceived more support from family and friends.

The correlations were statistically significant between the obstacle index of the *Income, labor, and income stability* category of the measure of the environment and the global AD-R score (r = .256, p < .05), the transformation subscale of the AD-R (r = .306, p < .01), and the containment subscale of the AD-R (r = .251, p < .05). These correlations were positive, meaning that individuals who reported better adjustment to their disabilities, perceived fewer obstacles relative to environmental characteristics such as income and labor. However, there was a negative significant correlation between the facilitator index of this category and the subordination of the physique relative to other values subscale of the AD-R scale (r = -.283, p < .05), meaning that individuals who perceived fewer facilitators in this domain, reported better adjustment to their disability.

The correlations were also statistically significant between the *Government and public services* category, the facilitator index and the enlargement subscale of the AD-R (r = .221, p < .05), and the obstacle index and the subordination subscale of the AD-R (r = .304, p < .05). No significant associations were observed between the *Physical environment and accessibility* or *Technology* domains and the AD-R or its subscales.

However, the correlation was statistically significant between the *Equal opportunities and political orientations* category of the MQE and the global score of the AD-R scale: the facilitator index and the AD-R (r = -.307, p < .05), and the obstacle index and the AD-R (r = .350, p < .01). Similarly, the *Equal opportunity and political orientation* category was significantly related to the transformation, containment, and subordination subscales of the AD-R scale. Interestingly, the associations do not always
follow the same directions. The correlation was statistically significant between the facilitator index of this category and the transformation subscale ($r = -.307, p < .05$), between the obstacle index and the transformation subscale ($r = .410, p < .01$), the obstacle index and the containment subscale ($r = .310, p < .05$), the facilitator index and the subordination subscale ($r = -.487, p < .01$), and the obstacle index and the subordination subscale ($r = .285, p < .05$). Results are shown in Table 9.
Table 7

*Correlations between the MQE and AD-R Scores (n = 109)*

<table>
<thead>
<tr>
<th>MQE</th>
<th>AD-R</th>
<th>Transform</th>
<th>Containment</th>
<th>Enlargement</th>
<th>Subordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social support and attitudes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilitator</td>
<td></td>
<td></td>
<td></td>
<td>.201*</td>
<td></td>
</tr>
<tr>
<td>Obstacle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income and labor</td>
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<td></td>
<td></td>
<td></td>
<td>-.283*</td>
</tr>
<tr>
<td>Facilitator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstacle</td>
<td>.256*</td>
<td>.306**</td>
<td>.251*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Govern and public services</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilitator</td>
<td></td>
<td></td>
<td>.221*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstacle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.304*</td>
</tr>
<tr>
<td>Physical environment and accessibility</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Facilitator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstacle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Facilitator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstacle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal opportunities and political orientations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilitator</td>
<td>-.307*</td>
<td>-.307*</td>
<td></td>
<td></td>
<td>-.487**</td>
</tr>
<tr>
<td>Obstacle</td>
<td>.350**</td>
<td>.410**</td>
<td>.310*</td>
<td></td>
<td>.285*</td>
</tr>
<tr>
<td>Global scores</td>
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<td>Facilitator</td>
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</tr>
<tr>
<td>Obstacle</td>
<td>.229*</td>
<td>.287**</td>
<td>.240*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Correlations significant at the level $p < .05$

**Correlations significant at the level $p < .01$

AD-R- Adjustment to Disability- Revised Scale
MQE- Measure of the Quality of the Environment
To evaluate the relationship between levels of adjustment to disability and the environment, a one-way analysis of variance (ANOVA) was conducted. Individuals can report high, medium, and low levels of adjustment (AD-R levels 1, 2, and 3, respectively). To test the hypothesis that individuals who perceive fewer obstacles in their environment report better adjustment to their disability, a one-way ANOVA was conducted. Results indicate that there is a significant difference in the amount of obstacles perceived by individuals reporting high, medium, and low levels of adjustment to their disability, $F(2,104) = 2.958, p = .056$. Because the F test was significant, follow-up tests were conducted to evaluate differences among the means. Tukey’s post-hoc analyses revealed that participants who reported a high level of adjustment to their disability perceived significantly fewer obstacles in their environment ($M = -48.83$) than did individuals who reported a low level of adjustment to their disability ($M = -102.50$), $p = .046$. Similarly, participants who reported a moderate level of adjustment to their disability perceived significantly fewer obstacles in their environment ($M = -50.69$) than did those who reported low level of adjustment ($M = -102.50$), $p = .53$. 
Table 8

*Means and Standard Deviations for Obstacle Indexes at Various Adjustment Levels*

<table>
<thead>
<tr>
<th>AD-R Level</th>
<th>Obstacle index</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>High level of adjustment</td>
<td>-48.83</td>
<td>46.63</td>
<td></td>
</tr>
<tr>
<td>Moderate level of adjustment</td>
<td>-50.69</td>
<td>34.71</td>
<td></td>
</tr>
<tr>
<td>Low level of adjustment</td>
<td>-102.50</td>
<td>92.85</td>
<td></td>
</tr>
</tbody>
</table>

In addition, a one-way ANOVA revealed a relationship between levels of adjustment and the obstacle index of the *Government and public services* domain of the MQE. Results indicate that there is a significant difference in the amount of obstacles perceived by people who reported high, moderate and low levels of adjustment to their disability, $F(2, 72) = 4.17, p = .019$. The Tukey’s HSD post hoc test showed that participants who reported a moderate level of adjustment to their disability perceived significantly fewer obstacles in their environment ($M = -10.97, SD = 9.38$) relative to various public services than did individuals who reported a low level of adjustment to their conditions ($M = -30.33, SD = 28.14$), $p = .02$.

Similarly, the one-way ANOVA test revealed significant differences between the AD-R levels and the obstacle index of the *Equal opportunities and political orientation* category of the MQE. The ANOVA was significant, $F(2, 66) = 13.40, p = .00$. The Tukey’s post hoc test revealed that individuals who reported a low level of adjustment perceived significantly more obstacles relative to equal opportunities in their environment ($M = -25.50, SD = 6.36$) than did people who reported moderate ($M = -5.82, SD = 5.02$) or high ($M = -5.42, SD = 5.76$), $p = .00$ levels of adjustment to their disability.
Consequently, individuals reporting a high level of adjustment to their disability perceived fewer obstacles relative to equal opportunities in their environment than did participants reporting low or moderate levels of adjustment.

Further, the one-way ANOVA was significant, $F(2, 72) = 4.00, p = .02$ between the containment level of the AD-R and the obstacle score of the *Government and public services* domain of the MQE. There was a significant difference in the means between individuals who reported moderate (M = -10.39, SD = 7.81) and low levels (M = -19.16, SD = 18.02) of containment of the effects of their disability. Individuals who perceived more obstacles in the area of government and public services, reported more difficulties containing the effects of their disability. In line with these findings, the ANOVA test was significant, $F(2, 66) = 4.18, p = .02$ between the containment level of AD-R scale and the *Equal opportunities and political orientation* domain of the MQE measure. There was a statistically significant difference in the means between the individuals who reported a high level of containment of their conditions (M = -3.93, SD = 4.85) and those who reported a low level (M = -10.63, SD = 9.59), $p = .01$. Participants who perceived more obstacles in their environment relative to equal opportunities experienced more difficulties containing the effects of their disability.

A one-way ANOVA was conducted to evaluate the relationship between the subordination subscale of the AD-R and obstacle domains of the MQE measure. Results indicate that there is a statistically significant difference in the amount of obstacles perceived by people reporting high, moderate, and low levels of subordination of disability effects to other values. The ANOVA test was significant for the subordination level of the AD-R and the *Government and public services* domain of the MQE measure,
\[ F(2, 72) = 7.79, p = .00. \] The Tukey’s HSD post hoc test revealed that participants who reported a high level of subordination perceived significantly fewer obstacles in the government and public services domain (M = -12.00, SD = 11.12) than did those who reported a low level of subordination (M = -27.33, SD = 21.97), \( p = 0.004 \). Similarly, individuals who reported a moderate level of subordination perceived fewer obstacles relative to government and public services (M = -10.95, SD = 8.32) than did those who reported a low level of subordination (M = -27.33, SD = 21.07), \( p = 0.001 \). Overall, participants who reported more obstacles in the area of government and public services tended to focus more on their disability-related conditions than on other important areas of their life such as friendships, vocational interest, or family roles.

The one-way ANOVA test was also significant for the subordination subscale of the AD-R and the *Technology* domain of the MQE, \( F(2, 32) = 3.14, p = .05 \). There was a marginal difference in the means between individuals who reported a high (M = -2.38, SD = 1.38) and moderate (M = -4.06, SD = 1.79), \( p = .07 \) level of subordination. Participants who reported a high level of subordination reported fewer obstacles in their environment relative to the technology domain that did those who reported a moderate level of subordination.

Finally, the ANOVA test was significant, \( F(2, 66) = 3.86, p = .02 \), for the subordination subscale of the AD-R and the *Equal opportunities and political orientation* domain of the MQE measure. Tukey’s post hoc analyses revealed that participants who reported a moderate level of subordination perceived significantly fewer obstacles in their environment relative to equal opportunities (M = -5.27, SD = 4.19) than did those who reported a low level of subordination (M = -12.14, SD = 10.96), \( p = .02 \).
In order to answer the question what environmental factors are frequently perceived as significant obstacles and what factors are perceived as facilitators by participants, frequencies, means, and standard deviations for the responses to questions on the MQE measure were examined. Environmental factors perceived frequently as obstacle are presented in Table 11.

Seventy two participants responded to question #16: “Current availability of jobs in your community.” The mean score for the responses to this question was -2.27 (SD = .842). Sixty individuals responded to question #16: “Hiring criteria and selection tests.” The mean score for the responses to this question was -2.11 (SD = .761). Similarly, sixty individuals responded to question #23: “Your personal income” with a mean -2.600 (SD = .693).

Environmental factors perceived frequently as facilitators are presented in Table 12. Among the main facilitators, attitudes and support from family and friends appear to play an important role in adjustment to disability. For example, seventy four individuals responded to question #2: “Support from members of your family or close friends who take place of family.” The mean score for the responses to this question was 2.28 (SD = .74). Additionally, 71 participants perceived “Support from your friends” as the positive influence on their lives. Similarly, sixty six individuals responded to question #7: “Attitudes of your friends toward you.” The mean score for this question was 2.16 (SD = .81).
Summary

This chapter described the results for the study. The results of this study showed that demographic variables were not significantly related to adjustment to disability and the first null hypothesis was retained. The combination of predictors including a set of demographic variables, facilitator index, and obstacle index statistically predict adjustment to disability, but only the obstacle index was responsible for the significant prediction equation. Results showed that participants who reported fewer obstacles in their environment reported better adjustment to their disability. Therefore, the second null hypothesis was rejected.

Supplemental analyses were conducted to examine and provide more detailed information on the relationships among the variables in this study. Significant associations emerged between some categories of the measure of the environment: Social support and attitudes, Income, labor, and income stability, Government and public services, and Equal opportunities and political orientation, and subscales of adjustment to disability: Transformation, Containment, Enlargement, and Subordination. The Physical environment and accessibility and Technology categories of the environment were not related to the subscales of the adjustment to disability instrument. The following chapter provides a discussion about the sample, null hypotheses, supplemental analyses, limitations, and directions for future research.
CHAPTER FIVE

Discussion

The purpose of this study was to investigate the relationship between adjustment to disability and environmental factors. This study examined a set of demographic variables including age, gender, years of education, disability type, and area of residence combined with the Measure of the Quality of the Environment (MQE) to predict adjustment to disability measured by the Adjustment to Disability- Revised scale (AD-R). In this chapter, a summary of the study is presented including the characteristics of the sample, results of hypothesis testing, and supplemental data analyses. Finally, limitations of this study and directions for the future research are discussed.

Sample Characteristics

Characteristics of the sample include response rate, age, gender, years of education, disability type, and area of residence. The number of subjects necessary for this study to conduct statistically significant or valid analysis was N=84 (Sample Power 2 from SPSS, 2000). Three hundred individuals were approached to participate in this study. Of the 300 surveys, 114 surveys were returned for an overall response rate of 38%. Out of 114 returned surveys, 109 participants were included for the statistical analyses in this research.

The demographic characteristics of the sample of individuals who applied and were found eligible for vocational rehabilitation services appeared to be very similar to the total population. This sample was composed of 55 female (50.5%) and 54 males (49.5%). The age of the participants ranged from 18 years to 63 years of age, with the mean being 43 years of age and (SD = 10). Education levels of participants ranged from 7
years of education to 20 years of schooling, with the mean being 13 years of
education and (SD = 2.2). In addition, of the 109 individuals, 50 (45.9%) reported having
physical disabilities, 34 (31.2%) indicated having psychiatric disabilities, and 25 (22.9%)
of the participants reported having both physical and psychiatric disabilities. Finally, of
all participants, 36 (33%) reported that they live in an urban area and 73 (67%) indicated
that they live in a rural area.

In this study, the AD-R instrument was administered to assess participants’
adjustment to disability. A single score was calculated to provide information about
overall adjustment to disability. Of the 109 participants, 45 (41.3%) scored in the High
Acceptance of Disability range, 60 (55%) individuals scored in the range of Medium
Acceptance of Disability, and only 4 participants (3.7) scored in the Low Level of
Acceptance to Disability.

Discussion of the Null Hypothesis

The hierarchical regression analysis rejected the null hypothesis that there was no
relationship between adjustment to disability and environmental factors. The results
indicate that there was a statistically significant relationship between adjustment to
disability and environmental factors perceived as obstacles (barriers) while taking into
consideration a set of demographic variables. The obstacle index explained 8% of the
variance in the AD-R scale, making a strong and significant contribution to the prediction
model. The finding of the current study supports the position that barriers in the
environment clearly influence the lives of individuals with disabilities and hinder
adjustment to disability (Badley, 1995; Fougeryrollas & Beauregard, 2001; Keysor, 1997;
Levasseur, Destosiers, & Noreau, 2004; Noreau, Fougeryrollas, & Boschen, 2002; Pope &
Brandt, 1997; Rochette, Desrosiers, & Noreau, 2001). This study found that, in general, individuals who perceived fewer obstacles in their environment reported better adjustment to their disability. This highlights the importance of addressing the environment while working with individuals with disabilities and developing strategies to facilitate better a person-environment fit. Similar findings were reported by Rochette, Desrosiers, and Noreau (2001) who investigated the association between personal and environmental factors and the occurrence of handicap situations following a stroke.

It was somewhat surprising that there was no statistically significant relationship between environmental factors perceived as facilitators and adjustment to disability, as this finding has been demonstrated in earlier research on the quality of life of individuals with disabilities (Levasseur, Desrosiers, Noreau, 2004) and adjustment to disability (Belgrave, 1990; Berkman, 1995; Cohen & Wills, 1985; Holosko & Huege, 1989; Kaplan, 1990). For example, the literature indicated that social and family support is a significant predictor of adjustment to disability. In this study, environmental factors perceived as facilitators did not influence adjustment to disability. The global score of the facilitator index was not significantly related to the total score on the AD-R measure. Those who reported better adjustment perceived the environment as less of an issue. It may be that individuals with disabilities are more aware of and concerned with environmental barriers because they limit their participation in the community and accomplishment of daily activities. Therefore, individuals may seek solutions and strategies to manage and overcome obstacle in their lives and not necessarily acknowledge factors that tend to enhance their lives.
The results of this study were similar to those reported by Rochette, et al. (2001) who examined an association between personal and environmental factors and the occurrence of handicap situation following stroke. The authors reported that environmental factors perceived as obstacles significantly contributed to greater occurrence of handicap situation among individuals who had a stroke. However, contrary to these findings, Levasseyr, Desrosiers, and Noreaus (2004) reported that global scores for the environment were not statistically related to quality of life among individuals with physical disabilities.

It has to be noted that, although in this hierarchical regression analysis only the obstacle index was significantly related to adjustment to disability, years of education and disability type revealed significant Beta weights. Years of education and the variable “disability type” were positively related to adjustment to disability. These findings indicate that individuals with more years of education report better adjustment to disability. These results support the perspective that individuals with more years of education may have more resources and better skills to overcome limitations associated with their disabilities and are better managing their environments. However, Li & Moore (1998) found that education was not significantly correlated with acceptance of disability but, individuals with multiple disabilities tended to report lower levels of adjustment.

The regression analysis retained the first null hypothesis indicating that a set of demographic variables including age, gender, years of education, disability type, and area of residence will fail to contribute significantly to an overall prediction equation that will predict the dependent variable of adjustment to disability. However, years of education and the variable “disability type” contributed to the variance. These results do not support
the hypothesis that demographic variables alone influence adjustment to disability. Some studies found that demographic variables are important predictors of adjustment to disability (Li & Moore, 1998). However, results are inconsistent and vary from study to study, depending on disability type or population.

Discussion of the Supplemental Analysis

Total scores of adjustment to disability and environmental factors may conceal some important relationships. Therefore, supplemental analyses were conducted to provide more detailed information on the relationships among the variables in this study. The correlation was statistically significant between the containment subscale of the AD-R scale and physical disability ($r = .20$, $p < .05$), indicating that individuals who reported only physical disability have better ability to contain effects of their disability than those who have psychiatric or both disability types.

A second correlational analysis found that the level of education was significantly ($r = .24$, $p < .01$) related to the subordination subscale of the AD-R that relates to an individual’s ability to place emphasis and focus on other important areas of his or her life other than disability. As the number of years of education increased, individuals’ ability to recognize and acknowledge other domains in their lives increased. In a practical sense, this may indicate that individuals with more education have better and a wider set of skills, a different outlook on life, or more resources to expand their value system and focus on other aspects their lives rather than their disabilities. Contrary to these findings, Belgrave (1991) and Li and Moore (1998) reported in their studies that levels of education are not important predictors of adjustment to disability. It is worth noting that
Li and Moore also surveyed also individuals who participated in public vocational rehabilitation programs.

Correlations were also conducted between categories of the MQE and subscales of the AD-R. As anticipated, some statistically significant relationships emerged. The correlation was statistically significant between the global score of the obstacle index of the MQE measure and the global score of the AD-R scale ($r = .229$, $p < .05$) meaning that the environment is generally perceived as being more of an obstacle than a facilitator in the adjustment to disability process. Individuals who perceive fewer obstacles in their environment tend to report better adjustment to their disability. Similarly, a positive correlation emerged between the global score of the obstacle index and transformation subscale of the AD-R scale ($r = .287$, $p < .01$), indicating that individuals who perceive fewer obstacles in their environment are better able to overcome challenges presented by their conditions and tend to focus on their assets instead of comparing themselves to other individuals without disabilities. Finally, the global score of the obstacle index of the MQE was significantly related to the containment subscale of the AD-R measure ($r = .240$, $p < .05$), suggesting that fewer obstacles in the environment tend to help individuals contain the direct effects of disability so that they do not interfere with functioning in other domains of their lives.

Additionally, correlational analysis found that the facilitator index of Social support and attitudes category of the MQE was significantly related to the enlargement subscale of the AD-R scale that measures an individual’s ability to recognize and appreciate the existence of other values. Consistent with previous studies (Belgrave, 1991; Holosko & Huege, 1989; Primomo, Yates, & Woods, 1990; Schulz & Decker,
individuals who reported more support from their families and friends had higher scores for adjustment to disability.

Subsequently, the obstacle index of the *Income, labor, and income stability* category of the measure of the environment was significantly related to the global score of adjustment to disability ($r = .256, p < .05$), the transformation subscale of the AD-R ($r = .306, p < .01$), and the containment subscale of the AD-R instrument ($r = .251, p < .05$). The facilitator index of *Income, labor, and income stability* was significantly related to the subordination subscale of adjustment to disability. Most associations between these environmental factors are in the same directions, meaning that the individuals who perceived fewer obstacles in this environmental category reported better adjustment to disability. These associations could have been expected because individuals who applied for public rehabilitation services used in this study have demonstrated some interest in employment. Previous research has shown individuals with disabilities tend to have high unemployment levels (Beresford, 1996). The onset of disability or unstable health may be related to reduced income, higher expenses associated with health care, and perpetuate poverty. However, individuals with disabilities often require more income to comply with their treatment regiments or to maintain appropriate living standards (Beresford, 1996). Not surprisingly, individuals with disabilities perceived employment and income as very important factors in adjustment to disability. Similar results were reported by Li and Moore (1998), who found that income was significantly correlated with acceptance of disability. Previous research has demonstrated that employment is important in the lives of individuals with disabilities to meet their social, economic, and vocational needs (Melamed, Grosswasser, & Stern, 1992; O’Neil, Hibbard, Brown, Jaffe, Sliwinski,
A significant correlation also emerged between facilitator and obstacle indexes of the *Government and public services* category of the environment and enlargement and subordination subscales of adjustment to disability. The *Government and public services* category measures the availability of various programs and services such as educational socio-sanitary, judicial, commercial, public infrastructure, and community organization services. The results of this study suggest that individuals who perceive more facilitators and fewer obstacles in their environment can better cope with the effects of their conditions and are able to recognize other assets and domains in their lives. This is in agreement with other studies (Drainoni, Lee-Hood, Tobias, Bachman, Andrew, & Maisels, 2006; Noreau, Fougeyrollas, Boschen, 2002; Rochette, Desrosiers, Noreau, 2001; Whiteneck, Gerbart, & Cusick, 2004; Yates, 2003).

Significant correlations were noted between the *Equal opportunities and political orientation* category of the measure of the environment and the total score of adjustment to disability measure and its subscales: transformation, containment, and subordination. The *Equal opportunities and political orientation* category assesses issues related to equal access to participate in programs, debates, decision making, and government policy orientations as well as social rules. Although these relationships were somewhat unexpected, similar results were found in the previous research related to quality of life of individuals with disabilities (Levasseur, Desrosiers, & Noreau, 2004) and outcomes of individuals with traumatic brain injury (Whiteneck, Gerbart, & Cusick, 2004). Individuals' concerns with equal opportunities to participate in society appear to be valid.
and well founded. However, associations between adjustment to disability and political orientations seem to be unclear and difficult to interpret. They may be due to chance (Levasseur, Desrosiers, & Noreau, 2004) or current economic and political changes occurring in the United States. Therefore, given the time of this research, it is possible that *Equal opportunities and political orientations* category has some influence of adjustment to disability as people become more concerned with their future opportunities.

In this research, no significant correlations were found between adjustment to disability and the *Physical environment and accessibility* and *Technology* categories of the measure of the environment. These findings are inconsistent with some previous studies which documented that technology and physical environment have some impact on the lives of individuals with disabilities (Badley, Tothman, & Wang, 1998; Fougeyrollas, 1993; Levasseur, Desrosiers, & Noreau, 2004; Mann et al., 2002; Richards et al., 1999; Shumway-Cook et al., 2003; Whiteneck, Gerbart, & Cusick, 2004). The lack of statistically significant differences in the correlations between adjustment to disability and the physical environment and technology may be attributable to a specific environment, from which this sample was drawn, individuals’ capacity to overcome the potential barriers, or that environments may have been modified and people may have been using assistive technology to accommodate their disability concerns so that they may not constitute significant issues in their lives.

A one-way analysis of variance (ANOVA) was conducted to evaluate the relationship between levels of adjustment to disability and the environment. Results suggested that individuals who reported higher levels of adjustment to disability
perceived significantly fewer obstacles in their environment than did individuals who reported a low level of adjustment to their disability. In this study, the majority of individuals reported moderate and high levels of adjustment to their disability. These results are not surprising because participants were engaged in vocational rehabilitations services that are designed to help them secure employment. This may mean that these participants were able to contain at least some effects of their conditions and enlarged their scope of values. Therefore, they were able to see other aspects and domains in their lives such as employment. In general, the results suggest that the environment plays an important role in adjustment to disability.

Implications of Findings

The results of this study have implications for rehabilitation counselors, policymakers, individuals with disabilities, and other professionals working with individuals with disabilities. Despite the fact that the sample size in this research included only 109 participants, the relationship between environmental factors and adjustment to disability was found to be statistically significant. Especially, environmental factors perceived as obstacles (barriers) were significantly associated with lower scores on the AD-R measure. The findings of this research clearly supported the position that barriers in the environment are important to consider while working with individuals with disabilities because they obstruct the adjustment to disability process. It has been long acknowledged by numerous researchers that rehabilitation needs to place more emphasis on identifying and addressing environmental factors that affect the lives of individuals with disabilities (Badley, 1995; Fougéyrollas & Beauregard, 2001; Groomes & Olsheski, 2002; Keysor, 1997; Levasseur, Destosiers, & Noreau, 2004; Noreau, Fougéyrollas, &
Assisting individuals with disabilities to cope with their conditions requires attention to a wide array of issues, including environmental factors and needs. Various service providers and policy makers need to be more concerned with environmental factors while developing effective policies and strategies. Effective environmental strategies may enhance physical, social, psychological, vocational, and economic functioning of individuals with disabilities. Therefore, rehabilitation professionals should appropriately assess and give attention to environmental aspects when working with individuals with disabilities.

Additionally, often individuals with disabilities are blamed for their lack of skills or abilities to carry on daily activities while environmental factors are ignored (Rubin & Roesler, 2001). Identifying and addressing environmental factors that have significant impact on functioning of individuals with disabilities may shift the focus from individuals and their deficits to the environment and its appropriate management (Hahn, 1982, 1988).

While the literature to date emphasizes the need to address environmental needs of individuals with disabilities (Badley, 1995; Fougeryrollas & Beauregard, 2001; Keysor, 1997; Levasseur, Destosiers, & Noreau, 2004; Noreau, Fougeryrollas, & Boschen, 2002; Pope & Brandt, 1997; Rochette, Desrosiers, & Noreau, 2001), there was a lack of research concerning the specific relationship between environmental factors and adjustment to disability. Some studies have correlated measures of the environment with measures of quality of live (Levasseur, Desrosiers, & Noreau, 2004). The majority of studies have examined adjustment to disability focusing heavily on personal or psychological factors, addressing only some aspects of the social or physical environment.
Belgrave, 1991; Li & Moore, 1998). In effect, the environment has not been assessed with a specifically designed measure. Therefore, this study helped fill the gap in the rehabilitation literature and expand the knowledge of environmental factors that impact adjustment to disability. Future studies may incorporate these results and capture similar characteristics across and within all disability types. In light of scientific advancements, variables affecting the adjustment process need to be constantly re-evaluated. Particularly, advances in medicine, technology, and rehabilitation engineering as well as social, attitudinal and cultural changes in society may influence and alter the lives of individuals with disabilities. Therefore, additional research is needed the impact of these changes on the lives of individuals with disabilities.

It was apparent that individuals with disabilities have recognized the importance of environmental factors in their lives (Levasseur, Desrosiers, & Noreau, 2004; Noreau, Fougéyrollas, & Boschen, 2002). According to this study, some environmental factors have a potential to create major issues for individuals with disabilities. Therefore, it can be expected that significant emphasis will be placed by individuals with disabilities, policymakers, the judiciary, and service providers to these issues in the future. Hahn (1982; 1988) noted that in order to modify the environment to better accommodate disability concerns, public polices need to be changed. Therefore, it is important that individuals with disabilities communicate their concerns to service providers and policymakers.

Limitations of the Study

The conclusions of this study were restricted by some limitations. Generalizability appeared to be the most significant limitation of this study. The sample of this study
consisted of individuals with disabilities who enrolled in the public vocational rehabilitation program in the State of Ohio, meaning that they expressed an interest and had some potential to return to the work force. These subjects may or may not be representative of all people with disabilities. It is not known if individuals with disabilities who are unable to work or choose not to seek employment would perceive the environmental characteristic in a similar way. Therefore, it is difficult to generalize the results of this research to other populations.

Another limitation of this study was the reliance on participants’ self-reported information. Data obtained this way may raise so questions if subjects’ answers were truly reflective of their experiences or biased and self-serving attributions. In addition, the design of this research was ex post facto which prevents attributing causation to the variables. Additionally, a lack of longitudinal data and further analysis make it difficult to examine and fully explain how these environmental variables that are perceived as obstacles influence adjustment to disability.

The sample size was sufficient to conduct valid statistical analysis. However, when this research is viewed in light of a small sample size with relatively low power, it is notable that statistically significant results were produced.

Directions for the Future Research

The primary goal of this research was to examine the influence of environmental factors on the adjustment to disability, taking into consideration a set of demographic variables. This study provides a clear indication that environmental factors, especially those perceived as obstacles, influence adjustment to disability. Additional studies may benefit from expending the scope of this study based on the null hypotheses
and supplemental analysis. Future studies could employ a larger sample of individuals with disabilities from across the country and from various settings rather than in one site and state. Such studies with similar findings would be more conclusive, and the findings would provide stronger support to advocate increased attention to the environment while working with individuals with disabilities. This would promote better outcomes in rehabilitation counseling.

In addition, this study examined only perceived environmental factors. Further research including information about both objective as well as perceived environmental characteristics would be desired. Moreover, qualitative studies could be conducted to investigate and enhance our understanding about the role of environmental factors in adjustment to disability. Knowledge about the environment is important to effectively address the needs of individuals with disabilities. Understanding the relationship between the environment and adjustment to disability is critical to assist policymakers and rehabilitation professionals to develop appropriate strategies that can enhance rehabilitation outcomes and the lives of individuals with disabilities.

Conclusion

This study examined the relationship between environmental factors and adjustment to disability, taking into consideration a set of demographic variables: age, gender, disability type, years of education, and area of residence. In light of some limitations, the results of this study supported the perspective that environmental factors play an important role in the lives of individuals with disabilities. Most notably, this research provided an opportunity to examine the relationship between adjustment to disability and environmental factors as measured by two standardized instruments. The
findings revealed a statistically significant relationship between adjustment to disability and environmental factors perceived as obstacles. No significant relationship was observed between adjustment to disability and demographic variables. The results of this study provide additional insights and contribute to the literature supporting the impact of the environment on the lives of individuals with disabilities.
REFERENCES


with disabilities in the community. *Disability & Society, 16*, 403-413.


APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL

The following research study has been approved by the Institutional Review Board at Ohio University for the period listed below. This review was conducted through an expedited review procedure as defined in the federal regulations as Category(ies):

7

Project Title: The Relationship between Adjustment to Disability and Environmental Factors

Researcher(s): Hanna Jadwieniczak

Faculty Advisor (if applicable): Jerry Olaheski

Department: Counseling and Higher Education

Jeff Vancouver, Ph.D., Chair
Institutional Review Board

Approval Date: 7/2/07
Expiration Date: 7/1/08

This approval is valid until expiration date listed above. If you wish to continue beyond expiration date, you must submit a periodic review application and obtain approval prior to continuation.

Adverse events must be reported to the IRB promptly, within 5 working days of the occurrence.

The approval remains in effect provided the study is conducted exactly as described in your application for review. Any additions or modifications to the project must be approved by the IRB (as an amendment) prior to implementation.
APPENDIX B: OHIO REHABILITATION SERVICES PERMISSION

State of Ohio
REHABILITATION SERVICES COMMISSION
400 East Campus View Blvd.
Columbus, OH 43235

Hanna Jadwisienzak
86 Columbus Rd., Suite 103
Athens, OH 45701

April 25, 2007

RE: Research

Dear Hanna,

The Ohio Rehabilitation Services Commission has approved your request to conduct research and to use select data from the agency’s confidential consumer database. This approval is based strictly upon your agreement to comply with federal research and regulatory requirements as specified in § 361.38 (d) of the Rehabilitation Act of 1973, as amended. The following specifies the conditions which must be met:

**Release for audit, evaluation, or research.** Personal information may be released to an organization, agency or individual engaged in audit, evaluation, or research only for the purposes directly connected with the administration of the vocational rehabilitation program, or for purposes that would significantly improve the quality of life for applicants and eligible individuals and only if the organization, agency, or individual assures that

1. The information will be used only for the purposes for which it is being provided;
2. The information will be released only to the involved individual;
3. The information will be released only to persons officially connected with the audit, evaluation, or research;
4. The information will be managed in a manner to safeguard confidentiality; and
5. The final product will not reveal any personal identifying information without the informed written consent of the involved individual or the individual’s representative.

You will be required to share your study results and final product with the agency’s administration.

If you have any questions or require any further information, please contact me at (614) 781-8714.

Sincerely,

[Signature]

Carol Herman, Manager
Quality Management Unit

cc: File

*serving Ohioans with disabilities*
Dear Hanna Jadwisiencsak,

I am pleased to give you may permission for using the Measure of the quality of environment (MQE) for the purpose of your dissertation. With my best regards. Patrick Fougeyrollas. Auteur et chercheur CIRRIS-IRDPQ-RIPPH-Université Laval

Hello Hanna:

Yes, Dr. Linkowski and I revised the Acceptance of Disability Scale (now called the Adaptation to Disability Scale-Revised). Publication of the revision has been slow-going due to need for further validation. However, please use the revised scale in your work and cite personal communication with me (Dr. Linkowski passed away last year) as of this date. I am attaching the revised scale, scoring, and psychometric property info for you. If you have questions, do not hesitate to contact me. Enjoy.

>From: Hanna Jadwisienczak [mailto:hj130001@ohio.edu]
>Sent: Monday, March 26, 2007 9:00 PM
>To: gromesd@msu.edu
>Subject: AD-R measure
APPENDIX D: SUBJECT CONSENT FORM

Ohio University Consent Form

Title of Research: The relationship between adjustment to disability and environmental factors.

Principal Investigator: Hanna Jadwisienczak
Co-Investigator: 
Department: Counseling and Higher Education

Federal and University regulations require a signed consent for participation in research involving human subjects. After reading the statement below, please indicate your consent by filling in your name and data and returning this consent form to your counselor or the principal investigator, Hanna Jadwisienczak.

Explanation of the Study
You are being invited to participate in the research study that analyzes the relationship between adjustment to disability and environmental factors. The researcher will gather information regarding environmental factors that facilitate or pose barriers to completing daily activities and adjustment to disability. The purpose of this research is to further the knowledge about this important issue and to assist professionals in understanding some of the needs of individuals with disabilities. Participation in this study, or your decision not to participate, will in no way affect any services you may receive from Ohio Rehabilitation Services Commission.

Risks and Discomforts
This research involves minimal to no risk. Potential risks in this study may include discomfort or negative feelings as a result of describing environmental factors that may present barriers to participation in society or reflecting on issues associated with adjustment to disability. There are no risks of physical injury. As with any research, there may be additional risks that are unknown or unexpected. If such a case will arise, participants are advised to stop completing the instrument or distressing questions. In addition, participants are encouraged to speak to the researcher, faculty advisor, or their counselors about their concerns.

Benefits
This study will provide the rehabilitation counseling profession with a greater understanding and knowledge of the environmental factors and their influence on the adjustment to disability process. Further, this research will reveal which environmental factors facilitate or hinder the adjustment to disability process. Additionally, the findings from this study may help rehabilitation practitioners and other professionals develop
strategies to better meet the needs of individuals with disabilities. Finally, findings of this study will also provide guidance for future research on adjustment to disability.

Confidentiality and Records
All personally identifying information will be kept confidential and the privacy of participants will be protected to the maximum extent allowed. Individuals will be assigned an identification number. To insure confidentiality, the participants of this study will be asked not to include their names on the survey instruments or on the return envelops. All research materials will be kept in a locked file cabinet accessible only to the researcher.

If you have any questions regarding this study, please contact Hanna Jadwisienczak at hj130001@ohio.edu or Dr. Jerry Olsheski, Faculty Advisor, at olsheski@ohio.edu. If you have any questions regarding your rights as a research participant, please contact Jo Ellen Sherow, Director of Research Compliance, Ohio University, (740)593-0664.

----------------------------------------

I certify that I have read and understand this consent form and agree to participate as a subject in the research described. I agree that known risks to me have been explained to my satisfaction and I understand that no compensation is available from Ohio University and its employees for any injury resulting from my participation in this research. I certify that I am 18 years of age or older. My participation in this research is given voluntarily. I understand that I may discontinue participation at any time without penalty or loss of any benefits to which I may otherwise be entitled. I certify that I have been given a copy of this consent form to take with me.

Signature____________________________________________________ Date___________
July 1, 2007

Dear Participant,

My name is Hanna Jadwisienczak. I am a doctoral student at Ohio University. I am working with Dr. Jerry Olsheski to secure a better understanding of the relationship between adjustment to disability and environmental factors.

The survey will take approximately 30 minutes of your time to complete. Your participation in this study is entirely voluntary. You may decline participation by simply not filling out this survey, and you may discontinue your participation at any time. Data from completed surveys will be given an anonymous identification number. All data will be analyzed using group statistics and no demographic information will be used to reveal the identity of any participants.

If you have any questions about this research project, please feel free to contact Hanna Jadwisienczak at 740 -594 7379 or hj130001@ohio.edu. Assistance in this project is greatly appreciated. Thank you for your time and your willingness to consider taking this survey.

Sincerely,

Hanna Jadwisienczak, M. Ed., CRC
Ohio University Doctoral Student
APPENDIX F: INSTRUMENTS

Demographic Questionnaire

Participant Questionnaire

Fill in the blank or place an “X” next to your response:

1. Age_____________________________________________

2. Gender
   Female____________________________________________
   Male_____________________________________________

3. Years of education_____________________________________

4. Disability type:
   Physical____________________________________________
   Psychiatric________________________________________
   Both_______________________________________________

5. Do you consider yourself living in the area:
   Urban____________________________________________
   Rural_____________________________________________
<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. With my disability, all areas of my life are affected in some major way.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Having my disability, I am unable to do things like people without disabilities do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Disability or not, I am going to make good in life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Because of my disability, I have little to offer other people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. Good physical appearance and physical ability are the most important things in life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. A person with a disability is restricted in certain ways, but there is still much s/he is able to do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. No matter how hard I try or what I accomplish, I could never be as good as the person who does not have my disability.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. It makes me feel very bad to see all the things that people without disabilities can do that I cannot.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. The most important thing in this world is to be physically capable.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. Because of my disability, other people's lives have more meaning than my own.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. Because of my disability, I feel miserable much of the time.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>-------------------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>12. Though I have a disability, my life is full.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13. The kind of person I am and my accomplishments in life are less important than those of persons without disabilities.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14. A physical disability affects a person's mental ability.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15. Since my disability interferes with just about everything I try to do, it is foremost in my mind practically all of the time.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>16. There are many things a person with my disability is able to do.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>17. My disability in itself affects me more than any other characteristic about me.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>18. There are many more important things in life than physical ability and appearance.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>19. Almost every area of life is closed to me.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>20. My disability prevents me from doing just about everything I really want to do and from becoming the kind of person I want to be.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>21. I feel like an adequate person regardless of the limitation of my disability.</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
**AD Scale-Revised**

Derived from the AD Scale (Linkowski, D.C., 1971)

Read each statement below and circle the number that indicates to what extent you agree or disagree with the statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>22. My disability affects those aspects of life that I care most about.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23. A disability such as mine is the worst possible thing that can happen to a person.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24. You need a good and whole body to have a good mind.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25. There are times that I completely forget that I have a disability.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26. If I didn't have my disability, I think I would be a much better person.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27. When I think of my disability, it makes me so sad and upset that I am unable to do anything else.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28. People with disabilities are able to do well in many ways.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>29. I feel satisfied with my abilities and my disability does not bother me too much.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>30. In just about everything, my disability is annoying to me so that I can't enjoy anything.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>31. Physical wholeness and appearance make a person who s/he is.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>32. I know what I can't do because of my disability, and I feel that I can live a full life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
MEASURE OF THE QUALITY
OF THE ENVIRONNEMENT

Version 2.0

Patrick Fougéyrollas
Luc Noreau
Ginette St Michel
Kathryn Boschen

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INDCP – 525, Boul. Hamel, suite A-08
(Québec), G1M 2S8, CANADA
MEASURE OF THE QUALITY OF THE ENVIRONMENT

**INTRODUCTION:**

The Measure of the Quality of the Environment MQE scale aims at evaluating the environment’s influence on the accomplishment of a person’s daily activities in relation to his/her abilities and limits.

While taking into account your abilities and personal limits (your disabilities), we ask you to estimate the influence that your environment generally exerts upon your daily life (accomplishment of your activities and various tasks within your environment).

To do this, we have drawn up a list of situations or factors within your environment that may:

- 😊 facilitate the accomplishment of your life activities,
- 😐 exert no influence on your life activities,
- 🙅 obstruct the accomplishment of your life activities.
MEASURE OF THE QUALITY OF THE ENVIRONMENT

DEFINITIONS:

Obstacles:
Environmental factors or situations that hinder the accomplishment of a daily activity or task.

Types of obstacles:

Major obstacle:
A major obstacle completely prevents accomplishment of the activity.
Example: A stairway that prevents access to a higher floor is a major obstacle for a person with difficulties walking.

Medium obstacle:
A medium obstacle largely hinders accomplishment of the life activity.
Example: A complicated instruction that hinders a person with intellectual disabilities when following a recipe required for preparing his or her meal, is a medium obstacle.

Minor obstacle:
A minor obstacle mildly hinders accomplishment of a life activity or slightly increases its level of difficulty.
Example: Negative attitudes, among the people interacting with a child with a visual disability, that disturb his or her functioning at home or at school, are minor obstacles.
MEASURE OF THE QUALITY OF THE ENVIRONMENT

DEFINITIONS (cont.):
Facilitators:
Environmental situations or factors that assist the accomplishment of a daily activity or task.

Types of facilitators:
Major facilitator:
A major facilitator fully compensates for the impairments or disabilities, and allows full accomplishment of the life activity without constraint nor difficulty.
Example: A wheelchair and a ramp that are necessary for a person who is unable to walk to enter a room are major facilitators.

Medium facilitator:
A medium facilitator partially compensates for the impairments or disabilities, and allows partial accomplishment of the life activity or accomplishment with difficulty.
Example: A simple illustration or a simplified instruction that makes following a recipe kitchen easier for a person with intellectual disabilities is a medium facilitator.

Minor facilitator:
A minor facilitator compensates a little for the impairments or disabilities, and allows partial accomplishment of the life activity or slightly decreases its difficulty.
Example: For a person with a behaviour disability, an encouraging attitude of a colleague that helps the accomplishment of a work task, is a minor facilitator.
MEASURE OF THE QUALITY OF THE ENVIRONMENT

DEFINITIONS (cont.):

No influence:
Environmental situations or factors that have no effect on the accomplishment of a daily activity or task.

Examples: • Winter climatic conditions generally do not influence the exiting of a building for a person with an auditory disability.
  • A person who does not use the health services available in his or her community.
  • A person who never goes to the movies or to the theatre by choice.

I don’t know:
The effect of the environmental situation or factor on the life of a person is unknown

Examples: • A person who does not know how law enforcement influences his/her daily life.
  • A person who does not know how financial institutions services influence his/her daily life.

Does not apply:
Environmental situations or factors that don’t exist within the person’s environment.

Examples: • Questions concerning the spouse or children of a person without spouse or children.
  • Questions concerning education for a person who does not study.
  • Public transportation services that are not available in a person’s community
MEASURE OF THE QUALITY OF THE ENVIRONMENT

INSTRUCTIONS:

Following each item, you will find a rating scale that ranges from obstacle (-3) to facilitator (3), as well as the boxes “I do not know” and “Does not apply”.

While taking into consideration your abilities and personal limits, indicate to what extent the following situations or factors generally influence your daily life.

<table>
<thead>
<tr>
<th>Influence Scale:</th>
</tr>
</thead>
<tbody>
<tr>
<td>obstacle</td>
</tr>
<tr>
<td>I do not know</td>
</tr>
</tbody>
</table>

| Item | -3 | -2 | -1 | 0 | 1 | 2 | 3 | - | [ ] | [ ] |

☑ If the item hinders accomplishment of your daily activities or tasks, please check the box according to your opinion: “-2” (medium obstacle) to “-3” (major obstacle).

☑ If the item does not influence accomplishment of your life activity, please check “0”.

☑ If, on the other hand, the item facilitates accomplishment of your current activities or tasks, please check the box “1” (minor facilitator), “2” (medium facilitator) or “3” (major facilitator).

☑ If the item does not correspond to your situation or is not present in your environment, check the box: “Does not apply”.

☑ If you do not know if the item affects your life, check the box: “I do not know”.

Note: Certain situations or certain factors, such as law enforcement, may influence your life in a general manner. However, others, such as home assistance services, may have a daily influence on your life.
**MEASURE OF THE QUALITY OF THE ENVIRONMENT**

**EXAMPLES:**

<table>
<thead>
<tr>
<th></th>
<th>Educational services in your community (elementary, junior and senior high, adult education, professional training, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Winter climatic conditions (snow, ice, cold, etc.).</td>
</tr>
<tr>
<td>3</td>
<td>Public transportation services in your community (schedule, stops, frequency, trajectory, etc.).</td>
</tr>
<tr>
<td>4</td>
<td>Law enforcement.</td>
</tr>
<tr>
<td>5</td>
<td>Your work hours.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Influence Scale</th>
<th>Obstacle</th>
<th>No Influence</th>
<th>Facilitator</th>
<th>I do not know</th>
<th>Does not apply</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Example 1: You have access to sign language services at all times in your community's school so that you may take courses; check **"major facilitator +3"** for this item.

Example 2: You cannot go out during the winter because your wheelchair gets stuck in the snow; check **"major obstacle -3"** for this item.

Example 3: You use your municipality's regular bus service without difficulty or constraint; check **"no influence"** for this item.

Example 4: You do not know how much law enforcement influences you; check the box **"I do not know"**.

Example 5: If you are not working, check the box **"does not apply"** to items mentioning "your job", even if you are able to work.
While taking into consideration your abilities and personal limits, indicate to what extent the situations or factors generally influence your daily life.

### Social network (support from people around you)

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Influence Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Your family situation (living alone, with a spouse, or with children).</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>2.</td>
<td>Support from members of your family or close friends who take the place of</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td></td>
<td>family (presence, physical assistance, household assistance, encouragement).</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Support from your friends.</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>4.</td>
<td>Support from your neighbours.</td>
<td>-1 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>5.</td>
<td>Support from your colleagues at work, school, or place of principal</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td></td>
<td>occupation.</td>
<td></td>
</tr>
</tbody>
</table>

### Attitudes of the people around you (way of acting)

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Influence Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>The attitudes of your family or close friends who take the place of family</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td></td>
<td>towards you.</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>The attitudes of your friends towards you.</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>8.</td>
<td>The attitudes of your colleagues at work, school or place of principal</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td></td>
<td>occupation towards you.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>The attitudes of your superiors (professors, supervisors, employers) towards</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td></td>
<td>you.</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>The attitudes of your neighbours towards you.</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>11.</td>
<td>The attitudes of your service providers (public services agents, salespeople,</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td></td>
<td>cashiers, etc.) towards you.</td>
<td></td>
</tr>
</tbody>
</table>
### MEASURE OF THE QUALITY OF THE ENVIRONMENT

While taking into consideration your abilities and personal limits, indicate to what extent the following situations or factors generally influence your daily life.

#### Attitudes of the people around you (way of acting) (cont.)

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Influence scale</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12-</td>
<td>The attitudes of strangers towards you (people that you pass on the street)</td>
<td></td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-</td>
<td>The attitudes of people towards you when they are in a group (a class, a crowd, interest group, etc.)</td>
<td></td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14-</td>
<td>The religious beliefs of the people in your community (faith, spirituality, etc.)</td>
<td></td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Labour market

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Influence scale</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15-</td>
<td>Counselling and employment seeking services</td>
<td></td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-</td>
<td>Current availability of jobs in your community</td>
<td></td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17-</td>
<td>Hiring criteria and selection tests</td>
<td></td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If you are not currently employed, check here and go to the next section.

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Influence scale</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>18-</td>
<td>Your workplace (physical set-up of your place of work)</td>
<td></td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19-</td>
<td>The requirements of your work tasks (obligations, performance, qualities needed, etc.)</td>
<td></td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-</td>
<td>Your work hours</td>
<td></td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-</td>
<td>Syndical stuctures</td>
<td></td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22-</td>
<td>Employee services</td>
<td></td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### MEASURE OF THE QUALITY OF THE ENVIRONMENT

While taking into consideration your abilities and personal limits, indicate to what extent the following situations or factors generally influence your daily life.

**Income (availability, financial programs and services)**

23. Your personal income (or your family's if you do not have your own income).

24. Public disability insurance programs (road accident, work, and health insurance, disability pension, etc.).

25. Private disability or health insurance programs (health insurance, travel insurance).

26. Other private insurance programs (house, car, life, etc.).

27. Financial compensation programs (subsidized rent, disability compensation, direct payments, etc.).

28. Socio-economic services (fiscal programs, family allocations, unemployment insurance).

29. Financial institution services (loans, investments, financial transactions, bank machines, etc.).

**Commercial services:**

30. The availability of businesses in your community (grocery store, restaurants, hardware store, department stores, shopping malls, etc.).

31. The services offered by the businesses in your community.

**Judicial services:**

32. Judicial services (courts, attorneys, notaries, judicial advice, etc.).

<table>
<thead>
<tr>
<th>Influence scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>obstacle</td>
</tr>
<tr>
<td>major</td>
</tr>
<tr>
<td>-3</td>
</tr>
</tbody>
</table>

-1: Minor
0: No Influence
1: Major
2: Medium
3: Does not apply
MEASURE OF THE QUALITY OF THE ENVIRONMENT

While taking into consideration your abilities and personal limits, indicate to what extent the following situations or factors generally influence your daily life:

**Socio-sanitary services:**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Influence scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>33.</td>
<td>External attendant services other than those provided by your family and close friends (escort, interpreter, etc.).</td>
<td>![Image]</td>
</tr>
<tr>
<td>34.</td>
<td>Home care services other than those provided by your family and close friends.</td>
<td>![Image]</td>
</tr>
<tr>
<td>35.</td>
<td>Health services in your community (hospital, medical clinic, dentist, etc.).</td>
<td>![Image]</td>
</tr>
<tr>
<td>36.</td>
<td>Physical and social rehabilitation services in your community.</td>
<td>![Image]</td>
</tr>
<tr>
<td>37.</td>
<td>Work vocational services within your community.</td>
<td>![Image]</td>
</tr>
<tr>
<td>38.</td>
<td>Social integration support services (social work, residential resources, etc.).</td>
<td>![Image]</td>
</tr>
<tr>
<td>39.</td>
<td>Day care services (including home day-care) and in-school child care.</td>
<td>![Image]</td>
</tr>
<tr>
<td>40.</td>
<td>Other child care services (providing time to rest and helping out).</td>
<td>![Image]</td>
</tr>
</tbody>
</table>

**Educational services:**

If you are not currently studying, check here and go to the next section.

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Influence scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>41.</td>
<td>Educational services in your community (elementary, jr and sr high, college, university, adult education, professional training, etc.).</td>
<td>![Image]</td>
</tr>
<tr>
<td>42.</td>
<td>Access to student loans and scholarships.</td>
<td>![Image]</td>
</tr>
<tr>
<td>43.</td>
<td>Other educational services in your community (extra-curricular, cafeteria, student services, etc.).</td>
<td>![Image]</td>
</tr>
<tr>
<td>44.</td>
<td>School transportation services.</td>
<td>![Image]</td>
</tr>
</tbody>
</table>
While taking into consideration your abilities and personal limits, indicate to what extent the following situations or factors generally influence your daily life.

### Public Infrastructure Services:

<table>
<thead>
<tr>
<th></th>
<th>Public transportation services in your community (schedule, stops, frequency, trajectory, etc.).</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Adapted transportation services (schedule, stops, frequency, trajectory, etc.).</th>
</tr>
</thead>
<tbody>
<tr>
<td>46-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Long distance transportation services (train, bus, plane).</th>
</tr>
</thead>
<tbody>
<tr>
<td>47-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Telephone communication services in your environment (telephone, fax, Internet).</th>
</tr>
</thead>
<tbody>
<tr>
<td>48-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Radio media services.</th>
</tr>
</thead>
<tbody>
<tr>
<td>49-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Television media services.</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Public services (fire, police, ambulance, civil protection).</th>
</tr>
</thead>
<tbody>
<tr>
<td>51-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Municipal services (road maintenance, snow removal, garbage pick-up, etc.).</th>
</tr>
</thead>
<tbody>
<tr>
<td>52-</td>
<td></td>
</tr>
</tbody>
</table>

### Community Organisation Services:

<table>
<thead>
<tr>
<th></th>
<th>Cultural services in your community (cinema, theatre, library, etc.).</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Religious organisation services in your community.</th>
</tr>
</thead>
<tbody>
<tr>
<td>54-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Athletic and recreational organisation services in your community (sports, chess, travel, outdoor recreation, collector clubs, etc.).</th>
</tr>
</thead>
<tbody>
<tr>
<td>55-</td>
<td></td>
</tr>
</tbody>
</table>
### MEASURE OF THE QUALITY OF THE ENVIRONMENT

While taking into consideration your abilities and personal limits, indicate to what extent the following situations or factors generally influence your daily life.

| Influence scale |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| obstacle        | no influence    | facilitator     | I do not know   | Does not apply  |                 |                 |                 |
|                 | major           | minor           | major           | minor           | major           | minor           | major           |
|                 | -3              | -1              | 0               | 1               | 2               | 3               |                 |

#### Community organisation services (cont.):

<table>
<thead>
<tr>
<th>56-</th>
<th>Community organisation services in your community (Self-help groups, Seniors Club, Lions clubs, Scouts.).</th>
</tr>
</thead>
</table>

#### Physical accessibility:

<table>
<thead>
<tr>
<th>57-</th>
<th>Physical accessibility of your residence.</th>
</tr>
</thead>
<tbody>
<tr>
<td>58-</td>
<td>Availability of accommodations that respond to your needs.</td>
</tr>
<tr>
<td>59-</td>
<td>Physical accessibility of public buildings in your community (government, hospitals, etc.).</td>
</tr>
<tr>
<td>60-</td>
<td>Physical accessibility of businesses in your community.</td>
</tr>
<tr>
<td>61-</td>
<td>Physical accessibility of your work or study setting.</td>
</tr>
<tr>
<td>62-</td>
<td>Physical accessibility of cultural, athletic or recreational centres.</td>
</tr>
<tr>
<td>63-</td>
<td>Physical accessibility of the residences of your relatives and friends.</td>
</tr>
</tbody>
</table>

#### Land, roads and distances:

<table>
<thead>
<tr>
<th>64-</th>
<th>Traffic density in your community.</th>
</tr>
</thead>
<tbody>
<tr>
<td>65-</td>
<td>Road accessibility in your community (summer).</td>
</tr>
</tbody>
</table>
While taking into consideration your abilities and personal limits, indicate to what extent the following situations or factors generally influence your daily life.

<table>
<thead>
<tr>
<th>Land, roads and distances (cont.):</th>
<th>Influence scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>66- Sidewalk accessibility in your community (summer).</td>
<td><img src="image" alt="Influence Scale" /></td>
</tr>
<tr>
<td>67- Intersection accessibility in your community (summer).</td>
<td><img src="image" alt="Influence Scale" /></td>
</tr>
<tr>
<td>68- Road accessibility in your community (winter).</td>
<td><img src="image" alt="Influence Scale" /></td>
</tr>
<tr>
<td>69- Sidewalk accessibility in your community (winter).</td>
<td><img src="image" alt="Influence Scale" /></td>
</tr>
<tr>
<td>70- Intersection accessibility in your community (winter).</td>
<td><img src="image" alt="Influence Scale" /></td>
</tr>
<tr>
<td>71- Unevenness of terrain (hills, slopes).</td>
<td><img src="image" alt="Influence Scale" /></td>
</tr>
<tr>
<td>72- The nature of the terrain’s surface (grass, gravel, sand).</td>
<td><img src="image" alt="Influence Scale" /></td>
</tr>
<tr>
<td>73- Location of your residence (according to distance from services).</td>
<td><img src="image" alt="Influence Scale" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Natural elements:</th>
<th>Influence scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>74- Winter climatic conditions (snow, ice, cold, etc.).</td>
<td><img src="image" alt="Influence Scale" /></td>
</tr>
<tr>
<td>75- Summer climatic conditions (heat, humidity, rain, etc.).</td>
<td><img src="image" alt="Influence Scale" /></td>
</tr>
<tr>
<td>76- Light intensity.</td>
<td><img src="image" alt="Influence Scale" /></td>
</tr>
<tr>
<td>77- Darkness.</td>
<td><img src="image" alt="Influence Scale" /></td>
</tr>
</tbody>
</table>
While taking into consideration your abilities and personal limits, indicate to what extent the following situations or factors generally influence your daily life.

### Natural elements (cont.):

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Influence scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>78-</td>
<td>Noise</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>79-</td>
<td>Air quality in your community.</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>80-</td>
<td>The time you require to carry out a task (ex. the time needed to get dressed, do an exam, get to work, etc.).</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>81-</td>
<td>Fauna (pets, wild animals, etc.).</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>82-</td>
<td>Flora (plants, trees, etc.).</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
</tbody>
</table>

### Objects:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Influence scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>83-</td>
<td>Little objects (utensils, pencils, etc.).</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>84-</td>
<td>Large objects (large boxes and toys, etc.).</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>85-</td>
<td>The weight of objects.</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>86-</td>
<td>Equipment in your work or study setting (office accessories, work tools, etc.).</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>87-</td>
<td>Furniture.</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>88-</td>
<td>Small electric appliances (toaster, blender, etc.).</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
<tr>
<td>89-</td>
<td>Large electric appliances (oven, refrigerator, etc.)</td>
<td>-3 -2 -1 0 1 2 3</td>
</tr>
</tbody>
</table>
### MEASURE OF THE QUALITY OF THE ENVIRONMENT

While taking into consideration your abilities and personal limits, indicate to what extent the following situations or factors generally influence your daily life.

<table>
<thead>
<tr>
<th>Influence scale</th>
<th>Obstacle</th>
<th>No Influence</th>
<th>Facilitator</th>
<th>Do not know</th>
<th>Does not apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstacles</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Obstacles</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Obstacles</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Obstacles</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Objects (cont.):

90. Telephones.
91. Fax machines.
92. Televisions and radios.
93. Computers.
94. Automobiles (car, truck, van, etc.).

#### Technology:

95. Directions for use related to technology (recipes, manufacturer notices, warnings, instructions, etc.).
96. Services related to technology access or maintenance (including plumbers, electricians, mechanics, repairmen, etc.).

#### Technical aids:

97. Availability of technical aids (wheelchairs, orthosis, writing assistance, guide-dogs, etc.).
98. Use of technical aids.
99. Technical aid maintenance services.
While taking into consideration your abilities and personal limits, indicate to what extent the following situations or factors generally influence your daily life.

### Political systems:

<table>
<thead>
<tr>
<th>100-</th>
<th>Equal opportunity programs (access to education, labour market, etc.).</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-</td>
<td>Actions of advocacy organisations.</td>
</tr>
<tr>
<td>102-</td>
<td>Modes of participation at public assemblies (debate, syndical meeting, general assembly, parent meeting, etc.).</td>
</tr>
<tr>
<td>103-</td>
<td>Participation opportunities in decision making (elections, administrative council, nomination to a position, etc.).</td>
</tr>
<tr>
<td>104-</td>
<td>Government policy orientations.</td>
</tr>
<tr>
<td>105-</td>
<td>Responsibilities and coherence of diverse governmental levels.</td>
</tr>
</tbody>
</table>

### Social rules:

| 106- | Rules (at school, the pool, public places, etc.).            |
| 107- | Conventions (eligibility criteria, collective agreement, etc.) |
| 108- | Law enforcement (smoking laws, parking laws, etc.).          |
| 109- | Administrative procedures (bureaucracy, forms, etc.).        |

<table>
<thead>
<tr>
<th>Influence scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>obstacle</td>
</tr>
<tr>
<td>-3</td>
</tr>
</tbody>
</table>


MEASURE OF THE QUALITY OF THE ENVIRONMENT
DEFINITIONS:

Obstacles:
Environmental factors or situations that hinder the accomplishment of a daily activity or task.

Major obstacle (-3): A major obstacle completely prevents accomplishment of the life activity.
Medium obstacle (-2): A medium obstacle largely hinders accomplishment of the life activity.
Minor obstacle (-1): A minor obstacle mildly hinders accomplishment of a life activity or slightly increases its level of difficulty.

Facilitators:
Environmental situations or factors that assist the accomplishment of a daily activity or task.

Major facilitator (3): A major facilitator entirely compensates for the impairments or disabilities, and allows full accomplishment of the life activity without constraint nor difficulty.
Medium Facilitator (2): A medium facilitator partially compensates for the impairments or disabilities, and allows partial accomplishment of the life activity or accomplishment with difficulty.
Minor Facilitator (1): A minor facilitator compensates a little for the impairments or disabilities, and allows partial accomplishment of the life activity or decreases its difficulty.

No influence (0):
Environmental situations or factors that have no effect on the accomplishment of a daily activity task.

I do not know:
The effect of the environmental situation or factor on the life of a person is unknown.

Does not apply:
Environmental situations or factors that don’t exist within the person’s environment
### Environmental Factors Frequently Perceived as Obstacles

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Current availability of jobs in your community.</td>
<td>72</td>
<td>-2.22</td>
<td>.84</td>
</tr>
<tr>
<td>85</td>
<td>The weight of objects.</td>
<td>68</td>
<td>-2.26</td>
<td>.78</td>
</tr>
<tr>
<td>17</td>
<td>Hiring criteria and selection tests.</td>
<td>60</td>
<td>-2.22</td>
<td>.76</td>
</tr>
<tr>
<td>23</td>
<td>Your personal income.</td>
<td>60</td>
<td>-2.60</td>
<td>.69</td>
</tr>
<tr>
<td>24</td>
<td>Public disability insurance programs.</td>
<td>48</td>
<td>-2.45</td>
<td>.77</td>
</tr>
<tr>
<td>27</td>
<td>Financial compensation programs (subsidized rent, disability compensations, direct payments, etc.).</td>
<td>45</td>
<td>-2.42</td>
<td>.78</td>
</tr>
<tr>
<td>71</td>
<td>Unevenness of terrain (hills, slopes).</td>
<td>44</td>
<td>-2.04</td>
<td>.77</td>
</tr>
<tr>
<td>25</td>
<td>Private disability or health insurance programs.</td>
<td>43</td>
<td>-2.53</td>
<td>.70</td>
</tr>
<tr>
<td>29</td>
<td>Financial institution services (loans, investments, financial transactions).</td>
<td>41</td>
<td>-2.46</td>
<td>.80</td>
</tr>
<tr>
<td>28</td>
<td>Socio-economic services (fiscal programs, family allocations, unemployment insurance).</td>
<td>36</td>
<td>-2.44</td>
<td>.73</td>
</tr>
<tr>
<td>109</td>
<td>Administrative procedures (bureaucracy, forms).</td>
<td>36</td>
<td>-1.80</td>
<td>.88</td>
</tr>
<tr>
<td>100</td>
<td>Equal opportunity programs (access to education, labor market, etc.).</td>
<td>31</td>
<td>-1.93</td>
<td>.81</td>
</tr>
<tr>
<td>36</td>
<td>Physical and social rehab services in your community.</td>
<td>29</td>
<td>-2.03</td>
<td>.81</td>
</tr>
<tr>
<td>47</td>
<td>Long distance transportation services (train, bus, plane).</td>
<td>29</td>
<td>-2.24</td>
<td>.83</td>
</tr>
<tr>
<td>6</td>
<td>The attitudes of your family or close friends who take place of family towards you.</td>
<td>26</td>
<td>-2.23</td>
<td>.86</td>
</tr>
<tr>
<td>108</td>
<td>Law enforcement (smoking laws, parking laws, etc.).</td>
<td>24</td>
<td>-2.00</td>
<td>.88</td>
</tr>
<tr>
<td>94</td>
<td>Automobiles.</td>
<td>22</td>
<td>-2.13</td>
<td>.94</td>
</tr>
<tr>
<td>4</td>
<td>Support from your neighbors.</td>
<td>22</td>
<td>-2.18</td>
<td>.85</td>
</tr>
<tr>
<td>5</td>
<td>Support from your colleagues at work, school, or place of principle occupation.</td>
<td>22</td>
<td>-2.22</td>
<td>.86</td>
</tr>
<tr>
<td>3</td>
<td>Support from your friends.</td>
<td>16</td>
<td>-2.25</td>
<td>.77</td>
</tr>
<tr>
<td>#</td>
<td>Question</td>
<td>N</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>----</td>
<td>---------------------------------------------------------------------------------------------</td>
<td>----</td>
<td>------</td>
<td>-----</td>
</tr>
<tr>
<td>2</td>
<td>Support from members of your family or close friends who take the place of family.</td>
<td>74</td>
<td>2.28</td>
<td>.74</td>
</tr>
<tr>
<td>3</td>
<td>Support from your friends</td>
<td>71</td>
<td>2.16</td>
<td>.84</td>
</tr>
<tr>
<td>7</td>
<td>Attitudes of your friends towards you.</td>
<td>66</td>
<td>2.16</td>
<td>.81</td>
</tr>
<tr>
<td>6</td>
<td>Attitudes of your family or close friends who take the place of family towards you.</td>
<td>64</td>
<td>2.34</td>
<td>.78</td>
</tr>
<tr>
<td>1</td>
<td>Your family situation (living alone, with a spouse, or with children).</td>
<td>56</td>
<td>2.42</td>
<td>.75</td>
</tr>
<tr>
<td>94</td>
<td>Automobiles (car, truck, van, etc.).</td>
<td>55</td>
<td>2.38</td>
<td>.73</td>
</tr>
<tr>
<td>90</td>
<td>Telephones.</td>
<td>54</td>
<td>2.05</td>
<td>.76</td>
</tr>
<tr>
<td>93</td>
<td>Computers.</td>
<td>51</td>
<td>2.31</td>
<td>.81</td>
</tr>
<tr>
<td>35</td>
<td>Health services in your community.</td>
<td>50</td>
<td>2.04</td>
<td>.85</td>
</tr>
<tr>
<td>51</td>
<td>Public services (fire, police, ambulance, civil protection).</td>
<td>43</td>
<td>2.13</td>
<td>.80</td>
</tr>
<tr>
<td>23</td>
<td>Your personal income.</td>
<td>40</td>
<td>2.25</td>
<td>.86</td>
</tr>
<tr>
<td>100</td>
<td>Equal opportunity programs (access to education, labor market, etc.).</td>
<td>34</td>
<td>2.08</td>
<td>.93</td>
</tr>
<tr>
<td>57</td>
<td>Physical accessibility of your residence.</td>
<td>33</td>
<td>2.15</td>
<td>.83</td>
</tr>
<tr>
<td>106</td>
<td>Social rules (at school, the pool, public places).</td>
<td>30</td>
<td>2.13</td>
<td>.86</td>
</tr>
<tr>
<td>27</td>
<td>Financial compensation programs.</td>
<td>29</td>
<td>2.27</td>
<td>.79</td>
</tr>
<tr>
<td>45</td>
<td>Public transportation services in your community.</td>
<td>19</td>
<td>2.42</td>
<td>.76</td>
</tr>
<tr>
<td>109</td>
<td>Administrative procedures (bureaucracy, forms, etc.).</td>
<td>17</td>
<td>2.29</td>
<td>.84</td>
</tr>
<tr>
<td>20</td>
<td>Your work hours.</td>
<td>15</td>
<td>2.26</td>
<td>.79</td>
</tr>
<tr>
<td>46</td>
<td>Adapted transportation services (schedule, stops, frequency).</td>
<td>14</td>
<td>2.35</td>
<td>.74</td>
</tr>
<tr>
<td>33</td>
<td>External attendant services other than those provided by your family and close friends.</td>
<td>12</td>
<td>2.41</td>
<td>.79</td>
</tr>
</tbody>
</table>