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The Impact of the State-Federal Vocational Rehabilitation Program on Quality of Life

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The Impact of the State-Federal Vocational Rehabilitation Program on the Quality of Life

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by

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Abstract

This study utilizes the Longitudinal Study of the Vocational Rehabilitation Program to examine the impact of state-federal vocational rehabilitation services on the quality of life of consumers. The theory that guides this study is an amalgam of theories of Allardt, Halpern, Campbell, and Cummins which indicate that quality of life is made up of various domains which parallel Maslow's Hierarchy of Needs. The study followed the theory that improvement in the individual domains of life would improve its overall quality. The domains of physical functioning, self-esteem, community integration and productivity were assessed prior to and after the receipt of vocational rehabilitation services. Results indicate that consumers who obtain an employment outcome obtain higher scores on measurements of self-esteem, physical functioning and activities of daily living and productivity than do consumers who do not obtain an employment outcome. The linkages that specific VR services have on individual life domains were also explored. Consumers who receive more education and training services show an increase in community integration scores. Suggestions for state-vocational rehabilitation services change are provided based on a socio-ecological model.

Chapter I – Introduction

The overall goal of rehabilitation is to improve quality of life for persons with disabilities. As early as 1943, Townsend reports that the National Council for Rehabilitation defined rehabilitation as "the restoration of the handicapped to the fullest physical, mental, social, vocational, and economic usefulness of which they are capable" (as cited in Bitter, 1979, page 3). Although the term "handicapped" is now dated, the definition of rehabilitation remains fundamentally the same today. Currently, the U.S. Department of Labor states that the role of a rehabilitation counselor is to:

> Counsel individuals to maximize the independence and employability of persons coping with personal, social, and vocational difficulties that result from birth defects, illness, disease, accidents, or the stress of daily life. Coordinate activities for residents of care and treatment facilities. Assess client needs and design and implement rehabilitation programs that may include personal and vocational counseling, training, and job placement (2009, http://www.bls.gov/oes/current/oes211015.htm, ¶ 1).

Although the public state-federal vocational rehabilitation (VR) program provides services that appear to assist clients in the areas of economic independence, physical functioning, and psycho-social functioning, the program typically utilizes employment as its main criterion for success (Turem, Koshel, D'Amico, & LaRocca, 1975). This gives the impression that consumers of rehabilitation services who do not attain an employment objective receive no measurable benefit from the program. In actuality, the state-federal vocational rehabilitation program does not have a policy to evaluate whether the services it provides lead to an improvement in other areas of consumers' lives.

This focus on employment as the measurable goal of program success is most likely a result of the early legislation and policy. The public rehabilitation program in the United States began in 1920 with the passage of the Vocational Rehabilitation Act. As the name implies, this Act was vocational in nature. It provided federal and state funds to pay for limited services such as vocational guidance, training, and placement to assist persons with physical disabilities in obtaining employment (Bitter, 1979). The implementation of this Act and its subsequent amendments along with the continued appropriation of millions of federal and state dollars for the vocational rehabilitation of persons with disabilities (Workforce Investment Act of 1998) provides evidence that work is greatly valued by public policy makers and the American society. Work, itself, may be thought of as a means by which persons can achieve other goals that improve quality of life.

The public state-federal vocational rehabilitation program, like American society, has continued to evolve over the past 85 years. In 1943, persons with mental disabilities were included as recipients of services, and the scope of services that was offered by the vocational rehabilitation program expanded to include any service necessary to help a person become employed. In 1973, Congress began to discuss the need to provide comprehensive service to persons for whom employment might not be feasible, and the Rehabilitation Act replaced the Vocational Rehabilitation Act as amended (Bitter, 1979).

During the 1970s and 1980s, it appeared that the public state-federal vocational rehabilitation program was beginning to also consider quality of life issues for persons with disabilities. The term “vocational rehabilitation” became used less frequently in legislation and professional literature, and the term “rehabilitation” began to take its

place. The Rehabilitation Act of 1973 and subsequent amendments began to place importance on environmental accessibility, social integration, consumer involvement, and civil rights of persons with disabilities. Emphasis was placed on providing services to persons with severe disabilities who had limited potential for employment, and independent living became a viable option (Dalrymple, Richards, & Frieden, 1985; Rubin & Roessler, 2008). Although it remained important, work was not seen as the only objective of the rehabilitation program.

In 1998, the Rehabilitation Act was incorporated into the Workforce Investment Act. Most of the provisions of the Rehabilitation Act remained the same, and the public rehabilitation program has continued to consider issues that address quality of life. However, because work is obviously the main emphasis of a law entitled the Workforce Investment Act, the trend of addressing other quality of life issues for persons with disabilities may reverse itself, and work may again become the only goal of the public rehabilitation program.

Although some of these past changes in the public rehabilitation program indicate that policy makers and members of society in general have viewed the state-federal vocational rehabilitation program as more than a service that assists persons with disabilities in going to work, the public VR program continues to use employment as its main criterion for measuring success in rehabilitating persons with disabilities. In addition, consumers of rehabilitation services who have the most significant disabilities often require lengthy, intensive services in order to become employed. At times they may not enter employment, but their lives may be improved as a result of the rehabilitation services they receive. Rehabilitation counselors recognize this and become torn between

serving persons with the most significant disabilities who may not be employed quickly and serving individuals with less significant disabilities in order to get the required number of "Status 26" case closures, a traditional measure of success indicating a case was closed with the consumer employed. One method of resolving this issue would be for the Rehabilitation Services Administration (RSA), the administrative body within the U.S. Department of Education that regulates the public vocational rehabilitation program, to develop a program evaluation system that also measures outcomes that pertain to quality of life.

It appeared that the Rehabilitation Services Administration (RSA) began to take efforts at evaluating quality of life measures when it authorized federal funds to conduct the Longitudinal Study of the Vocational Rehabilitation Services Program (LSVRSP). The LSVRSP is the largest ongoing study ever designed to assess the performance of the vocational rehabilitation program. This study, conducted by the Research Triangle Institute (RTI) International, utilized a national sample of vocational rehabilitation consumers to assess linkages between vocational rehabilitation services and economic and noneconomic outcomes (U.S. Department of Education, 2005, http://www.ed.gov/policy/speced/leg/rehab/eval-studies.html#vr). This longitudinal study collected information on factors that have been considered pertinent by previous researchers in measuring the quality of life for individuals. Because the LSVRSP assessed many of these factors, it will be the source of data for this dissertation.

Purpose

The purpose of this study is to evaluate the state-federal vocational rehabilitation program from a broad perspective in order to ascertain whether the services it provides,

on average, are associated with an overall improved quality of life, regardless of employment outcome. Overall quality of life is the chief dependent variable in this study, and is defined as the sense of well-being and satisfaction reported as being experienced by individuals in their current life situation. This definition of quality of life is drawn from various theories and the ensuing research that there are specific domains of life experienced by individuals that contribute to their reported satisfaction and ultimate quality of life (Andrews and Withey, 1976; Campbell, Converse & Rodgers, 1976; Rogers, 1977; Diener, 1984; Halpern, 1993; Cummins, 1996). The number of domains varies, depending upon the theorist. Because this study is dependent upon secondary data acquired from the LSVRSP, it will assess quality of life of clients in the domains of self-esteem, physical functioning and activities of daily living, community integration, and work productivity.

Research Question

The research question of this study is do consumers of VR services experience improvement in the quality of their lives? The study will examine the relationship between the receipt of public state-federal rehabilitation services and the quality of life reported by consumers in Longitudinal Study of the Vocational Rehabilitation Services Program. Some of the past research that has examined the quality of life reported by those who have obtained employment after receiving rehabilitation services has shown conflicting results. Eklund (1991) found that successful vocational rehabilitation led to an increase in social well-being for persons with somatic ill-health; whereas Fabian (as cited in Fabian, 1991) found that some groups of persons with severe mental illness showed a decrease in quality of life outcome after achieving competitive employment. However, it

does not appear that studies have examined the quality of life of those who did not go to work. It is expected that persons who receive vocational rehabilitation services but do not become employed will also have their quality of life affected by the receipt of rehabilitation services.

To test this question, this study will use information from the surveys and case record reviews in the LSVRSP and will compare the responses of consumers who obtained a vocational outcome to those who did not to determine if there is a change in the quality of life. It is expected that all consumers who receive services will report a greater quality of life after obtaining services.

Overview of the Methodology

As stated previously, data from the Longitudinal Study of the Vocational Rehabilitation Services Program (LSVRSP) conducted by Research Triangle Institute (RTI) for the Rehabilitation Services Administration (RSA), U.S. Department of Education, under contract number HR92022001 will be used to address the research questions (www.LSVRSP.org, 2005). To date, the LSVRSP is the most comprehensive study available designed to address the economic and noneconomic outcomes achieved by recipients of the state-federal vocational rehabilitation program. The LSVRSP used a multistage design to select a random sample, with probability proportional to size, of 40 local vocational rehabilitation (VR) offices. From those offices, 8818 applicants and consumers for VR services were selected for the study over a period of two years. A cohort design was implemented that selected 25% of the sample from the population of persons who were applying for VR services, 50% of the sample were already accepted and receiving services and 25% had exited services. Sample acquisition and data

collection began in December 1994 and ended in January of 2000. The study tracked 8,500 participants for a period of three years. (Hayward & Schmidt-Davis, 2002).

The LSVRSP is the only study available that has utilized a national sample to study the noneconomic impacts of the vocational rehabilitation program. Traditionally, measures of physical functioning, psychological functioning, and community integration are not available for consumers of the VR program. The LSVRSP was specifically designed to collect such information through consumer interviews and case reviews. Because the study is longitudinal in design, repeated measures were attempted on all participants of the study. This includes not only study participants who received VR services and obtained an employment outcome, but also those who received services and did not obtain employment and those who submitted an application for VR services but did not receive them for whatever reason. Thus, the relationship between the receipt of VR services and these nonecomomic factors can be assessed with this database.

For this study on the impact of VR services on quality of life, a number of criteria were used in selecting the particular cases to study. In order to provide pre-service and post-service comparison of service measures, only cases that were actually opened and closed during the data collection of the LSVRSP were selected. The analysis focuses on three groups of individuals. The first group consists of those individuals who received services, became employed, and had VR cases closed as successfully employed (Status 26 measure). The second group consisted of individuals who received services but whose cases were closed as not successfully employed (Status 28 measure). The third group consisted of individuals who applied for VR services and were determined eligible for services but had their cases closed before receiving VR services (Status 30 measure).

This group was selected to provide a control group. Although it is possible that individuals in this group may have hidden characteristics that make them different from the groups that receive services, previous researchers in VR have justified the use of this group for control because the individuals do meet the criteria for eligibility and are motivated to apply for services (Dean and Dolan, 1991).

The original data for the LSVRSP contained information from consumer case records and conducting computer assisted interviews with study participants. LSVRSP researchers abstracted data from consumer records when the consumer entered the LSVRSP and quarterly thereafter until the consumer left the state-federal VR program. The LSVRSP contains information from baseline interviews that the investigators conducted with each study participant upon entry into the LSVRSP. The original LSVRSP investigators conducted follow-up interviews each year for three years. However, these interviews varied, depending upon whether or not the consumer's case was active or closed to the vocational rehabilitation program and, if closed, the type of closure.

Significance of the Study

This study is expected to utilize a comprehensive socio-ecological model in order to make contributions to the specific field of vocational rehabilitation services and the broad field of disability policy. The socio-ecological model provides a mechanism for ensuring systems change by stressing that both individual and environmental factors be addressed. It was first described McLeroy, Bibeau,Steckler, & Glanz, (1988) to deal with the effectiveness of health programs. However, it has been applied to describe a method of systems change in rehabilitation programs as well (Lewis, 2008). This model suggests

that if sustainable change in a program is to take place, change must be effected in the following five levels of influence: intrapersonal, interpersonal, organizational, community, and public policy.

Change in the intrapersonal or individual level of analysis would involve change in such factors as the person's knowledge, skills, attitudes, and behavior. It has been argued that the purpose of rehabilitation is to assist persons with physical, emotional, mental, and social disabilities to improve the quality of their lives (Livneh, 1988; Rubin & Roessler, 2008). Therefore, a public rehabilitation program can begin to initiate change on an individual level by assessing the physical, psychological, social, educational and functional benefits obtained by the aggregate of all individuals served by the program. Such an assessment would move the focus of program evaluation from measuring the number of consumers who become employed to measuring the change in potential benefits obtained by individual consumers of the program. .

This next step involved in the socio-ecological model encourages a change in interpersonal processes, which involves recognizing the importance of relationships with family, friends, coworkers, neighbors and others in one's life. Persons acquire their social identity from their social relationships. These relationships can provide a positive source of support in changing personal attributes, or they can reinforce undesirable behavior.

If the evaluation of rehabilitation programs takes into consideration the social systems of consumers, strategies can be designed that would enhance conditions that support positive outcomes and modify those that result in negative outcomes. The current study considers social relationships and social integration to be an important aspect of consumers' lives that can be measured. If the results show that the VR program can

impact the social integration of consumers, it may provide impetus for a model of systems change that takes into consideration the need to ameliorate consumers' social environments. This level requires a change in overall social norms and influences in order to target a change in the individual.

The third level of analysis in a socio-ecological model focuses on change within the organizational system. If the results of this study indicate that quality of life may be impacted by the provision of VR services, this could potentially lead to a cultural change within the organization of the state-federal VR program. This type of change would involve the organization and its employees changing practices and procedures to focus on providing services that can impact the overall quality of its consumers' lives. New objectives for program evaluation would be developed, and the organization would begin to evaluate practitioners on how well their services bring about change in the individual and the individual's social systems.

The fourth level of change that is discussed within the context of the socio-ecological model is that of community. The community involves the relationships among various organization and groups that exist within a defined geographical or political area. Often, organizations within a community must compete for limited resources. If the current study indicates that the quality of consumers' lives can be improved through the provision of services, it may provide incentive for various organization that seek to provide services to persons with disabilities to cooperate with one another for the best interest of their consumers. This cooperation would require the service organizations to restructure their social networks and practices and strategies to achieve their common goals.

The fifth level of analysis in the socio-ecological model involves changing public policy. This would involve changing the laws, regulations, and procedures pertaining to the state-federal vocational rehabilitation program. It also involves passing legislation that ensures funds will be available to provide services to persons with disabilities. This would require government programs to justify the use of public resources that are allotted to support and maintain them (Gallagher-Lepak, 1996). The state-federal VR program must demonstrate that it is effective in meeting these new goals and it must also demonstrate that it is efficient by providing the best service for the least amount of money.

According to the Census 2000, there are at least 49.7 million persons in the United States who report having some form of disability (Waldrop & Stern, 2003). This is approximately 19.3 percent of the population. Although this number appears too large to risk alienating politically, there is a current legislative movement in the federal government to reduce or eliminate various public benefits to persons with disabilities. Medical care, housing, education and rehabilitation programs are in danger of being slashed (National Coalition for Disability Rights, 2005; Price, 2005). Any research that demonstrates persons with disabilities are active and interested in improving the quality of their lives will demonstrate to legislators that these are issues that should not be overlooked when allotting public funds to programs.

Thus, this study seeks to provide a mechanism for change in all five levels of analysis that are depicted in the comprehensive socio-ecological model described by McLeroy et al. (1988). According to this model, change in a system cannot take place unless individual and environmental factors are addressed. If the current study provides

evidence that VR services can impact the lives of consumers, it will demonstrate that change in outcomes can be measured at the individual level and the intrapersonal level. Such outcomes can provide the impetus for change at the organizational, community, and public policy levels of the socio-ecological model.

Organization of the Dissertation

The organization of this dissertation will consist of six chapters. The second chapter will discuss program evaluation and provide a review of the literature on studies that evaluate the state-federal vocational rehabilitation program. The third chapter will review literature pertaining to the construct of quality of life as well as literature specific to the quality of life of persons with disabilities. In addition the theoretical and conceptual models of quality of life that are espoused by various authors in the field will be discussed, and the different instruments used to measure quality of life and life satisfaction will also be discussed. The fourth chapter covers the methodology of the dissertation. The LSVRSP will be discussed more in depth. Its method of sample acquisition and data collection will be covered. The sample used and items chosen from the surveys administered in the LSVRSP for this dissertation along with the method used to analyze the data will be discussed in detail. The fifth chapter will discuss the results of the data analysis, and the sixth chapter will provide implications and limitations of the study along with recommendations for the future.

Chapter II – Program Evaluation and the VR Program

Human service programs such as the state-federal vocational rehabilitation program are expected to improve the lives of the people they service. More specifically, human service programs are designed to change the knowledge, behavior, and values of the people they serve. These programs are diverse, and may address issues of health, education, housing, economic development, legal services, public safety, and general welfare of clients. Some may even seek to change institutions with which their clients interact and the environment in which their clients live. Despite their diversity, all the programs have the overall goal of making life better for the people they serve (Weiss, 1972).

However, no human service program works in a vacuum. It receives funds from public or some private organizations in order to operate. Subsequently, the program is required to demonstrate and prove to policy makers, funding parties, stakeholders, and the public in general that the program is accomplishing its desired goal. A program demonstrates its accomplishments through systematic program evaluation.

According to Chen (2005, p.3) "Program evaluation is defined as the application of evaluation approaches, techniques, and knowledge to systematically assess and improve the planning, implementation, and effectiveness of programs ." The program must interact with the environment in order to obtain needed resources. Inputs include resources such as finances, technology, facilities, equipment, personnel and clients that come from the environment. The program must transform inputs into desirable outcomes. Transformation is the stage in which the events take place to achieve a desired outcome. In public service programs, this is simply the stage in which services are provided to

clients. Outputs are the results of this transformation. This expected transformation takes place in an environment that consists of factors that, although outside the boundaries of the program, can promote or hinder the program success. Such environmental factors include social norms, political structures, the economy, interested groups and individuals.

In order to correct existing problems or to improve desired outcomes, a program requires information about inputs, outputs, transformations, and the environment's responses to all of these. This information is feedback. Obtaining this feedback about a program is the purpose of program evaluations.

Programs must have feedback to determine if inputs are adequate, interventions are implemented appropriately, target groups are reached, and intended clients receive quality services. This feedback determines whether the outputs achieved by the program, meet the goals of funding sources, decision makers, and other interested parties. Without feedback, a system will deteriorate and fail.

Although one of the purposes of program evaluation is to assess the existing merits of a program, program evaluators are usually expected to go beyond simple assessment of the existing merits of a program. Stakeholders not only want to know how well a program has performed in the past, but they also want information on what must be done to improve current performance. Thus, one purpose of program evaluation is to measure the effects of the program in accomplishing its stated goals, and a second purpose is to evaluate how the program can improve its performance (Weiss, 1972).

History of Evaluating the Vocational Rehabilitation Program

When the state-federal vocational rehabilitation program was established in 1920, it was the first program of its kind that allowed the federal government to provide grants

to the states for the purpose of providing individualized services to improve the overall welfare of consumers. Congress had no precedent to follow in providing direction on carrying out this program. The federal and state governments were given equal responsibility for implementing the programs, but there were no standards developed to assess how each state performed in achieving the goals of the legislation. As a result, evaluations differed greatly from state to state (Turem, Koshel, D'Amico, & LaRocca, 1975).

A formal program evaluation system to assess the vocational rehabilitation program was not legally mandated until the Rehabilitation Act of 1973. This Act required the Secretary of Health, Education, and Welfare to develop standard criteria by which the program would be evaluated. The evaluation guidelines on the particular standards that were distributed to the states emphasized that the VR program was to be assessed by the changes the program brought about in the condition of the client. The actual standards required each state program to collect information on the percentage of the existing population it served. The standards also required that a greater number of people accepted for services eventually enter some form of gainful employment. The program was to demonstrate that services were adequate and timely and provided in a cost-effective manner that showed a positive return on society's investment. Clients were to demonstrate the ability to retain the employment outcomes achieved and show increased evidence of economic independence. In addition clients were to demonstrate satisfaction with the services they received (Barrett & Shea, 1980; Rubin & Roessler, 2008; Turem et al, 1975).

Although each state VR program was required to collect this information, the ability to use it to conduct accurate assessments was severely hampered by the evaluation technology and practices that existed in the 1970s (Rubin & Roessler, 2008). Professional literature began to discuss the problems of conducting meaningful evaluations on social programs (Capella, 2001; Conley, 1969). Some authors attempted to provide specific guidance on the process of conducting program evaluations of the vocational rehabilitation program. Bennett and Weisinger (1974) suggested that an analysis of hard data that utilized measures of rates, ratios, index numbers, costs, and rating scales provided the most objective method of evaluating the program. They also indicated that it was difficult to measure criteria related to quality and client satisfaction due to lack of objectivity. Turem et al. (1975) indicated that although changes in physical and psychosocial function are required to accomplish vocational goals, the legislation required that services be delivered in order to achieve a vocational outcome. No objective criteria were given to the states for evaluating changes in the personal functioning of the individual. The easiest, objective output to evaluate the goals of the legislation was the moving of a person with a disability into employment, which is measured by the Status 26 closure.

Use of the Status 26 Closure Measure

Perhaps because the Status 26 closure as an output measure is conceptually simple and concretely measured, it became a mainstay in evaluating the vocational rehabilitation program. The Status 26 closure was used to show dollars spent by the program and dollars earned by the recipients of services. Legislators and taxpayers tended to be impressed with the numbers of people that enter employment and the amount of money

they contribute to the economy. Other service delivery programs did not have such a concrete measure to use in their evaluations. It was easy for proponents of the VR program to justify its existence when it was compared with other service programs that had vague, nonspecific statement goals. Initially, the Status 26 closure standard was an asset for the state-federal vocational rehabilitation program (Backer, 1980).

As stated previously, the Status 26 closure has been used to demonstrate the economic efficiency of the vocational rehabilitation program. Studies have often utilized cost-benefit analyses that utilized the Status 26 closure measure. Conley (1969) compared the earnings that persons earned when closed as Status 26 to those they received at application. After applying a social discount rate, Conley found that a successfully closed individual earns about $5.00 for every $1.00 spent on rehabilitation services. Although an analysis of change in wages is an incomplete measure of the total benefits of rehabilitation; Conley asserted that it is a marketable output that can be used to justify government spending for persons with disabilities.

One issue with cost-benefit analyses is that they may be used to justify the rationing of services based on demographic variables. A previous cost-benefit analysis study by Conley (as cited in Conley, 1969) utilized data from an individual state VR program that showed that those with the highest earnings at closure tended to be white married males with orthopedic disabilities who were well educated. However, because these were the individuals that had the highest earnings at application, the actual increase in earnings from application to closure was about the same for whites and nonwhites. In addition, the average case service cost for the white group was higher, making this group more expensive to rehabilitate. This led Conley to suggest that it may be more profitable

for society to focus on rehabilitating the uneducated, middle aged, severely disabled, and nonwhite in order to raise their productivity to the level of the more productive group.

Bellante (1972) wanted to test Conley's conclusion that it may be more economically efficient to rehabilitate those who are uneducated, nonwhite, unmarried and severely disabled. He used closure data from another state vocational rehabilitation program to generate a cost-benefit ratio for various subgroups that Conley identified. Consistent with the findings of Conley, nonwhites tended to be less expensive to train. However, Bellante noted that nonwhites tended to enter jobs requiring fewer skills. Contrary to Conley, Bellante found that whites do have higher benefit-cost ratios than nonwhites over the course of their work life. He also found that although individuals who obtain higher education require more case dollars to rehabilitate, they show a higher benefit-cost ratio. In contrast to Conley, this study showed a negative relationship between age and benefit-cost ratios. This is probably because older rehabilitants do not have as much work life left to realize a significant increase in earnings. Bellante's study demonstrates that high productivity groups actually benefit the most per dollar spent on rehabilitation services.

Worrall (1978) used a stratified, national sample in attempt to replicate Bellante's results. The probability of employment was estimated using a multiple regression with the independent variables of age, sex, race, education, primary disabling condition, secondary disabling condition, public assistance status, marital status, and dependents. Worrall asserted that the previous studies utilizing cost-benefit ratios overstated the result of the vocational rehabilitation program because they assumed that clients who entered the program with no wages would have continued to have no wages for the rest of their

lives if they had not obtained services. He assigned nonworking applicants proxy wages at entry that were equivalent to the mean wages of working applicants in the same strata based on to race, age, disability and education. Consistent with previous cost-benefit studies, Worrall (1978) found that the VR program returned more gains to society than costs it expended. His findings also suggested that it was more efficient to rehabilitate the young, married, and the nonwhite.

Although they had somewhat different outcomes with regards to subgroup variables, all of these cost-benefit analyses showed that the Status 26 closure is an output that is efficient to analyze in terms of dollars spent. However, cost-benefit analyses must be interpreted with caution. They are dependent upon the assumptions used to implement the technique. The different researchers made different assumptions when calculating their cost-benefit ratios. These assumptions may account for the different outcomes among the various subgroups.

Dean and Dolan (1991) asserted that the previous economic evaluations of the vocational rehabilitation program had not provided adequate estimates of the program's impact on earnings. To test this impact, they compiled longitudinal earning profiles on persons receiving vocational rehabilitation services for three years prior to services and three years after receiving services. They utilized data from a state VR program and compared those closed successfully to those of a group of individuals who had applied for services and were determined eligible but left the program before receiving services (Status 30).[1] To control for the difference between the treatment group and the comparison group, the differences in post programmatic earnings and preprogram

[1] Status 30 closure is the code given the case of an individual who applies for services, is determined eligible but leaves the program before services are received.

earnings were regressed against change in age, change in age squared, VR participation which denoted treatment or not, and the year of the referral to the program. The measure for earnings impact was the change in earnings for the interval between two years prior to application to one year after closure. The treatment coefficient was positive for all six cohorts and statistically significant for women with mental disabilities and for men and women with physical disabilities. The authors concluded that participation in the VR program was associated with higher earnings for treatment group.

Capella (2001) also used the Status 26 closure measure in an attempt to evaluate the cost effectiveness of the vocational rehabilitation program and to compare individual state programs on their effectiveness. The study showed a significant negative correlation between cost per closure[2] and success rate.[3] However, there was a positive relationship between success rate and the cost of purchased services.[4] State vocational rehabilitation programs with high success rates also tended to be more financially efficient. They tended to spend more money directly on clients and less on overhead costs. Capella (2001) went so far as to acknowledge that variables such as quality of services delivered, consumer satisfaction, retention of gains achieved, and clients' quality of life were important factors to consider in evaluating the effectiveness of the program; however, data to measure these variables were not collected.

Client and Service Factors Relating to Status 26 Closures

Other research has been interested in assessing whether the services provided by the VR program do lead to employment. Peterson and Nelson (2001) utilized a stepwise

[2] Cost per closure is the total program expenditures divided by the total number of Status 26 closures
[3] Success rate is the number of Status 26 closures divided by the total number of clients who received services under an employment plan (Status 26 and Status 28 closures).
[4] Cost of purchased services is the total cost of purchased services divided by the number of Status 26 closures.

regression to determine demographic and service variables that best predicted an employment outcome for those that were closed as employed in a midwestern state during federal fiscal year of 1994. Service-related variables considered were length of time from application to closure, amount of case service expenditures, and type of training received. Demographic variables were age, race, gender, education at application, type of disability, and earning at application. They found that the VR service-related factors were more predictive of an employment outcome than the demographic variables identified.

Rosenthal, Chan, Wong, Kundu, and Dutta (2005) conducted a Chi-squared Automatic Interaction Detection or CHAID analysis in order to examine relationship of age, race, gender, and disability type, the receipt of benefits such as Social Security Disability Insurance and Supplemental Security Income, and service patterns on the VR outcomes of consumers. They found that the highest percentages of successful employment occurred among those with sensory impairments, those who did not receive benefits, and those who received job placement services. However, the service of job placement was the highest predictor of employment. This study provided evidence that service provided by the program was able to predict competitive employment much better than demographic variables.

Martz and Xu (2008) took a slightly different approach and investigated demographic variables and the beliefs that consumers had about the VR services they received to determine the best predictors of an employment outcome. Data were collected via a survey of persons who received services from the Tennessee Division of Vocational Rehabilitation and exited the program. Measures of age gender, ethnicity and education

levels were considered. Nine different disability groups were also considered. In addition to the demographic variables, data from 23 questions in the survey was also used as predictors of employment. Nine logistic regression models were developed based on the disability categories. The researchers found that the same predictor variables showed different results in these nine categories. For example, the best predictor of employment for persons with hearing disabilities included a belief that they were involved in their service program development and a belief that they obtained services or training they needed. Persons in the "other" disability category had service related factors that included the feeling of being treated with dignity, feeling positive about their training, and feeling positive about their vocational program. These findings suggest that various aspects of consumer satisfaction with service delivery can be an important predictor of an employment outcome and focusing on those aspects could enhance the outcomes attained by the VR program.

Limitations of the Status 26 Closure Measure

Although the Status 26 closure standard is a useful, objective criterion for the state-federal vocational rehabilitation program to measure, sole reliance on this criterion has some negative consequences for the program. Using this measure as the main criterion for measuring success emphasizes quantity of numbers rather than quality of the rehabilitation. Counselors may have a tendency to seek out simple cases that require little time and effort in order to meet the Status 26 closure requirements needed for their performance evaluations. Counselors may push consumers to take unsuitable jobs, or they close cases before consumers were ready. Individuals with more severe disabilities often may not get accepted into the program because it is more difficult for them to

obtain employment. Little incentive is given for working challenging cases. No credit is given for providing services to persons who do not enter employment although the services may result in great gain for the person and may lead to employment at some later date (Backer, 1980).

Another problem with the Status 26 closure is that it has not reflected the changes that have been occurring in our society. Public activism for persons with disabilities has grown and become more organized. This activism helped pass The Americans with Disabilities Act of 1990, which is a civil rights act that impacted many facets of life. Medical and technological advances have brought about a new standard of living for everyone, including persons with disabilities. The VR consumer population consists of fewer people with work related physical injuries. Persons with learning disabilities, psychiatric disabilities and other forms of cognitive disabilities are now eligible for services, and many of them do not have a work history. Education of rehabilitation professionals has increased the focus of the program on delivering a broader range of services to persons with a variety of disabilities (Menz, 1997). The social milieu has required that the VR delivery system evolve and become more consumer directed. This has resulted in the need for a program evaluation system that assesses outcomes that are more consumer specific

In addition to increasing consumer demands, legislators and taxpayers continue to require that public funds be spent in a manner that maximizes the impact of available resources. Evaluations need to measure the degree to which positive outcomes at the consumer level are achieved while continuing to evaluate the total impact of the program to society at large. Program evaluations that assess consumer satisfaction in addition to

measures of effectiveness and efficiency have been proposed as a means for delivering a higher quality of services (Lewis, 2005; Lewis, Armstrong, & Karpf, 2005).

Evaluation of Consumer Satisfaction

Although one of the original federal program evaluation standards of the Rehabilitation Act of 1973 focused on consumer satisfaction, recent literature concerning consumer satisfaction has suggested that this type of data has increased in level of importance because of the increased emphasis on consumer choice that was written in the legislation in the 1990s (Capella & Turner, 2004; Koch and Merz (as cited in Lewis, Armstrong, Taylor, & Spain, 2005)). Consumer satisfaction studies are required of all state VR programs. Kosciulek, Vessell, and Rosenthal (1997) described the results of Missouri's first consumer satisfaction survey process conducted on cases closed in status 26, 28, or 30 from October 1, 1994 to September 30, 1995 The responses to the survey indicated that the majority of consumers were satisfied with the VR program. The authors stress that such findings are an important aspect of program evaluation because they demonstrated to legislators that the program is effective and provide data that can be analyzed to demonstrate the areas of a program that need improvement.

As with the study by Kosciulek et al. (1997), consumer satisfaction studies that have been conducted by state VR agencies have tended to show high levels of satisfaction. However, the consumer satisfaction criterion in program evaluation is criticized because there is little agreement on the definition of the construct and methods of measurement. Little empirical research has been conducted regarding consumer satisfaction in vocational rehabilitation, and RSA has not provided specific criteria for individual state programs to follow in acquiring consumer satisfaction data. As a result,

the methods utilized by the individual state programs vary greatly and do not allow for comparison across states (Capella & Turner, 2004).

In an attempt to identify the dimensions involved with the construct of consumer satisfaction, Kosciulek (2003) sent a 14 item questionnaire to all consumers whose case had been closed by a midwestern state VR agency that served persons with visual impairments. The questionnaire had a 30.5 percent response rate and an internal consistency reliability of .94 for the current study. Information about the data set was obtained by the use of a technique known as multidimensional scaling. The results demonstrate that at least two dimensions are involved when assessing the construct of consumer satisfaction with this scale. The first dimension was referred to satisfaction with case management versus satisfaction with employment. The second dimension was satisfaction with consumer choice versus satisfaction with customer service. These results led Kosciulek (2003) to suggest that consumers view satisfaction with VR services as consisting of multiple factors. He recommended that future studies assess consumers' satisfaction at various times during the service process and after case closure in an effort to demonstrate the effectiveness of the VR program in improving consumers' standard of living and quality of life.

To address the problems with the measurement of consumer satisfaction, Capella and Turner (2004) developed a valid and reliable instrument to assess various dimensions of consumer satisfaction that are found among consumers of the VR program. They theorized that consumer satisfaction with VR was a function of the following four dimensions: counselor interpersonal factors, counselor job effectiveness, the services the consumer received from service providers other than VR personnel, and the impressions

that the consumer has about the specific VR agency. Items for the instrument were created based on reviews of existing literature, interviews with former VR consumers, and a review of existing methods used by VR programs to evaluate consumer satisfaction. A panel reviewed the items selected and determined which of the four dimensions it measured. The instrument was pilot tested and revised. In the revised test 478 of the 640 surveys were completed and used in a factor analysis. The factor analysis supported the multidimensionality of the theory; however, it demonstrated that three factors accounted for most of the variance. Consumers did not discriminate between counselor interpersonal factors and the effectiveness of the counselor.

This instrument does prove to be reliable and valid with respect to the sample selected. Nevertheless, no instrument is without limitations. This one is three pages long, and this may discourage consumers from completing it. Items may be too complex for persons with cognitive disabilities or limited reading abilities to comprehend. In addition, all the respondents came from one state VR program. A high proportion of them had their cases closed successfully as employed. Thus, the results may not generalize to individuals receiving services from other states or to those whose cases were closed as unsuccessful.

A Comprehensive Study to Assess the Vocational Rehabilitation Program

Each of the previous studies discussed demonstrate that a number of factors have been involved in the success of the state-federal vocational rehabilitation program; however, these past studies examined employment outcomes and customer satisfaction with VR services. The Longitudinal Study of the Vocational Rehabilitation Program (LSVRSP), the largest single study designed to measure the VR program, utilized a conceptual framework that assumed the outcomes of the VR program are a result of a

number of factors. These factors include the characteristics of the consumer, the type and cost of services received, the characteristics of the local population, the current economic environment, and the organizational culture and resources of the local agency where services are provided. "The broad purpose of the study is to assess the performance of the state-federal VR services program in assisting eligible individuals with disabilities to achieve positive, sustainable economic and noneconomic outcomes as a result of their receipt of VR services" (Hayward &Schmidt-Davis, 2002, report 1, p. 1-1).

The LSVRSP tracked approximately 8,500 participants of the vocational rehabilitation program from the time of application for services to up to three years after case closure. As a result of this study's broad scope, a large amount of data was collected and made available to the public for additional research. This data contains information on consumer demographic characteristics, consumer attitudes, work histories, and functional limitations. Information on services connected with the achievement of an employment outcome was collected. However, a wealth of data on consumer functioning, including physical functioning, psychosocial functioning, and integration into society, was collected at time of application and up to three years after case closure. In addition to persons who received services and obtained an employment outcome, persons who did not achieve employment and those who dropped out of the program before receiving services were also followed (U.S. Department of Education, 2005, http://www.ed.gov/policy/speced/leg/rehab/eval-studies.html#vr).

Previous analyses of the LSVRSP show that about two-thirds of consumers who received VR services achieved an employment outcome. A logistic regression was used to identify consumer characteristics that would lead to an employment outcome. Persons

with higher gross motor functioning; higher cognitive levels; and higher self-esteem were more likely to become employed as were those who were working at the time of applying for services and those who had dependents. Individuals who indicated they applied for VR to obtain assistive technology services were more likely to become employed. It was found that individuals with visual disabilities, hearing impairments, mental retardation, or orthopedic impairments were more likely to become employed than those with other disabilities. Being older or receiving some form of financial assistance or having a significant disability also reduced the likelihood of employment. Persons who applied for VR with the stated purpose of obtaining post-secondary education were less likely to be employed. Having a race or ethnicity other than white also reduced the likelihood of employment (Hayward & Schmidt-Davis, 2002).

At exit from the VR program, 32 percent of consumers who entered competitive employment were earning 200 percent above the poverty level. Forty-four percent of those who became employed were able to stop receiving public assistance. At the third annual follow up, 78 percent of those who exited the VR program were still employed.

After controlling for consumer characteristics, it was shown that the specific services relating to job development, post-secondary education, and the provision of secondary services such as job tools, equipment, and uniforms increase the likelihood of an employment outcome. Specific services that decreased the likelihood of competitive employment were medical services and supported employment (Hayward & Schmidt-Davis, 2002).

The LSVRSP did assess consumer choice and consumer satisfaction with VR services. Of the consumers who received services under an employment plan, 81 percent indicated that the counselor provided them with the information they needed to make a decision about service options. When it came to decisions concerning their rehabilitation plans, half of those receiving services indicated that they were in charge to a great extent and 41 percent indicated that they were in charge to some extent. Seventy-five percent of the consumers reported that they were satisfied with their counselors' efforts to assist them in working toward employment. Ten percent of the consumers were consistently dissatisfied with their interaction with their counselors, with their counselors' efforts to provide services, and with their perceived control over their rehabilitation program (Hayward & Schmidt-Davis, 2002).

Persons who achieved an employment outcome tended to be more positive about their VR experiences than those who did not. However, at application these individuals tended to report that their disability did not interfere with their ability to participate in social activities. Consumers that did not receive an employment outcome were more likely to report a need for help in community integration and independent living. These individuals tended to report that VR was not helpful and that they were less satisfied with the noneconomic outcomes they obtained (Hayward & Schmidt-Davis, 2002).

RSA Standards and Indicators Measures for the VR Program

Although the RTI has published four final reports on the LSVRSP and data has been made available for public use, there have been few changes in the program evaluation of the VR program. The latest standards and indicators for the VR program were published in 2000. RSA published two standards and performance indicators that

were designed to measure the outcome performance of the VR program. The first standard evaluated the program's performance in assisting eligible persons in obtaining or maintaining employment. The second standard was designed to ensure that the program provided equal access to services to persons from minority background. In addition, RSA developed six performance indicators for the employment standard and one for the minority services standard. An individual state VR program must meet four of the six performance indicators in the employment standard as well as the one indicator in the minority service standard in order to be considered to have a satisfactory performance (U.S. Department of Education, 2009, http://www.ed.gov/rschstat/eval/rehab/standards.html).

U.S. Government Evaluation of VR

When the United States Government Accountability Office (GAO) (2005) evaluated the 2003 fiscal year performance of the VR program, it utilized the data pertaining to the two RSA standards discussed in the previous section. The GAO results demonstrated that 200,000 persons with disabilities were working after receiving services, but reported that twice that many left the program without achieving an employment outcome. Compared to other studies, this ratio of one to three is inflated because the GAO counted all persons who had submitted an application. It does not take into consideration those that are not eligible for services. Consistent with previous studies, this one demonstrated that consumers with mental and psychosocial disabilities achieved the lowest rate of employment. Those who were deaf and those who were blind achieved the highest rate of employment. Over half of the individuals who received Social Security Disability Insurance benefits at application were not able to earn enough

to have their benefits discontinued. Although 94 percent of all who achieved employment received at least minimum wage, only half of them worked full-time. In addition, 30 percent of these individuals were working at the time of application to the VR program, but the median wage of those who continued to work at closure increased from $225 to $300. It is suggested that a report of earnings increase underestimates the value of services that are provided to persons. Some consumers are provided services that help them to maintain their current job. These individuals may not show an earnings increase, but would show a loss of earnings if they lost their jobs.

The GAO study acknowledged that individuals do receive important noneconomic benefits from the VR program. The report indicates that persons who do not obtain an employment outcome may increase their educational level, their physical or psychological functioning, their personal independence or independence of family members, or their integration into the community. However, because information regarding these benefits is not routinely collected, the program's impact in these areas cannot be rigorously assessed

This report stressed that the VR programs performance measures are not comprehensive. Because information on specific outcomes is not collected on all persons that receive services, the program cannot determine how it is "accomplishing its purpose of assisting individuals with disabilities to maximize their employment, economic self-sufficiency, independence, and inclusion in society ''GAO, 2005, p. 31). The recommendations from this particular report were that additional measures be developed to evaluate the performance of all persons who remain in the program. It was suggested that performance measures be developed that addressed specific populations. It was also

recommended that performance measures take into consideration additional factors such as a state's economy or demographics.

Conclusion

It is possible that the state-federal vocational rehabilitation program does improve the quality of the lives of the people it serves, but the evidence to document this is not readily available. The program provides many diverse services to consumers with a variety of disabilities that result in different limitations. These services are expected to ameliorate these limitations and may improve the overall quality of the lives of consumers. Nevertheless, the current program evaluation standards established by RSA assess employment and income goals. Improvement by those who do not obtain an employment outcome is not measured, and any other benefits acquired by those who obtain employment are not taken into consideration.

The GAO (2005) has acknowledged that consumers do receive noneconomic benefits from the VR program. Consumers may increase their education level, their physical and psychological functioning, their personal independence, and their integration into society. However, data that would assess these factors are not typically collected for program evaluation. Thus, the VR program cannot evaluate its impact in assisting consumers in improving these areas pertaining to quality of life.

The next chapter will focus on the construct of quality of life. A discussion of how this construct has been defined and measured by others will be included. If the construct can be defined and measured appropriately, it may be possible to incorporate quality of life measures into a program evaluation system for the VR program. Such a

system would allow the state-federal VR program to acknowledge and evaluate more positive impacts that the program has upon consumers.

Chapter III – Quality of Life

Quality of life has attracted much attention in the fields of health, economics, psychology, rehabilitation, and disability studies. Research generated from these various disciplines has provided the helping professions, including rehabilitation counseling, with means for advancing the quality of life of their consumers. However, these various disciplines have often taken a different approach in measuring quality of life, which has resulted in the development of numerous definitions and theoretical models regarding the quality of life construct (Cummins, 2005 & Michelos, 1991). This chapter provides an overview of the major concepts involved in defining and measuring quality life and integrates these concepts into a theory to assist in evaluating the quality of life of consumers of VR services.

Definitional Issues and Terminology

Cummins, McCabe, Gullone and Romeo (1994) reviewed over 80 scales that purport to measure quality of life and found that not one scale had obtained acceptance by which others could be validated. Cummins later stated, "The literature on quality of life contains well in excess of 100 definitions and models" (1997, page 117). As a result, the concept of quality of life has been studied on many levels ranging from the general assessment of broad social indicators which measure the well-being of a society, community, or culture (Andrews & Withey, 1976) to the specific evaluation of psychological indicators which measure the well-being of individuals or groups of individuals (Bigelow, Gareau, & Young, 1990; Bradburn, 1969; Brown & Brown, 2003; Campbell, Converse, & Rodgers, 1976; Flanagan 1978, 1982; Heal & Chadsey-Rusch, 1985).

Some have stressed that quality of life is synonymous with happiness, an ephemeral state thought to be dependent upon the current mood or affect of the person (Michelos, 1991). Bradburn (1969) indicated that it is akin to well-being which has been defined as the difference between the level of one's positive and negative affect; whereas. Diener (1984) uses the term life satisfaction and well-being interchangeably.

George (as cited in Edgerton, 1990) concluded that there was a conceptual difference between happiness, life satisfaction, and well-being. Happiness is an affective state that is short-lived. Life satisfaction addresses how well one's life expectations have been met and tends to show more stability than happiness. Well-being is a more global concept which addresses one's satisfaction with the nature and quality of one's life. Each is a different construct which has components that can correlate significantly with the components of the other. Edgerton (1990) suggested that quality of life is an objective measure while well-being is a subjective experience; whereas Cummins (1997) proposed that subjective well-being appears to be a component of quality of life that looks at one's perceived measure of well-being.

One of the most comprehensive statements regarding quality of life is provided by Felce and Perry (1995) who state: "Quality of life is defined as an overall general wellbeing that comprises objective descriptors and subjective evaluation of physical, material, social, and emotional wellbeing together with the extent of personal development and purposeful activity, all weighted by a personal set of values" (p. 60-62). They have suggested that quality of life is not synonymous with other terms such as personal life satisfaction because persons who live in adverse conditions such as extreme poverty may report satisfaction with life despite living in adverse conditions (Felce &

Perry, 1995 & 1997). This particular definition encompasses both objective and subjective indicators and can be used to provide a thorough approach to measurement. For these reasons, it is the definition that will be used to guide this study

General Conceptual Models

Existing conceptual models for quality of life appear to be divided into four categories (Felce & Perry, 1995). The conceptual framework behind theories in this first category describes the construct as a function of life conditions, external states, and sociological conditions that surround the individual. Theories in this category are also known as bottom-up theories because they propose that individuals who experience pleasurable events in their lives will report a higher quality of life. In simple terms, these theories state that happy people are happy because they have more happy events that occur in their lives (Diener, Sandvik, & Pavot, 1991). They suggest that ultimately, an individual will evaluate the quality of his or her life by assessing the conditions in which he or she lives and then combining these conditions to form an overall evaluation (Andrews & Withey, 1976; Bradburn, 1969; Lucas, 2004). Such theories would support the idea that rehabilitation services could improve consumers' quality of life by changing their external conditions.

The second category of models defines quality of life as being synonymous with the satisfaction one experiences with life (Felce & Perry, 1995). These theories are known as top-down theories. Top-down theories are more trait dependent. These theories propose that individuals are predisposed to interpret experiences in a positive or negative manner based on some global aspect of their personality. This predisposition determines whether or not the person experiences happiness, not the objective experience. These top-

down theories explain why some people appear to be happy in the face of great adversity. If top-down theories are correct, individuals would first evaluate the overall quality of their lives and then rely on this overall evaluation to evaluate the specific aspects of life (Brown & Brown, 2003; Costa, McCrae, and Zonderman, 1987; Emmons & Diener, 1985; Mallard, Lance, Michelos, 1997; Watson & Walker, 1996). Such approaches would suggest that reported quality of life would not change in response to services provided.

The third category of models views quality of life as a combination of both life conditions and one's satisfaction with those conditions. Such theories are also known as bi-directional theories because they suggest that the quality of one's life is directly affected by a combination of one's predisposition to happiness and the number of positive events in one's life. An individual who has an optimistic personality and experiences positive objective circumstances makes for the most positive quality of life. Conversely, an individual with a tendency toward pessimism who experiences negative objective experiences will have the most negative quality of life. An optimistic individual who experiences negative events or a pessimist who experiences positive objective circumstances will have a quality of life that falls between the two extremes (Brief, Butcher, George, & Link, 1993; Feist, Bodner, Jacobs, Miles, & Tan, 1995; Headey, Veenhoven, & Wearing, 1991; Veenhoven, 1994; Zautra & Goodhart, 1979). People who are naturally optimistic would be expected to report a greater improvement in their lives as a result of receiving social services.

The empirical evidence accumulated in the last five decades has indicated that there is a relationship between external and sociological indicators and psychological states, but this relationship has been shown to be an imperfect one. For this reason, the

fourth category of theoretical models describes quality of life as a combination of life conditions and one's satisfaction with meeting or addressing those conditions; however, this relationship between the two is mediated by the personal values, aspirations and expectations of the individual (Felce and Perry, 1995). Therefore, most of the current conceptual models appear to fall into a fourth, broad category that takes into consideration personal values and expectations as well as existing life conditions to explain the motivation that humans have to improve the quality of their lives.

Quality of Life as a Satisfaction of Human Needs

Specific theories of human motivation have long stressed that human behavior is directed by the desire to meet one's biological and psychological needs. These theories are so widespread that it is difficult to find an introductory psychology text that does not address at least one need theory, and those who study human behavior are continually developing and revising these theories. If need theories are credible, it stands to reason that as an individual's life needs are met, the better one's quality of life becomes. Thus, quality of life could be assessed by how well these needs are met. As needs are met, measures of quality of life would be expected to increase.

One of the best known theories of human motivation is that of Abraham Maslow. In the early 1940s, Maslow (1987) developed what has become a widely accepted theory of human nature based on a hierarchy of human needs. The human needs are classified into two groups: deficiency needs and growth needs. The deficiency needs are more basic needs that form the foundation of the hierarchy. As a lower level need is satisfied, the individual becomes dominated by the need to satisfy the next level of need in this

hierarchy. These deficiency needs are in ascending order: physiological needs, safety and security needs, belongingness and love needs, and esteem needs.

If all of these four deficiency needs are unsatisfied, an individual is governed solely by the physiological needs. If one is starving of hunger or parched of thirst, that person must devote all efforts to meeting these needs in order to survive. There is no time or energy to devote to other needs. "For our chronically and extremely hungry person, Utopia can be defined simply as a place where there is plenty of food" (Maslow, 1987, page 17). However, as the physiological needs become sated, the individual becomes dominated by the safety and security needs.

The "need for safety and security" can be categorized as striving to feel free from danger. In order to be free from fear and anxiety, individuals impose structure on the world around them. They seek shelter from harm. They attempt to organize their chaotic lives by imposing order and laws. If an individual lives in a peaceful, stable society, free from the fear of war, assault, or personal attacks, a majority of the safety need has been met.

As the safety need is met, the "need for belongingness and love" begins to emerge. Individuals fear loneliness and rejection by others. They need to give and receive love and affection. They need relationships with other people and will seek a place within a family or a group. Friends, family, mate, and children help one to meet this need. According to Maslow (1987), "Any good society must satisfy this need, one way or another, if it is to survive and be healthy" (page 20).

The final deficiency need in this hierarchy is the "esteem need". This is a need for self-respect and self-esteem as well as the need to have the esteem and respect of others.

The individual has a need for achievement and competence but also seeks prestige. When this need level is satisfied, one becomes confident and feels that he or she is a useful member of society. When a preponderance of the deficiency needs is met, the growth needs begin to take hold.

At the apex of Maslow's hierarchy are the growth needs. Originally, when Maslow developed his theory, he posited that an individual becomes "self-actualized" when all of the deficiency needs are met. In his later writings, Maslow divided the growth needs into four separate levels. He suggested that prior to achieving self-actualization, the individual seeks to meet the "cognitive need" to know, understand, and explain his or her world. Then there are the "aesthetic needs" where one seeks beauty in life. After reaching the stage of self actualization, there is a level referred to as "self-transcendence" where the person seeks to go beyond the self or to assist others in achieving their potential and self-fulfillment (Maslow, 1971; Huitt, 2007, ¶ 2). However, for the purposes of this dissertation, Maslow's original theory will be utilized, and all of these growth needs will be categorized as the need for self-actualization.

Persons who achieve self-actualization come from different walks of life and different cultures, but they have a number of characteristics in common. One characteristic is their tendency to resist enculturation. Although they are ethical and live by a set of personal values, they can live and fit in a culture without overly identifying with it. Their perception of reality is correct and efficient. They recognize that no one is perfect and they accept themselves and others. They are creative and concerned about personal growth, but they focus on problems and causes outside of themselves rather than being egocentric. They know their likes and their dislikes without having to consult with

others. They are spontaneous and can have a fresh appreciation of the beauty in life. Although they have respect, sympathy, and affection for others and form deep interpersonal relationships, they are autonomous and enjoy solitude. One of the most unique features of the self-actualized person is the ability to have peak experiences. These experiences are described as mystical events where one transcends the self and experiences great ecstasy, wonder, and awe. These characteristics result in self-actualizing persons having a need to reach the highest human potential that is within their capabilities (Maslow, 1968, 1971, 1987).

Often the levels within the hierarchy of needs are described as if they are in a fixed order, and that one need level must be satisfied fully before the individual can move on to the next level. However, Maslow (1987) considered that the hierarchy is not this rigid. Human behavior is determined by a variety of determinants in addition to needs and desires. Many of these are unknown. For this reason, exceptions can exist. Some individuals may value self-esteem more than they value love. Some may have such an innate desire to be creative that they will forgo food in order to fulfill this creativity. Individuals do not have to be totally satisfied in a lower level need before a higher level need begins to emerge. Selecting arbitrary percentages, it is possible that one could meet 85% of the physical needs, 75% of the safety needs, 50% of the love needs, 40% of the self-esteem needs and be 10% self-actualized. As a lower need is increasingly satisfied, the next level becomes more dominant (Maslow, 1987).

Thus, according to Maslow, healthy people are ultimately motivated by their need to achieve self-actualization. They have a need to reach the fullest potential that is within their capabilities. Unhealthy or sick people are frustrated in meeting their needs along the

hierarchy, and it is the result of forces outside themselves that results in individuals being unable to meet their needs. Thus, being unhealthy is the result of something external to the individual. This unhealthiness comes from a society that cannot meet the needs of the individual. "The good or healthy society would then be defined as one that permitted people's highest purposes to emerge by satisfying all of their basic needs" (Maslow, 1987, page 31).

In 1967, Wilson echoed Maslow's theory of motivation in proposing a theory regarding the requirements for a happy life. According to Wilson, a happy life was a product of an individual's met or unmet needs. When one's needs were satisfied, happiness was the result. On the other hand, unfulfilled needs resulted in unhappiness. Wilson indicated there were three types of needs that were important for human happiness. These needs were physiological needs, pleasure seeking needs, and acquired needs which include needs for affection, acceptance, and achievement. Like the fourth category of structural models described by Felce and Perry (1995), Wilson did believe that the level of fulfillment one required to reach satisfaction of needs depended on the personal values, past experiences, and aspirations of the individual.

Wilson also hypothesized that having aspirations that are too high or unrealistic appears to be one of the major threats to happiness. He found that when success was held constant, aspiration was negatively correlated with happiness. Conversely, if aspiration is held constant, success was positively correlated with happiness. He also found that happiness correlated .40 with the discrepancy between a person's need for achievement and actual achievement. Therefore, Wilson's findings also follow the category of theories

that look at quality of life as the difference between what exists and what one wants to exits.

A Scandinavian sociologist by the name of Erik Allardt (1976) appeared to adopt and refine Maslow's theory for his own work. Allardt proposed that need satisfaction can be studied through the observation of the material conditions in which one lives and through one's actual patterns of behavior in interacting with others and forming observable social bonds. Allardt suggested that basic human needs could be classified into the three categories of having, loving, and being.

The "having need" is met through acquiring material and impersonal resources. These needs are often considered necessary for survival. Allardt operationalized this level of needs by measuring individuals' income, housing, employment, health, and education. This classification appears to be synonymous with Maslow's levels of physiological and safety needs.

The "loving need" refers to one's need for love, companionship and solidarity. This need requires that an interaction between individuals takes place. The person must give and receive love for this need to be met. Allardt observed community attachments, family attachments, and friendship patterns to measure how well one meets this need. The similarities between Allardt's classification of loving need and Maslow's level of love and belongingness needs are self-evident.

The "being need" pertains to the role the individual has in society. It is who the individual actually is. This need was evaluated by observing the individual engaging in interesting activities, by the personal prestige the person appeared to have, and the political resources one had available. Also pertinent to meeting this need was whether or

not the individual could be substituted or replaced in a job or with family or friends. The less easily one can be replaced, the more one is a person and less a thing. Allardt stated that this need "denotes self-actualization and the obverse of alienation" (1976, page 231). It appears comparable to Maslow's levels of esteem needs and self-actualization.

Although he did attempt to operationalize this classification of needs for the purposes of his research, Allardt indicated that there was no universal list that categorized all of these needs. The needs are determined historically, and they exhibit convertibility. This means that achieved needs can be used as resources to meet other needs. Family attachment may influence income. Income may help one obtain an education. An education may help influence social contacts which in turn influence political resources. However, resources cannot replace needs. Hunger for food cannot be satisfied by the feeling of esteem or love, and a person seeking love will not be satisfied with a higher income.

Allardt (1976) stressed that need satisfaction is more objectively observed and is separate from happiness, which is one's subjective perception of experiences. Individuals may not be able to judge their level of need-satisfaction. They may not know what they need in order to improve their lives, but they are the best judges of their own happiness. Thus, the question remains as to whether quality of life is need satisfaction, or happiness, or a combination of the two. According to Allardt, the satisfaction of the needs for having, for loving, and for being contributes independently to the individual's well-being.

Quality of Life as an Evaluation of Life across Domains

One of the more detailed models of quality of life arose from the seminal work of Campbell, Converse and Rogers in 1976. Like Wilson and Allardt, Campbell et al. also

defined quality of life in terms of satisfaction of needs. Campbell et al. reported that they were initially attracted to Maslow's theory of a hierarchy of needs and attempted to develop their study using Maslow's system of classification. However, they found some of the terms used by Maslow, such as self-actualization, were too abstract for a survey suitable to administer to a national sample. They sought to utilize terminology that was closer to everyday usage. As a result, they developed their study around what they referred to as "domains" of life.

The specific life domains that figured the most prominently in the research of Campbell in 1976; Campbell, Converse, & Rodgers in1976; and Campbell in 1981 were marriage, family life, friendships, standard of living, work, neighborhood, city or town of residence, the nation, housing, education, health, and the evaluation of the self. Campbell acknowledged that the actual number of life domains that exist is probably quite large, and the selection of the domains that he and his colleagues chose to measure was somewhat arbitrary. According to the authors, "The selection of the twelve domains which became the core of our inquiry was based in part on the presence of earlier research, in part on their relevance to questions of public policy, and in part on our intuitive sense of their importance in the lives of the general population" (Campbell et al., 1976, p. 13). The number of domains had to be broad enough to encompass all aspects of a heterogeneous population, and they had to be relevant to most people in the population and experienced by most people most of the time. They are the areas of life to which people devote most of their time, thought and energy. The characteristics of some domains appear very similar, and it is possible for some domains, such as marriage and family life, to overlap.

Using a model of life domains, Campbell et al. conducted a study designed to provide an understanding of the experiences that describe the quality of life of individuals in the United States. This study used a probability sample design that resulted in a total of 2,164 interviews being conducted with persons 18 year or older drawn from a household located within the 48 contiguous United States. Individuals were asked a series of questions designed to assess their satisfaction with the various domains of life. The questions used a seven point Likert scale ranging from completely satisfied to completely dissatisfied. At the conclusion of the interview, respondents were asked to use the same seven-point scale to evaluate their current satisfaction with life as a whole.

Providing support for the domains of life theory, Campbell et al. found that satisfaction with individual domains accounts for a high percentage of the variation in global reports of well-being. In addition, measures of individual domains are more reliable than the measures intended to assess only global reports of well-being. For this reason, the authors proposed that the utility of global assessments of quality of life is limited. If an individual is dissatisfied with life, it is usually because certain domains have gone bad. When domains are measured, it can be observed which areas of life are lacking. Thus, efforts may be taken to improve those areas.

Rather than having subjects just describe the quality of their lives as a whole, this study focused on the individual domains, the relationship the domains of life have to one another, and the relationship that the domains have to the overall quality of the individual's life. According to Campbell et al., a person's satisfaction with a particular domain depends on how the individual perceives the objective attributes of that particular

domain. The individual applies his own standards of comparison which include his aspirations, expectations, norm group, personal needs, and values to judge that attribute.

Campbell indicated that although the environment provides an explanation for why some individuals find life satisfying, the psychological quality of an individual's life cannot be understood totally from the circumstances in which the person lives. An individual's mind does influence perceptions of the external world, making correlations between objective conditions and subjective experiences less than perfect. Objective circumstances such as economic data leave much of the individual's quality of life unexplained. Thus, it is necessary to go to the individual for a subjective description of how life feels.

The subjective quality of life involves one's expectations, feelings, and values. This would be the experience of life rather than the condition of life. In judging the quality of one's life, the individual assesses personal experience and compares it to personal aspirations. The individual also compares how life stands up compared to those in a reference group with whom he or she identifies. If an individual determines that personal experience does not meet personal aspirations in life, or personal experience in life is not equal to those of a chosen reference group, the individual will tend to evaluate life as less satisfying.

When asked to evaluate the quality of life, many individuals may think of life as a whole. However, most individuals tend to be pleased with some aspects of life more than others. The more positive a person feels about each individual life domain, the higher he will report his overall quality of life. However, some individuals are dominated by a single domain. For example, if a person is seriously ill, the domain of health will make a

larger contribution to that person's global sense of well-being. Also, a domain may be important to an individual at one point in life and less important at another point in life. Work is important to those in the middle years, whereas it is less important to those in young adulthood and old age. Thus, Campbell suggested that an individual's global satisfaction with life is determined by a simple, linear model in which the individual domains are added. However, because some domains are more crucial to the individual than others, this overall number is a sum where the specific domains important to the individual's life are weighted.

A simple linear additive model may not initially appear to support a hierarchy of needs theory. However, when specific domains that are important to the individual are weighted, the model could easily be attributed to a hierarchy of needs. If a person is lacking in the standard of living domain, his basic needs will be unmet. This particular domain would be given a greater weight in the summation of domains. As the need is met, this domain would probably be given less weight in the linear model. Until the basic needs are satisfied, one cannot achieve overall satisfaction.

As indicated previously, the similarities between Campbell's domain theory, Maslow's hierarchy of needs, and Allardt's need theory are not coincidental. In Campbell's (1981) domain theory, the mechanisms by which American's meet Maslow's needs for "love and belonging" or Allardt's need for "loving" are through marriage and through having family and friends. Most Americans do marry, and practically everyone has had some form of a family that includes parents, siblings, children or other extended family members at some point in their lives. In addition, the majority of Americans report having at least one close, personal friend. The interpersonal relationships afforded by

these domains assume a great importance in a person's life because they provide affection, psychological support, and a sense of belonging (Campbell, 1981).

Campbell's domain of standard of living refers to economic security and the accumulation of material goods. Economic security is pervasive and impacts many areas of life. It enables one to acquire food and shelter in Maslow's hierarchy. In Allardt's terms, standard of living falls within the realm of having. Individuals in prosperous countries do report higher levels of well-being than those in impoverished countries, and those with higher incomes often describe themselves as happy and satisfied with their life. However, this relationship is not as strong as it initially appears, and having a large amount of material resources does not guarantee a high quality of life. The standard of living domain does not adequately predict the domains of life that are concerned with relating, such as marriage, family, and friends; and it fails to relate to satisfaction with one's self (Campbell, 1981). It appears that once one has the economic resources required to meet one's basic needs, additional wealth does not improve the quality of one's life.

Work or employment is a domain in Campbell's (1981) theory that enters many facets of life. People work for different reasons. For some, work only provides financial rewards to meet basic needs, to acquire material goods, or in Allardt's terms, to have. For others, work provides an opportunity to interact with coworkers or to relate to others. Many individuals spend more time with coworkers than they do with their families. Work also challenges individuals and provides an opportunity to contribute to society. It provides a sense of identity and a purpose for being.

The neighborhood, the city or town of residence, and the nation one lives in are other domains recognized in Campbell's (1981) work. These domains provide a sense of

identity, a source of relationships, and a means of services. Neighborhoods may be judged by the noise and pollution they experience and the personal space they afford their residents. The city or town of residence pertains to urban or rural living and the advantages and disadvantages that such living provides. The nation is the ultimate social identity, and concerns with inflation, unemployment, war, governmental services impact the evaluation of this domain.

For Campbell (1981), the domain of housing implies a physical structure that offers the basic amenity of shelter needed for life. However, there is a psychological connotation to housing as well. It is the center of family life. It provides a refuge from the world, and can be a status symbol of one's place in the world. It provides a place to gather and a sense of security. Housing is considered to be so important that governments around the world seek to improve the housing of its citizens with the apparent expectation that life will improve.

Our nation places great importance on the domain of education. Education is often viewed as a means to success, and Americans tend to spend more years in school than residents of other countries. In the 1970s, there was an increase in the number of individuals in the populations who obtained a college education, and the number of individuals with less than a high school education declined. Interestingly, during the periods between 1971 and 1978, as the overall level of education increased, the degree of satisfaction that Americans reported with their education declined. During this period of time, the number of persons that started but did not finish their college education also increased. These individuals reported less satisfaction with their education than did high school or college graduates. Persons who spend the most time in school and complete

their education appear to report the most satisfaction with their educational achievement (Campbell 1981).

Health is an important domain to Americans as evidenced by the money spent on health care. The domain of health is unique for several reasons. It is an intensely personal issue that is judged by one's own perceptions, and it rarely becomes a priority or concern unless it is poor. It is difficult for persons to remain in good spirits and manage the everyday demands of life when their health fails. In addition, once a person is in poor health, it is difficult to harness personal resources to improve this domain. Health is best maintained while it is good and not a priority in one's life (Campbell, 1981).

The domain of "the self" is very broad in Campbell's work. This domain resembles the higher order needs of "self-esteem" and "self-actualization" in Maslow's theory, and it is similar to Allardt's "need for being". People evaluate themselves in many ways and may use different measures of evaluating their strengths and weaknesses. They use a subjective standard they have in mind to evaluate themselves. Individuals may evaluate themselves highly if they have accomplished something. Some individuals may evaluate themselves on the basis of physical attractiveness, whereas others evaluate themselves on the basis of being kind, thoughtful, and caring. Individuals who view themselves favorably tend to evaluate their life in more positive terms than individuals who are distinguished on the sole basis of economic terms. In addition, individuals who feel in control of their lives and their destiny and who see themselves as responsible for the outcomes of their own actions tend to feel more satisfied with themselves than do those who believe that their fate is in the control of something outside themselves (Campbell, 1981).

Andrews and Withey (1976) also gave support to the domains of life theory when they chose to assess the quality of the life of Americans by evaluating the individual's perception of well-being. They found that individuals do evaluate their global well-being by summing the positive and negative domains of their lives. Domains consisted of marriage, health, job, religious faith and the like. Individuals also use their own criteria such as personal aspirations, standards, and goals to judge what a life domain has to offer. According to these authors, global well-being was determined by adding up several levels of domains and the criteria by which the domains were judged. Thus improvement in a domain appears to result in an overall improvement of well-being.

This study utilized a stratified, multistage probability sample that selected households from the 48 contiguous United States. A responsible respondent from the household was selected to undergo an interview or answer a detailed questionnaire designed to assess well-being. The results of this study also confirmed that a linear combination of measures of satisfaction in life domains accounted for much of the variance in global life satisfaction.

Cummins (1996, 1997, & 2005) reviewed the voluminous literature pertaining to quality of life and developed his own definition, model, and instrument to evaluate this construct. As a result, he determined that the construct of quality of life is a multidimensional concept that is impacted by both objective and subjective components. The objective components can be norm referenced by observing physical properties such as quantities and frequencies and comparing the results to the population. The subjective components exist in one's consciousness and can only be verified through repeated responses provided by the individual. Both types of components constitute an identifiable

set of domains that apply to all people. Individuals differ in the value they assign to these domains because of the cultural and socioeconomic differences that exist. The quality of one's life may be improved by the resources, the self-determination, and the sense of purpose one has in life. For these reasons, the conceptualization of quality of life applies to all persons, including those with disabilities.

This theoretical approach was utilized to develop the Comprehensive Quality of Life Scale (ComQol) (Cummins, McCabe, Gullone, & Romeo 1994). Upon reviewing over 500 publications that identified quality of life as a dependent variable, 64 different components were identified that appeared to address the various aspects related to quality of life. These 64 different variables were then classified into seven domains so that face validity appeared to exist between the larger domain name and the individual components. A group of college students was asked to place each variable either under one of the seven domains or under an "other" heading. This resulted in 97% of the components being placed under the seven original domains. The three variables that were selected the most often for each of the seven domains were then randomly sorted. A second group of college students were asked to place each of these 21 components under the appropriate domain heading. This second group sorted these components by domain with a consistency of 75%. This was considered to provide verification for the use of the seven domain headings and their corresponding variables to be included in the ComQol scale. The seven domains headings that were selected in this scale to measure quality of life were Emotional Well-Being, Health, Intimacy, Material Well-Being, Productivity, Safety, and Place in Society.

To lend further support to this theoretical construct upon which the ComQol scale was developed, Cummins (1997) located 27 definitions by other authors that divided quality of life into domains to operationalize the construct. Eighty-five percent of the definitions found contained the domain of Emotional Well-Being in the form of leisure, spiritual well-being, morale, etc. Seventy percent contained the domain of Health. Seventy percent contained the domain of Intimacy that included social and family ties. Fifty-nine percent contained the domain of Material Well-Being or wealth, and fifty-six percent contained the domain of Productivity or work. Twenty-two percent of the definitions that Cummins reviewed contained a domain of Safety, which encompasses constructs such as personal security, justice, privacy, autonomy, independence. Thirty percent of the 27 definitions contained a domain that Cummins referred to as 'Place in Society or the community'. This domain includes the constructs of community involvement, social activities, neighborhood, services and facilities, and political activities. Additional empirical support for these domains in his definition was provided when Cummins also identified data from surveys, such as that obtained by Campbell et al. (1976) where individuals were asked to identify the domains that were important to them.

Similar to the other theorists discussed, Cummins acknowledged that the number of life domains that actually exist is probably larger than the number he identifies. However, many terms that have been used by others do have overlapping constructs and share a great deal of variance. Utilizing a parsimonious approach in identifying the number of domains helps to reduce the number of items used to measure the broad aspects of life and keep them to a manageable number for study. Nevertheless, the

number should be broad enough to encompass the construct of life quality (Cummins, 1996).

As a result of his extensive work pertaining to quality of life, Cummins (1997) was able to develop the following succinct yet all-encompassing definition to help operationalize this construct:

> Quality of life is both objective and subjective, each axis being the aggregate of seven domains: material well-being, health, productivity, intimacy, safety, community, and emotional well-being. Objective domains comprise culturally relevant measures of objective well-being. Subjective domains comprise domain satisfaction weighted by their importance to the individual. (p. 132)

Notably absent from this definition is any statement that addresses the fulfillment of human needs as a prerequisite for a quality of life. Cummins (2005) indicates that quality of life should not be defined in terms of needs because a low level of needs does not necessarily have a relationship to life quality. However, it is apparent that the domains identified by Cummins are very similar to those identified by Campbell, and like those domains, can easily be placed along the continuum of Maslow's hierarchy of needs.

Cummins (2000) suggested that life satisfaction is an indicator of subjective quality of life. He proposed that satisfaction with the seven domains of life he identified could be placed in a hierarchy of domain satisfaction. He also suggested that this hierarchy would be different between groups with different levels of overall life satisfaction.

To test these hypotheses (Cummins, 1996) conducted a meta-analysis of 32 existing studies on life satisfaction that utilized scales containing life domains. He

classified the domains from the original studies into the seven domains utilized by the ComQol and standardized the original scores into ComQol scores. In addition, an overall life satisfaction score was obtained. The combined samples from the previous studies were divided into four groups and ranked from highest to lowest in overall life satisfaction. A univariate analysis of variance within each domain showed a pattern of decline in satisfaction for each domain as the overall life satisfaction declined. When the individual domains were compared across these groups that differed in overall life satisfaction, the relative ordering of the domains did not change significantly. The domains of Intimacy and Health remained consistently above the study mean. The other five domains were consistently below the mean. This analysis did not show a change in the hierarchy between groups (Cummins, 1996).

Cummins (1996) also utilized secondary data in the same way to compare the ComQol scores of samples of normal adults to samples of persons with a chronic medical problem and samples with a psychiatric impairment. The samples with chronic medical problems showed significantly lower satisfaction with the domain of health when compared to the normal samples. Both of these groups rate satisfaction with the Intimacy domain significantly higher than the other domains. The group with the psychiatric impairment showed a persistent pattern of lower satisfaction with all domains and a lower satisfaction with life overall. In addition, satisfaction with the domain of Intimacy was not significantly higher for this group.

These particular studies that involve a meta-analysis of existing data have a number of methodological concerns which Cummins (1996) acknowledged. Considering the vast amount of literature that actually exists in this area, the articles selected for the

study were limited. The method of selecting the articles may be biased as they were drawn from existing collections compiled by researchers and students that are affiliated with the same university as the author. It is a matter of interpretation as to whether the domains measured in the original studies could be classified into one of the seven ComQol domains. Not all individuals were initially assessed with the same instrument, and their scores had to be converted to ComQol scores before the analysis could be conducted

Although these studies have some methodological limitations, they do provide evidence that a hierarchy of domain satisfaction exists. Intimacy and Health dominate this hierarchy unless extraordinary conditions occur that disrupt one's level of satisfaction. (Cummins referred to this as a disruption in homeostatic control, which will be discussed later.) Although Cummins states that quality of life should not be defined in terms of needs, it is intuitively appealing that individuals with chronic health problems would not be satisfied with the domain of Health because this domain need is not being met. A more in depth analysis that divided groups according to deficiencies in other domains and addressed the methodological problems would need to be conducted to lend support to the hypothesis that if a significant need in one's life is met, the overall life satisfaction may increase.

Adverse Events and Quality of Life

Although quality of life is considered an aggregate of seven domains, the interaction between subjective quality of life indicators and objective quality of life indicators also play an important role in Cummins' (1998, 2000) overall theory. Cummins theorized that the life satisfaction of most people in a population will not vary

greatly from measurement to measurement but will hold within a narrow range of values. Under normal conditions, the relationship between objective external conditions and subjective life satisfaction tend to be very weak. He proposes that people maintain their life satisfaction at a relatively stable level by means of an internal homeostatic control. This mechanism of homeostasis has evolved in humans to help them adapt to negative situations in their lives and maintain a "normal" level of life satisfaction within the face of adverse environmental conditions.

Support for this mechanism was demonstrated by Headey and Wearing (1989). They found that negative life events do tend to initially reduce the life satisfaction of individuals. After a period of time had lapsed and the life satisfaction of individuals was reassessed, they found that individuals tend to recover and their level of satisfaction returns to the level it was prior to the adverse event.

In Cummins' (2003) theory, this homeostatic control can be disrupted if an individual is faced with chronic negative environmental conditions. The conditions become so strong and persistent, that the individual cannot adapt and regain the previous level of satisfaction. When the homeostatic mechanism fails, the individual experiences a negative mental state such as depression or anxiety.

Evidence for a non-linear relationship between subjective and objective indicators was provided by Diener, Sandvik, Seidlitz, and Diener (1993). They compared the relationship between income level and reported levels of happiness. As expected, individuals in the lowest income levels reported the lowest level of happiness. As income levels began to increase, the individuals reported level of happiness also tended to rise. However, the steady increase in the level of happiness began to level off around the

twentieth percentile. Extremely low income can be viewed as a negative external life event that disrupts homeostasis, and increasing income levels assists the individual in reaching the point of homeostasis. Once this level of homeostasis is achieved, the individual's state of happiness does not continue to increase as income increases.

This concept of homeostasis is especially relevant when discussing whether or not rehabilitation programs can increase the quality of life for persons with disabilities. If the subjective well-being of the individual is within the normal range of the homeostatic mechanism prior to entering a program, it is unlikely that it will increase after receiving any treatment or services. However, if the value of the subjective well-being of the individual is below the normal range for the population, then a program that is aimed at improving life's quality may restore homeostasis (Cummins, 2005).

Universal Concept or Culture Bound

As with most quality of life research, studies that have compared the fit of bottom-up, top-down, and bidirectional models tended to have utilized samples taken from modern, western cultures (Mallard, Lance, & Michalos, 1997). These cultures tend to be more individualistic. Autonomy is valued. The individual is encouraged to make his or her own way in life with little or no help from others. Collectivist societies tend to value the community over the individual. Each one is expected to help the collective society. Individuals are not encouraged to stand out from the group less they risk alienation from society (Veenhoven, 1999). These facts make it intuitively appealing to think that persons from different cultures would value different attributes of life, but the empirical research in this area is less than conclusive.

In the early 1990's, Veenhoven (1999) compared 43 nations and found a positive correlation between individualistic societies and enjoyment of life among a nation's citizens. Although individualization may enhance quality of life, it is possible that causation may work the other way. Happy citizens may be more tolerant and promote an individualistic society. Also, individualistic societies tend to be more economically affluent, and among countries with diverse economic conditions, affluent citizens tend to describe their lives more positively than those less affluent (Campbell, 1981).

Keith, Heal, and Schalock (1996) used a semantic differential study to assess the meaning of ten critical concepts thought to be important to the quality of life construct. They asked professionals from the United States, Australia, England, Finland , Germany, Japan, and Taiwan employed in the field of developmental disabilities to rate the meaning of the concepts. Professionals from the different cultures tended to agree on which concepts were important to the meaning of quality of life. This led the authors to conclude that the concept of quality of life was universal among professionals from these seven cultures. However, it is important to note that the majority of the cultures sampled were westernized and individualistic.

Although it remains questionable as to whether the concept of quality of life is culturally universal, the influence of culture on quality of life is an important concern in policy research. This is especially relevant in the United States where the population is made up of persons from many diverse cultures. In this society, policy makers tend to want to consider the views of all their constituents before implementing a policy that is intended to improve the quality of life. For this reason, policy makers need to be cognizant of how policies will influence the lives of those from different cultures.

The research for this dissertation utilizes the diverse population of the United States as a reference group. Persons of different ethnic and social backgrounds were selected in the sampling process, and hopefully the diversity of culture will be represented in the results of the study. Nevertheless, some persons residing in the United States have been known not to participate in social programs because it is not accepted by their cultural norms. As a result, such individuals may be underrepresented. This would be a concern for policy makers who wish to consider the views of all constituents before implementing policy. It would also be of concern to practitioners who may be attempting to provide rehabilitation services to an individual from a different culture.

Quality of Life and Persons with Disabilities

Any discussion on quality of life in the field of rehabilitation would not be complete without an overview of the literature that explores this issue as it relates to persons with disabilities. Some may question what is different about the quality of life for persons with disabilities as opposed to that of the general population. Is it necessarily true that limitations imposed by disability result in a lower than normal quality of life? Many who do research regarding quality of life in the specific field of disability agree that factors pertaining to the quality of life for persons with disabilities are the same as for those without a disability (Cummins, 1997; Goode, 1994; Schalock, 1990; Woodill, Renwick, Brown, & Raphael, 1994). Others would argue that persons with disabilities have more difficulty in achieving a satisfactory quality of life because they may lack the capacity to establish relationships and perform social roles that are required of persons in society (Bostick, 1977; Kottke, 1982). Empirical evidence does demonstrate that quality

of life may vary according to the type of disability and the time of onset; but it does not support the assumption that persons with disabilities do not have a good quality of life.

Several studies have shown that persons with disabilities can adapt to disabling conditions and enjoy a high quality of life, but the nature and cause of the disability appears to impact their reported level of satisfaction with life. Cameron, Titus, Kostin, and Kostin (1973) conducted two studies in which convenience samples of persons with physical disabilities were compared to samples of individuals with no reported disability. Respondents with disabilities were matched with respondents without disabilities on basic demographic variables and their responses to a questionnaire compared. No differences in life satisfaction were observed between persons born with disabilities and those who later acquired disabilities. Although it was found that persons with disabilities felt their lives were more difficult, they were less likely to report contemplating suicide than their counterparts without disabilities.

In the first study by Cameron et al., income was more positively associated with life satisfaction than was the presence or absence of disability, or any other variable. When income was controlled, no differences were observed between the two groups in the area of life satisfaction or frustration with life. In the second study, none of the study variables were found to be related to life satisfaction or life frustration, but there was a tendency for persons with disabilities to have more pleasant mood states. Neither study showed any difference between persons with disabilities and those without in reports of life satisfaction.

The authors suggested that an individual's quality of life is a function of satisfaction with two factors. First, the individual takes into account his current position

with the social status milieu. Some statuses are fixed such as sex, generation, race, and usually the presence of a disability. Other statuses such as marital status, employment, and wealth can be changed. The individual appraises where he is in society relative to others and evaluates what he can change and what he cannot. Second, a person must look at his own personal life history and how things are going for him relative to the way things have gone in the past. The individual evaluates his life satisfaction by measuring how life is going for him and how it could go for others. The individual experiences dissatisfaction with life when he feels that he is thwarted from reaching his potential from something outside himself.

Bostick (1977) compared the interview responses of 44 persons with spinal cord injuries who were living outside a hospital setting in the Houston, Texas area to a comparison group of 45 college students without spinal cord injuries. Both groups reported being satisfied with their lives. They both had positive affects and positive self-concepts. However, only limited conclusions from this study can be drawn because the comparison group was drawn from different economic, educational, and occupational backgrounds

Brickman, Coates, and Janoff-Bulman (1978) compared persons who had sustained a spinal cord injury with a comparison group. Although the persons with the spinal cord injuries found everyday events less enjoyable than persons without such injury, the difference between the groups was not significant. Persons with spinal cord injuries tended to report their past as being happier than the comparison group did. Persons with injuries experienced the present as being less happy than the comparison group. However, the group with spinal cord injuries still rated their present level of

happiness above the midpoint of the scale. This data was gathered within one year after the group had sustained their spinal cord injury. Thus, individuals may adapt to their circumstances, and their level of happiness could improve over time.

Weinberg (1984) asked a convenience sample of thirty persons with a variety of physical disabilities the following question: "If there were a surgery available that was guaranteed to cure your disability (with no risk) would you be willing to undergo the surgery?" (Weinberg, 1984, p. 13). Half of the twenty-two persons in the sample were disabled from birth chose the surgery. Those opting for surgery indicated that they felt their disability prevented them from achieving their desired goals in life. Those rejecting the surgery indicated that they were capable of achieving the goals they set for themselves and they were satisfied with the person they were. In addition, they feared losing part of their existing social identity and would no longer be the same person if they were no longer disabled.

The responses of the eight persons who became disabled later in life were much more varied. Three immediately indicated they would have the surgery. Two said they would not, and three others wanted to know about considerations such as cost and length of recovery time. Upon being questioned, these respondents indicated that adapting to a disability was not easy. They experienced periods of loneliness and depression. In adapting to their physical limitations, they also had to change their personal values. Those who valued physical strength and appearance adopted other values such as kindness, intellect, and productivity. In addition, respondents indicated that adapting to societal attitudes was more difficult than adapting to personal physical changes.

Schulz and Decker (1985) used extant standardized instruments to interview a sample of 100 middle-aged and older individuals who had, on the average, obtained spinal cord injuries twenty years prior to the study. They found that the well-being of this sample only slightly lower than the well-being of persons of similar age who did not have disabilities. When the variables of health and income were controlled, it was found that the individuals with high levels of social support who were satisfied with their social contacts and who felt they had a high level of control were better able to cope with their disability. The authors suggested that the individuals who were able to cope stressed the immediate situation and did not focus on the circumstances that resulted in their disability. Individuals in this sample were identified as a result of their affiliation with one of three institutions that work with persons with spinal cord injuries. Two of the three institutions worked with veterans. All individuals were Caucasian, and most were men who were married or living as married. It is unknown if different results may have been obtained with a less homogeneous sample.

Albrecht and Devlieger (1999) conducted a qualitative study to analyze the responses of 153 persons in the Chicago metropolitan area that had a variety of disabling conditions. They found that 54.3 percent of their sample reported having a good or excellent quality of life. Analysis of the interviews indicated that persons who reported having a good quality of life tended to be those with visible disabilities who had good energy levels and experienced only predictable, intermittent pain. These individuals had an understanding of their situation, were able to exert control and order in their lives, and remained connected socially within their environment. Individuals with communicative or cognitive disorders and those with invisible disabilities or those experiencing chronic

fatigue or unpredictable pain tended to report a low quality of life. These individuals also tended to report a loss of control over their physical and mental activities and had no purpose or spiritual outlook. They lacked order in their lives and did not possess the resources or social contacts needed to develop well-being. The authors concluded that one dimension of life may compensate for another so that balance of self is maintained. Those who had a good quality of life were able to maintain this balance between body, mind, and spirit and to experience harmonious relationships with the social and physical environments.

Chase, Cornille, and English (2000) conducted a regression analysis on responses provided by a convenience sample of 158 persons with spinal cord injuries. The more limited the person was in fulfilling their social role typical of their age, sex and culture, the more likely they were to report lower satisfaction with life. The number of years since injury and the individuals' perceived physical health did not predict satisfaction with life. However, those who were married reported higher levels of satisfaction as well as those who had effective communication skills. In addition, the authors found that those who perceived themselves as having the most control over their lives were the most likely to have a higher life satisfaction. They recommended that service providers and policy makers allow consumers more control in the provision of services as a means of improving life satisfaction.

Research that utilized subjects with intellectual and cognitive disabilities has also shown that this population also reports high levels of life satisfaction. Corrigan, Bogner, Mysiw, Clinchot, and Fugate (2001) conducted a longitudinal study with a convenience sample of persons with traumatic brain injuries who were admitted to a specialized

inpatient rehabilitation unit located in a Midwestern academic medical center in the United States. Measures were taken one and two years after injury in order to examine the correlates of life satisfaction after traumatic brain injury. Some of the variables that were examined were age, education, living situation at the time of injury, premorbid history of substance abuse, functional motor independence at discharge, social integration at follow-up, marital status at follow-up, employment status at follow-up and depressed mood at follow-up. Life satisfaction was measured by a raw score on the Satisfaction with Life Scale (Diener, 1984) which asks five questions regarding general life satisfaction on a seven point Likert scale. This measure does not assess particular domains of life satisfaction. Stepwise multiple regressions indicated that not having a premorbid history of substance abuse and having gainful employment at the time of follow-up were associated with higher life satisfaction scores both at one and two years after injury. Motor independence at discharge was associated with higher life satisfaction at one year and social integration and lack of depressed mood was associated with higher life satisfaction at two years. Changes in life satisfaction between years one and two were associated with depressed mood and marital status. Otherwise, life satisfaction between the two years was shown to be fairly stable. It was concluded that life satisfaction was related to a healthy and productive lifestyle.

Bramston, Chipuer, & Pretty (2005) compared the reported life satisfaction of persons with an intellectual disability to a sample from the general population. Life satisfaction across the seven life domains of material well-being, health, productivity, intimacy, safety, community, and emotional well-being was assessed. They found that both samples reported being well satisfied with life. However, with the exception of

material well-being, persons with an intellectual disability reported that the other domains were less important to them. When satisfaction with the seven domains of life was regressed against measures of stress, social support, and neighborhood belonging, the measure of social support significantly predicted satisfaction with safety and emotional well-being in both groups. The measure of social support also significantly predicted satisfaction with material well-being in the sample with an intellectual disability. Measures of stress and social support significantly predicted life satisfaction for the comparison group in the domains of intimacy and community involvement, but these results were not found in the sample with an intellectual disability. Although not significant for either group, measures of stress and social support did demonstrate a trend toward predicting satisfaction with health for both groups. The authors indicated that their study supports the bottom up model or environmental influence of support of family and friends in the life satisfaction of all persons.

Chen and Crewe (2009) utilized a questionnaire to investigate the life satisfaction of persons with the progressive disabilities of muscular dystrophy and multiple sclerosis. The questionnaire contained specific instruments previously designed to measure spiritual well-being, acceptance of disability, satisfaction with life, and hope. Subjects were recruited through the mailing lists of the National Multiple Sclerosis Society and the Muscular Dystrophy Association. A regression analysis showed that the best predictors of life satisfaction were acceptance of disability and hope. These were followed closely by spiritual well-being. The best demographic predictors of life satisfaction were the variables of age, sex, marital status and employment status respectively. The variables of educational attainment, type of disability, and years since diagnosis were not significant

predictors of life satisfaction. This study indicates that psychological variables are much better predictors of life satisfaction than are demographic variables. The authors stress that the results indicate that professionals need to look beyond demographic variables when addressing issues of life satisfaction.

In Spain,Verdugo, Martin-Ingelmo, Jordán de Urríes, Vicent and Sánchez (2009) used an extant, standardized quality of life scale to analyze the responses of persons with a variety of disabilities upon entering a supported employment program. They looked at demographic variables such as age, sex, type of disability and degree of disability as well as environmental factors such as working day, wages, and benefits obtained. The scale provided an overall quality of life score as well as an assessment on the following four domains of quality of life: competency/productivity, self-determination/independence, satisfaction, and social belonging/community integration. Responses of subjects were compared to one another using an analysis of variance and t-tests.

The authors found that most workers scored high on the overall quality of life scale. The domain in which subjects tended to obtain the highest scores was competency/productivity. The lowest scored domain was social belonging/integration into society. Those over the age of 46 scored higher in self-determination but lower in satisfaction. Women tended to obtain significantly higher scores in competency/productivity and self-determination/independence. Persons with an intellectual disability tended to obtain significantly lower scores in self-determination/independence domain that those with higher intellectual abilities. Those with higher intellectual abilities tended to score higher in social belonging/community integration. Persons with behavioral disabilities tended to score lower in

competence/productivity and satisfaction than did subjects who did not present behavioral problems. Those with less severe disabilities obtained significantly higher scores in self-determination and quality of life as a whole.

Subjects that obtained work related training prior to entering this program scored higher in competence. Those without previous work experience scored higher on competence/productivity and satisfaction. Those who worked a full day scored higher on self-determination/independence. Those with higher wages scored higher on the domains of competency/productivity and self-determination/independence. Persons who received job related benefits scored significantly higher in the competency/productivity domain. The authors used these results to conclude that one must analyze both internal characteristics and environmental variables to assess quality of life for persons with disabilities.

All of these studies indicate that disability specific factors such as the time in life of onset, type of onset, the body parts affected and associated functional limitations imposed, the stability of the situation, the pain experienced, and the degree of visibility impact the life satisfaction of the individual (Vash, 1981; Livneh, 2001). Evidence suggests that those who experience disabilities as a result of trauma, such as spinal cord injury, must deal with the shock that occurs with the sudden onset of physical limitations. Once medical stability is achieved, the individual is able to adapt to the permanent nature of the disability, learn to adjust to the resulting limitations, and reintegrate into society. Persons who experience disabilities that are progressive over time, such as multiple sclerosis or rheumatoid arthritis, must cope with the initial experience of the disability and with new, unexpected limitations that occur as the disease progresses. Adaptation is

difficult because limitations are constantly changing. (Antonak & Livneh, 1995; Frederick & Loewenstein, 1999).

Rehabilitation and Quality of Life

Roessler (1990) suggests that using quality of life as a criterion for evaluating rehabilitation outcomes will provide a measure of the individual's affective state. This measure may be directly related to the personal and environmental factors that need to be addressed in the rehabilitation process in order for the individual to achieve the best possible outcomes. However, despite these assertions, the empirical research that specifically evaluates the impact of vocational rehabilitation services on the quality of life of recipients is rather scarce.

Fugl-Meyer, Eklund, and Fugl-Meyer (1991) conducted a lengthy study on the vocational rehabilitation program in Sweden. They assessed the life satisfaction of individuals at the time they entered the Swedish vocational rehabilitation services system and again two years later. The individuals had a variety of disabilities that included locomotor impairments, cardio-respiratory impairments, brain dysfunction, skin diseases, gastrointestinal dysfunctions, and hearing impairments. A life satisfaction questionnaire was utilized that asked one question about life satisfaction as a whole and eight questions about satisfaction with the following specific domains of life: ability to manage self-care (ADLs), leisure situation, vocational situation, financial situation, sexual life, relations with partner (significant other), family life, and contacts with friends and acquaintances

At the commencement of vocational rehabilitation, it was found that the levels of satisfaction in the areas of self-care, leisure, vocation, and finances were all lower than the level of satisfaction with life as a whole. However, the levels of satisfaction with

sexual life, partner relations, family life, and contacts with friends and acquaintances were higher than the level of satisfaction with life as a whole.

At the two year follow up, the individuals were divided into four separate groups, depending on their vocational status. Group A contained those individuals who had the same job at commencement of service and at follow-up. Group B consisted of individuals who had been vocationally active at the beginning of the study but who obtained new jobs and individuals who were receiving financial benefits but were vocationally active at follow-up. Individuals in Group C were vocationally inactive at the beginning of the study but were undergoing some form of vocational training or education at follow-up. Group D was comprised of individuals who were receiving some form of financial benefits both at the beginning of the study and at follow-up.

The results of this study demonstrated that groups that did not change in vocational status (groups A and D) did not change significantly in any of the life satisfaction domains. For groups B and C who did have a change in vocational status after entering the program, there was a significant increase in levels of satisfaction with life as a whole, with the performance related factors, and the provider related factors. However, this group showed no significant change in the emotion related factor. Thus, Fugl-Meyer et al. (1991) found that not only vocational satisfaction was increased after rehabilitation services, but also the performance related and provider related factors as well as satisfaction with life as a whole increased.

Bränholm, Eklund, Fugl-Meyer, and Fugl-Meyer (1991) compared the life satisfaction of this same sample of persons who were vocationally disabled with the life satisfaction of a sample of working persons who were not disabled. They found that

persons without disabilities had high levels of life satisfaction. Upon admission to vocational rehabilitation, those with disabilities had significantly lower levels of satisfaction on most items in the life satisfaction questionnaire. However, two years after entering vocational rehabilitation, those who were considered successfully vocationally rehabilitated, as evidenced by their being employed or entering vocational training, had an increase in their scores on all of the items in the life satisfaction questionnaire. With the exception of the question on overall life satisfaction and the question on ability to manage self-care, the responses of the successfully rehabilitated group were comparable to that of the group without disabilities. Those who were not successfully rehabilitated after two years continued to report low levels of life satisfaction, and their satisfaction on most items actually decreased. These findings suggest that VR services only improve quality of life for persons who achieve an employment outcome and that employment is a major factor in achieving quality of life

Implications for the Current Study

One of the implied goals of the state-federal rehabilitation services program is to improve the quality of life of its recipients. However, rehabilitation practitioners often feel pressured to meet performance evaluation measures that are based on the number of clients they place in employment. Time constraints as well as budget factors may not allow them to emphasize the issue of overall quality of life. This has resulted in rehabilitation professionals disagreeing as to whether the focus of their work should be on vocational placement or promoting a quality of life for the persons they serve. In addition, others have indicated that the use of vocational placement as the only criterion for measuring rehabilitation goals limits the rehabilitation services program, and they

have provided suggestions for refining the measurement of rehabilitation goals (Bolton, 1979; Livneh, 1988a). Subsequently, some authors of rehabilitation literature have suggested that quality of life be used as a criterion for measuring the effectiveness of rehabilitation services (Halpern, 1993; Livneh, 1988b; Roessler, 1990; Wright, 1980).

Halpern (1993), conducted research in the areas of program evaluation of federally mandated services designed to transition adolescents and young adults with disabilities from the school setting to adult life. He indicated that federal rehabilitation services for persons with disabilities, particularly transition services, should not be so narrowly aimed toward the sole goal of employment. Halpern maintained that quality of life was an implied goal of the federal legislation. As a result, he developed a theoretical framework that is similar to Campbell's (1981) to guide research and support quality of life as an outcome for evaluating transition programs for adolescents and young adults with disabilities.

Halpern suggested that those who study transition in vocational rehabilitation have often implied that success in employment will lead to success in other domains of life. However, research conducted by Halpern (1993) and his colleagues indicate that this may not be the case. They developed three subscales to examine the quality of life for a sample of students in Oregon and Nevada. They found that success in employment does not predict success in social integration but is somewhat predictive of overall personal fulfillment. Success in the area of social integration, however, is a better prediction of personal fulfillment. Thus, Halpern recommends that subjective dimensions to quality of life be used to evaluate transition programs for all Americans, including those with disabilities.

Livneh (1988b), proposed a conceptual approach that utilized quality of life as the ultimate criterion for evaluating rehabilitation goals. Acknowledging that program goals must be stated in tangible terms in order to be measured, this approach defines quality of life using multifaceted terms arranged in a hierarchy. Quality of life is portrayed as consisting of the two main subdivisions of community membership and labor force membership. Each of these two components can be further subdivided into two parts referred to as physical adjustment and psychosocial adjustment. Physical and psychosocial adjustment can each be divided into specific behavioral objectives for an individual to accomplish. Also included in developing behavioral objectives for the individual are the environment in which rehabilitation occurs, the actual system that defines the performance of the behavior, and the attainment of a level of adjustment or function. As the individual accomplishes the specific behavioral objectives at their most elementary level which can be measured, he or she begins to see an improvement in life quality. This measured improvement will produce data that can be used to assist in program planning and evaluation.

The theory of quality of life that guides this study is a synthesis of the theories of Allardt, Campbell, Halpern, and Cummins. These theories indicate that quality of life is a multidimensional construct. However, these dimensions can be arranged in a loose hierarchy of life domains that resembles Maslow's hierarchy of needs. Each individual domain represents a particular area of life that is important to all persons. Table 1 illustrates how the domains in these specific theories are closely paralleled and aligned with Maslow's hierarchy.

Table 1 *Comparison of Maslow's Theory of Self Actualization to Other Theorists' Quality of Life Domains*

	Maslow's Five Hierarchy of Needs				
	Self Actualization	Esteem Needs	Social, Love, Belonging	Safety	Physiological Needs
Allardt	Being	Relating	Relating	Having	Having
Halpern	Personal Fulfillment	Performance of Adult Roles	Performance of Adult Roles	Physical and Material Well-Being	Physical and Material Well-Being
Campbell		Amount of education, usefulness of education , job, housework, nonwork, standard of living	Marriage, Family Life, Friendships	Neighborhood	Health,, Savings, Housing
Cummins	Emotional Well-being (leisure, spiritual well-being, morale)	Productivity; and Place in community (social class, education, job status, community integration, community involvement, self-esteem, self – concept, and empowerment)	Intimacy (family and friends)	Safety (security, personal control, privacy, independence, autonomy, competence, knowledge of rights, and residential stability)	Health and Material Well-being

According to the theories, the quality of one's life can be measured objectively by evaluating the conditions of life in each domain. These theories posit that quality of life can be improved by changing life conditions. Improving life conditions in one domain will add to the overall quality of one's life. A change can occur in one or all domains and it can be assessed by comparing pre-test and post-test measures.

The state-federal VR program provides a variety of services to its consumers. In addition to vocational rehabilitation guidance and counseling, the program also provides physical and mental restoration services, education and training services, and many other secondary supports services (State Vocational Rehabilitation Services Program: Final Rule, 2000). All services are designed to lead to an employment outcome. However, it is possible that these individual services may lead to improvements in other domains of life, and these benefits may be also observed in those who did not achieve an employment outcome.

Because the current study is utilizing secondary data of the LSVRSP, it is dependent on measuring the domains that can be identified in the dataset. The specific domains selected for the study are physical functioning and activities of daily living, self-esteem, and community integration. These domains are easily identified in the LSVRSP because specific scales exist within the study's datasets that were designed to measure these areas.

This study is also assessing the impact of the provision of certain categories of vocational rehabilitation services on specific domains. Therefore, the domains selected for study are those identified that have the potential to be impacted by the provision of VR services. The service of guidance and counseling is expected to improve self-esteem.

Physical and mental restoration services are expected to lead to improvement in the domain of health or physical functioning and activities of daily living. Education and training services would improve the area of community integration.

The three variables of work, receipt of financial assistance, and primary source of support will also be measured. These variables are proxies for the quality of life domain of productivity. Individuals who are working or are economically self-supporting are considered to be more productive than those who do not engage in some form of work activity or self-supporting activity. Even consumers of VR services whose cases are closed as not achieving an employment outcome may acquire services that help them to engage in some form of productive activity. Economic self-sufficiency and productivity are also expected to be improved as a result of receiving VR services.

In summary, according to the domain theories, quality of life is a multidimensional construct consisting of various life domains. Conditions within each domain can be assessed by adding the scored responses to indicators. The better the life conditions within each domain, the greater the overall quality of life. Quality of life can be changed by changing life conditions in a specific life domain, and this change can be measured by comparing the scores obtained before and after the change occurs. It is expected that the provision of VR services may lead to an improvement in specific life domains, and subsequently, to a better quality of life.

CHAPTER IV-Methodology

The purpose of this dissertation will be to examine the relationship between the services provided by the public state-federal rehabilitation program and the quality of life reported by its consumers with disabilities. This will be done utilizing secondary data acquired from the Longitudinal Study of the Vocational Rehabilitation Services Program (LSVRP) conducted by the Research Triangle Institute (RTI) for the Rehabilitation Services Administration (RSA).

The previous chapter provided support for the theory that quality of life is a multidimensional construct that consists of several domains arranged in a loose order that parallels Maslow's hierarchy of needs. The quality of one's life increases in a linear manner as one's needs are met. This dissertation will evaluate four of the seven domains that resemble those identified by Cummins (1996). These domains are, in descending order, self-esteem, productivity, community integration, and activities of daily living and physical functioning.

Chapter IV will explain the history and original purpose of the LSVRSP and describe the procedures that were employed in developing and implementing the LSVRSP. The population of the LSVRSP will be presented, the method of sampling will be explained, and the instrumentation will be discussed. Then the hypotheses of this dissertation will be presented. The means for selecting the particular individuals from the overall sample in the LSVRSP will be presented. Finally a statistical plan for evaluating the hypotheses of the study will be provided.

History of the Longitudinal Study of the Vocational Rehabilitation Services Program

The Longitudinal Study of the Vocational Rehabilitation Services Program (LSVRSP) was conducted by the Research Triangle Institute (RTI) for the Rehabilitation Services Administration (RSA) in response to a congressional mandate contained in section 14 of the 1992 Amendments to the Rehabilitation Act. "The broad purpose of the study is to assess the performance of the state-federal VR services program in assisting eligible individuals with disabilities to achieve positive, sustainable, economic and noneconomic outcomes as a result of their receipt of VR services" (Research Triangle Institute, 2003, para 1).

The LSVRSP began in the fall of 1992 and concluded in the fall of 2002. The study's data collection period ran from December 1994 through December 1999. A nationally representative sample of applicants to and consumers of the VR services was acquired over a two year period. For a period of three years, repeated contacts were made with each of the 8,500 participants in the sample to obtain information to support the research question that the program benefits consumers and society (Hayward & Schmidt-Davis, 2002).

Sample Design of the LSVRSP

A multistage sampling design was utilized to select a random sample with probability proportional to size. The sampling frame for the first stage consisted of the 1,082 district offices within the 48 contiguous United States that provided services under

the state-federal vocational rehabilitation program. This frame was stratified by region and type of agency[5], resulting in the following five strata:

1. The general and combined agencies in the Eastern Region;

2. The general and combined agencies in the North Central Region;

3. The general and combined agencies in the South;

4. The general and combines agencies in the West; and

5. All agencies that serve solely the blind and visually impaired.[6]

The number of active cases and closures for the fiscal year 1991 was counted for each of the 1,082 district offices. The number of district offices in each of the five strata was selected for the first stage of the sample based on probability proportional to size of the total number of consumers served within each stratum. The probability of selecting a given site was calculated by taking the number of consumers served at the site and dividing that number by the number of all consumer served by all sites within that particular stratum. The sampling weights for the sites are the mathematical inverse of their probability of selection. A total of forty district offices were selected for the sample.

Once the district offices were selected, an equal number of consumers within each district office was selected. The intent of this sampling process was to achieve equal sampling weights across all sampled consumers in order to increase the precision of the outcomes. However, it was discovered after the selection of the district offices had taken

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[5]In the state-federal vocational rehabilitation system, some states have only one agency that provides services to persons with all disabilities. This type of agency is referred to as a combined agency. Other states have two separate agencies: one agency provides services to persons with visual disabilities and is referred to as the agency for the blind and visually impaired. The second agency provides services to persons with all other disabilities and is known as a general agency.

[6] Only about five percent of the sample population received services from the agencies serving the persons who are blind and visually impaired; therefore, these agencies were not divided up by the four regional strata.

place, that the number of consumers served by each office was not accurate. The sampling weights provided reflect the probability of selection of both offices and consumers, but the variance in the sampling weights is greater than originally expected. According to the original designers of the LSVRSP, the precision of the study is less than initially planned, but still within acceptable limits (Research Triangle Institute, 2003)

The second stage of the sampling frame for the LSVRSP consisted of individuals who were at varying statuses within the VR program at the time of their being selected for this study. There were three cohorts for the LSVRSP. The first cohort, the applicant cohort consisted of individuals who applied for vocational rehabilitation services. The second cohort, the active cohort, consisted of individuals who had active cases with the VR program. The third cohort, the closure cohort, consisted of individuals who had applied or received services but whose cases had been closed from the VR system. The original designers of the LSVRSP calculated the selection process to provide a random selection of 75 applicants, 150 active cases, and 75 closed cases per site. Some sites had more cases than others, thus the sample sizes do vary some from site to site. However, the cohort design provided that 25 percent of the sample was selected from the population persons at application to the VR program, 50 percent of the persons selected for the sample were already accepted for services, and 25 percent of the sample was selected from the population at the time of exit or after exiting the VR program.

This sample acquisition took place between December 1994 and December 1996. During these 24 months of sample acquisition, consumer membership in a population cohort could change. Consumers entering the system as applicants (Status 02) could remain as applicants, be closed as ineligible for VR services (Status 08), be placed in an

extended eligibility status to determine eligibility for VR services (Status 06), or be determined eligible for VR services (Status 10) and become active. If a consumer was accepted into the VR program, the LSVRSP considered the consumer to be an active consumer. After being determined eligible for services and placed in Status 10, consumers would at some later point in time have their VR cases closed in one of three ways: those who received VR services and obtained an employment outcome would be closed as Status 26; those who received VR services but did not obtain an employment outcome would be closed as Status 28; and those who were determined eligible but were closed before they received services would be closed as Status 30.

Because the population of applicants, the population of active cases, and the population of closed cases could vary from one point in time to the next, the consumer samples had to be selected from a sampling frame that was defined in time as well as in space. On a monthly basis, a list of consumers that entered one of the selected status codes was obtained from each of the selected sampled offices. Sample members were selected on a monthly basis from this list. Consumers chosen for the sample remained with the cohort they were with when selected. For example, if a consumer was selected for the LSVRSP sample as an applicant, he or she remained with the applicant cohort for the remainder of the study. If the consumer was not selected for the sample while he or she was in applicant status, he or she became eligible for the sample again upon entry into the active or closed status. Thus, consumers had multiple opportunities to enter the sample.

In addition to calculating sampling weights for each site as previously discussed, sampling weights for each consumer within sites also had to be calculated. This was

accomplished by taking the inverse of the probability of selecting that individual in the sampling frame for the cohort in which the consumer was selected. This is one divided by the number of consumers that were on the sampling frame across the sampling period. After the sampling process was complete, and consumers were recruited as sample members for the study, the designers of the LSVRSP adjusted the within site sampling weights within that cohort for individuals who did not respond or who refused to participate.

The LSVRSP data set also includes a total sampling weight for each individual selected for the study. This is the individual's within site weight multiplied by the site weight for the individual. It is the inverse of the probability that the consumer would be selected for the LSVRSP from anywhere within the regional offices. This is the weight that is to be used when conducting analysis with the data set.

According to the Research Triangle Institute (2003), this data set can be analyzed from two different perspectives. Parameters can be used to describe the characteristics of specifically defined subpopulations at the time of entry into the sample. Parameters can also be used to make inferences about specifically defined subpopulations at a given point in the rehabilitation process. Because of the longitudinal nature of the study, the data set allows a defined subpopulation to be compared to another defined subpopulation at the same point in time, or the subpopulation can be compared to itself at another point in its progression through the vocational rehabilitation system.

Data Collection and Instrumentation of the LSVRSP

Data collection for the LSVRSP consisted of computer aided interviews with the participants in the study, abstractions of data from VR records, and mailed surveys to VR staff who provide services to the participants. Each participant underwent a battery of baseline interviews upon entry into the study. The interviews were structured to obtain information on work history, functioning, vocational interests and attitudes, independence and community integration, and personal perspectives regarding participation in the vocational rehabilitation process. Follow-up interviews were administered annually for three years. However, the type of interviews varied depending upon the consumer's stage or status within the VR program at the time the interview was conducted. In addition, information on consumer demographic characteristics and information on VR services received were obtained via records abstraction. This information was obtained at the time the participant entered the study and quarterly until the person exited the VR program or until the LSVRSP ended (Hayward & Schmidt-Davis, 2002).

Research Question and Hypotheses

The research question will examine the relationship between the receipt of public state-federal rehabilitation services and the quality of life reported by consumers in The Longitudinal Study of the Vocational Rehabilitation Services Program. This will involve comparing those that received services and achieved an employment outcome (Status 26) to those who received services but did not achieve an employment outcome (Status 28) and to those who were determined eligible but did not receive services (Status 30).

It is acknowledged that persons who apply for services, are determined eligible by qualified personnel, but leave the program before receiving VR services may have some inherent differences that set them apart from those who apply and receive services. However, as noted in Chapter 3, Dean and Dolan (1991) suggest that persons whose cases were closed as Status 30 provide an "internal" comparison group for the VR program. They assert that persons in the Status 30 cohort have much in common with the cohorts that receive services. They are all motivated to apply for services and meet the eligibility requirements of the program. Any biases that occur as a result of the application and eligibility determination processes are avoided, and any preexisting conditions that exist prior to entering the program are minimized. Therefore, in order to provide the best available comparison group, this study will utilize a cohort of persons from the LSVRSP whose cases were closed as Status 30.

In order to answer the research question, five hypotheses are proposed. The first hypothesis is that those persons who receive vocational rehabilitation services will report a greater increase in quality of life than those who do not receive services. This will be assessed by comparing Status 26 and Status 28 closures with Status 30 closures on pretest and posttest measures on the six dependent variables of self-esteem, physical functioning, community integration, work, receipt of financial assistance, and self as primary source of support.

The second hypothesis asks whether any effect of receiving vocational rehabilitation services on quality of life holds equally well for those who achieve an employment outcome and those who do not. This will be assessed by comparing Status

26 closures with Status 28 closures and with Status 30 closure on pretest and posttest measures on the six dependent variables.

Thus, hypotheses one and two will test if consumers who receive services will show a higher increase in their quality of life scores related to self-esteem, physical functioning, community integration, and work, receipt of financial assistance, and self as primary source of support than consumers who do not receive services. The hypotheses will also examine whether the relationship between vocational rehabilitation services holds for both those who obtain an employment outcome and those who do not.

Additional hypotheses will be used to test if specific services received in particular domains lead to significant increases in the quality of life indicators that are related to the specific service received. The third hypothesis of this study is that among consumers who receive VR services, those who receive physical and mental restoration services will show a significant increase in their scores on the physical functioning and activities of daily living scale as compared to those who receive other VR services but did not receive physical and mental restoration services. This hypothesis will be assessed by comparing the change in the pretest and posttest scores on the physical functioning and activities of daily living scale of all persons who received one unit or two or more units of physical and mental restorations services to the pretest and posttest scores of persons who did not receive this service.

The fourth hypothesis is those who receive units of education and training services will show a significant increase in their scores on the community integration scale as compared to those who received other VR services but did not receive training services. Education and training services provide numerous venues for individuals to get

access to their communities and socialize. Through training services, individuals may learn how to access public accommodations directly, or they acquire computer skills that allow them to engage in social networking via the internet. The impact of education and training services will be assessed by comparing the change in the pretest and posttest scores on the community integration scale of consumers who received this service with consumers who received other VR services but did not receive education and training services.

The fifth hypothesis is that consumers who receive more units of counseling and guidance services will show a significant increase in their scores on the self-esteem scale as compared to those who received less units of counseling and guidance services. Counseling and guidance services are a means of assisting consumers in learning of their options and resources for dealing with various problems related to their disabilities. Learning to adapt to personal limitations and capitalizing on individual strengths leads to an improvement in self-esteem. This will be assessed by comparing the change in pretest and posttest scores on the self-esteem scale of consumers who receive two or more units of counseling with consumers who received one or less units of this service.

Data Preparation

This nonexperimental design uses the secondary data that were originally collected for the LSVRSP to assess the performance of the state-federal VR services program. The original LSVRSP data set contains a STATUS file that indicates whether an individual respondent is in a particular data set. Information from the STATUS data set is used for this dissertation because it identifies the sampling cohort and contains information about VR status at specific points in time during the LSVRSP

The Applicant/Client Demographics and Disability Characteristics (CDF1), is utilized to obtain basic demographic information on study participants. This information consists of birth date, gender, race, type of disability, educational level attained, public and private financial assistance and source of income support, individual VR services received and other pertinent information. Another survey used, Factors Affecting Quality of Services (CDF3), contains questions about vocational goals, family or advocate involvement in the VR process, relationship between the VR consumer and the VR counselor, dates and circumstances of closure, earnings, fringe benefits, and job entrance information. The Applicant/Client Work History Interview (WHI) asks questions about job status before and after the receipt of VR services. The Applicant/Client Function Interview (CFI) is used because it contains questions that pertain to activities of daily living and physical functioning, self-esteem, and community integration which are three domains of quality of life that this study was evaluating.

The Follow Up Interview for 26 Closures (FI26) is used because it asked questions of study participants who exited the vocational rehabilitation program with an employment outcome. The Follow Up Interview for 08, 28, and 30 Closures (FU) is used because it asked questions of participants whose case was closed from the VR program without having obtained an employment outcome. These interviews asked questions about the participant's employment status, earnings, fringe benefits, financial assistance, community integration, self-esteem, and perceived self-worth (School of Industrial and Labor Relations, 2004, Download Specific Subsections, ¶ 1).

All data files are available to the public and can be accessed online from www.lsvrsp.org which is maintained by the Cornell University, ILR School, Employment

and Disability Institute. The data files provided for the LSVRSP do not contain personal identifiers, and there are no codes available by which an investigator utilizing the secondary data can identify the individual respondents.

Cornell University Employment and Disability Institute created one file by merging the primary data sets based on the unique client identification number variable (CL_ID) of the LSVRSP. Because the original data files of CFI, CDF3, FI26 and FU contained multiple repeated measures for each case, a single observation had to be selected for the merged file. In the CFI file, the first observation was closest to the subject's application date to the VR program and was the one selected for the merged file. In the case of the CDF3 file and the two closure follow-up interviews (FI26 and FU), the first observation after closure from the VR program was the one selected (Cornell University Employment and Disability Institute, 2003).

This study is designed to compare the responses of consumers at the time they applied for vocational rehabilitation services to their responses on the same measure at the time their case with the vocational rehabilitation program was closed. Thus, only cases that were opened to VR services, determined eligible for services, and then closed from VR services during the time of the LSVRSP data collections were selected. To identify these cases, the variables PINSTAT, which is "Applicant/consumer status at study entry", and PCURSTAT, which is "VR Status at the end of data collection", were used. All cases that had the PINSTAT value of 02 and a PCURSTAT value of 26, 28, or 30 were selected for this dataset. This resulted in 1384 cases that met the criteria of being open to VR, determined eligible for services, and closed from VR either before or after receiving services.

Many of the posttest variables for this study were contained in two separate data sets. Responses of consumers whose cases were closed as Status 26 were contained in the FI26 data set. Responses of consumers whose cases were closed as Status 28 or status 30 were contained in the FU data set. To assist with analysis, the identical FI26 and FU variables were combined to make one follow up posttest variable for all subjects.

Development of the Four Quality of Life Indices

The items contained in the LSVRSP were modified to create four separate indexes. These indexes were used to assess a consumer's change in the different areas pertaining to quality of life.

To measure the domain of Physical functioning, Part A of the LSVRSP Client Function Interview (CFI) was used. This section contained 23 items that measured different areas of Physical Function and Activities of Daily Living index and contained items that parallel items contained in the Katz Activities of Daily Living Scale or the Lawton Instrumental Activities of Daily Living Scale. The Katz Scale asks questions about feeding, continence, transferring, toileting, dressing, and bathing. The Lawton Scale assesses telephone use, shopping, food preparation, housekeeping, laundry, transportation use, management of medication, and management of finances. Both scales are used in the healthcare field to assess physical functioning (Graf, 2008). With the exception of continence, the LSVRSP Measures of Physical Function and Activities of Daily Living index contains questions that address these same areas of functioning. In addition, the LSVRSP Client Function Interview also inquired about one's ability to walk, read and understand a newspaper, write, drive, remember, and have speech understood.

PART A of the CFI file did not have corresponding follow up questions in the FU or FI files. Therefore, the merged file created by Cornell University Employment and Disability Institute did not contain a posttest for Measures of Physical Function and Activities of Daily Living. However, the original CFI file in the LSVRSP did have repeated measures for each quarter that data was gathered on each consumer. To assess a posttest measurement, the quarter measure in the original CFI file that corresponded to the closure date measure was identified and merged in the Cornell University Employment and Disability Institute file. This created a time two point of measure for items in this scale

The LSVRSP asked each respondent if he or she could perform the function by himself or herself and coded “Yes” as 1 and “No” as 2. For this study, all “No” responses were recoded to a value of 0. Yes responses continued to be coded as 1.Table 2 provides a listing of the individual variables contained in the Physical Functioning Index and a comparison of the LSVRSP variable values to the values newly created for this study. The twenty-three items in this scale were combined to make a new variable labeled PFADL. The values of this variable ranged from 0 to 23.

Table 2 *Physical Functioning and Activities of Daily Living Index Variables and Values*

Are you able to do this by yourself?		
Variable	LSVRSP Values	Current Study Value
Seeing words and letters in ordinary newspaper print, even when wearing glasses or contact lenses if you usually wear them?	1 =Yes 2 =No	1 =Yes 0 =No
Hearing what is said in a normal conversation, conversation with another person, even when using a hearing aid if you usually use one?	1 =Yes 2 =No	1 =Yes 0 =No
Lifting and carrying something as heavy as 10 pounds (such as a full bag of groceries)?	1 =Yes 2 =No	1 =Yes 0 =No
Walking for a quarter of a mile – about three city blocks?	1 =Yes 2 =No	1 =Yes 0 =No
Walking up a flight of stairs without resting?	1 =Yes 2 =No	1 =Yes 0 =No
Getting around outside the house by yourself?	1 =Yes 2 =No	1 =Yes 0 =No
Getting around inside the house by yourself?	1 =Yes 2 =No	1 =Yes 0 =No
Getting into and out of bed by yourself?	1 =Yes 2 =No	1 =Yes 0 =No
Bathing or showering?	1 =Yes 2 =No	1 =Yes 0 =No
Dressing by yourself	1 =Yes 2 =No	1 =Yes 0 =No
Eating?	1 =Yes 2 =No	1 =Yes 0 =No
Using the toilet, including getting to the toilet?	1 =Yes 2 =No	1 =Yes 0 =No
Shopping for personal items (such as toilet items or medicines)?	1 =Yes 2 =No	1 =Yes 0 =No
Managing your money (such as keeping track of expenses or paying bills)?	1 =Yes 2 =No	1 =Yes 0 =No
Using the telephone?	1 =Yes 2 =No	1 =Yes 0 =No

Table 2 continued

Physical Function and Activities of Daily Living Index Variables and Values

Doing heavy housework (such as scrubbing floors, or washing windows)?	1 =Yes 2 =No	1 =Yes 0 =No
Reading and understanding the newspaper?	1 =Yes 2 =No	1 =Yes 0 =No
Doing light housework (such as doing dishes, straightening up, or light cleaning)?	1 =Yes 2 =No	1 =Yes 0 =No
Writing?	1 =Yes 2 =No	1 =Yes 0 =No
Having your speech understood?	1 =Yes 2 =No	1 =Yes 0 =No
Driving?	1 =Yes 2 =No	1 =Yes 0 =No
Using public transportation	1 =Yes 2 =No	1 =Yes 0 =No0
Remembering things?	1 =Yes 2 =No	1 =Yes 0 =No

Attrition at Time 2 was a limitation for this measure. The number of subject that had a posttest score on this measure was 479 with a mean of 20.3340. The number that did not have a posttest score was 808 with a mean of 20.3837. This information is shown in Table 3.

Table 3 *Comparison of Pretest Mean of Subjects with a Posttest Score on PFADL to Pretest Mean of Subjects Without a Posttest Score on PFADL*

	Group	N	Mean	Std. Deviation	Std. Error Mean
Physical Functioning and Activities of Daily Living Time 1	Had posttest score on PFADL	479	20.3340	3.39781	.15525
	No posttest score on PFADL	808	20.3837	3.52493	.12401

A t-test comparing the pretest mean of those that had a posttest score was compared to the pretest mean of those who did not have a posttest score. This test yielded an F value of .051 with a significance level of .821, indicating no significant difference in the pretest scores. Therefore, attrition does not pose a significant limitation for this measure. The results of this test are displayed in Table 4.

Table 4 *Independent Samples t-test for Equality of Means on PFADL Pretest for Subjects with a Posttest and Without a Posttest*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Physical Functioning and Activities of Daily Living Time 1	Equal variances assumed	.051	.821	-.247	1285	.805	-.04963	.20057	-.44312	.34385
	Equal variances not assumed			-.250	1033.360	.803	-.04963	.19870	-.43953	.34026

The merged file created by Cornell University Employment and Disability Institute also contained a Part C of the CFI file entitled Community Integration. To measure the domain of Community Integration, twelve questions from Part C of the CFI file were used as a pretest. These same twelve items also exist as a posttest measurement in Part C of the FI26 and Part C of the FU data files, which were previously merged in order to create one single, follow up file.

The original value labels provided in the Community Integration variables in the LSVRSP were recoded to assist with analysis for the current study. All binomial variables were recoded so that a positive response was given a value of 1 and a negative response was given a value of 0. Values that required a response indicating frequency were recoded with the values of 0, .5, or 1. These twelve variables were added to make one variable labeled COMMUNITY with responses ranging from 0 to 12. Table 5 provides a list of the variables selected, the original LSVRSP value labels and the recoded value labels.

Table 5 *Community Integration Index Variables and Values*

Variable	LSVRSP Values	Current Study Values
Does your disability prevent you IN ANY WAY from getting around, attending cultural or sports events, or socializing with friends outside your home as much as you would like to?	1 =Yes 2 =No	0 =Yes 1 =No
About how often do you socialize with close friends, relatives, or neighbors?	1 =At least once a week 2 =About Once a week	1 =At least once a week (Combines 1 and 2)
	3 =Once a month	.5 =Once a month
	4 =Less than once a month 5 =Never	0 =Less than once a month (Combines 4 and 5)
How often do you visit a supermarket or food store?	1 =At least once a week 2 =About Once a week	1 =At least once a week (Combines 1 and 2)
	3 =Once a month	.5 =Once a month
	4 =Less than once a month 5 =Never	0 =Less than once a month (Combines 4 and 5)
How often do you go to a restaurant?	1 =At least once a week 2 =About Once a week	1 =At least once a week (Combines 1 and 2)
	3 =Once a month	.5 =Once a month
	4 =Less than once a month 5 =Never	0 =Less than once a month (Combines 4 and 5)
How often do you go to a place of worship such as a church or synagogue?	1 =At least once a week 2 =About once a week	1 =At least once a week (Combines 1 and 2)
	3 =Once a month	.5 =Once a month
	4 =Less than once a month 5 =Never	0 =Less than once a month (Combines 4 and 5)
Are you very active, somewhat active, or not active in any community group such as a religious group, volunteer group, or recreation group?	1 =Very active 2 =Somewhat active 3 =Not active	1 =Very active .5=Somewhat active 0 =Not active

Table 5 continued

Community Integration Index Variables and Values

Variable	LSVRSP Values	Current Study Values
Do you feel that your disability or health problem has in any way prevented you from reaching your full abilities as a person?	1 =Yes 2 =No	0 =Yes 1 =No
Are you familiar with independent living centers?	1 =Yes 2 =No	1 =Yes 0 =No
Are you familiar with Section 8 and other housing for disabled people?	1 =Yes 2 =No	1 =Yes 0 =No
Are you familiar with transportation services for disabled people?	1 =Yes 2 =No	1 =Yes 0 =No
Are you familiar with medical and rehabilitation services for disabled people?	1 =Yes 2 =No	1 =Yes 0 =No

Three variables related to working status, financial assistance from other sources, and primary source of support were used as separate dichotomous measures of financial independence. The LSVRSP variable that inquired about a consumer's employment status required that a new variable be created from existing data. The question "Were you working at the time you applied for VR Services?" located in the AWH file was used to determine if the applicant was working at the time of entering the VR program. Consumers who were working were coded as 1 and those not working were coded as 0. The identical items asking if the consumer was working in the FU file and FI26 follow up files were merged to create one posttest variable for analysis. A yes for working was recoded as 1 and a no for not working was recoded as 0. A question in the CDF file asked: " Is there evidence of current receipt of any financial assistance?" This question required the interviewer to check yes or no. All yes responses were recoded to 0 and all

no responses were recoded to 1. The identical items of ”Are you currently receiving any financial assistance?’ located in the FU file and FI26 follow up files were merged to create one posttest variable for analysis. Again yes responses were recoded as 1 and no responses were recoded as 0.

Because people can be working and receiving financial assistance at the same time, the question of primary source of support is important in determining if a consumer is supporting himself with his earnings. For the pretest, the question concerning primary source of support was also located in the CDF file. The original LSVRSP asked this question only of consumers who indicated that they received financial assistance Therefore, a new variable had to be created for this study that provided a response for all applicants. Consumers who indicated that they were not receiving financial aid or who indicated that their primary source of support was self were coded as 1. Consumers who indicated that they were receiving financial aid and who indicated that their primary source of support came from benefits or families were coded as 0.For the posttest variable of primary source of support, consumers in the FU and FI 26 files who indicated that they were not receiving financial assistance or those indicated that their primary source of support was self were coded as 1. Consumers who responded that they were receiving financial assistance and that their primary source of support was either financial assistance or family and friends were coded as 0. The three variables and their values are summarized in Table 6.

Table 6 *Work Related Variables and Values*

Variable	LSVRSP Values	Current Study Values
Are you currently working ?	1 =Yes 2 =No	1 =Yes 0 =No
Is there evidence of current receipt of financial assistance? (pretest) Are you currently receiving any financial assistance (posttest)	1 =Yes 2 =No	1 = Yes 0 = No
What is your primary source of support?	1 = Self 2 = Benefit 3 = Family or friends	1 = Self 0 = Benefits or family and friends

The ten items in the Self-Esteem index were selected because they are items that comprise the Rosenberg Self-Esteem Scale (Rosenberg, 1965), which is used frequently in the social sciences to measure self-esteem. In the single LSVRSP file merged by the Cornell University Employment and Disability Institute, the ten items that make up this index are located in Part F of the CFI file and are used for the pretest measurement. This Self-Esteem scale also exists as a posttest measurement in Part D of the FI26 and Part D of the FU data files, which were previously merged in order to create one follow up file for analysis.

In the merged LSVRSP data file, the respondent had the following choices of Agree with a value of 1, Neutral with a value of 2, and Disagree with a value of 3. New variables with new values were created for this study. The values of these items were recoded for analysis. For the positively worded items, Agree was given a value of 1, Neutral was given a value of 0 and Disagree was given a value of -1. For the negatively worded items, Agree was given a value of -1, Neutral was 0, and Disagree was 1. Table 7

gives a listing of the individual variables in the Self-Esteem Index and provides a comparison of the LSVRSP original values to the newly created values used for this study.

Table 7 *Self-Esteem Index Variables and Values*

`Variable	LSVRSP Values	Current Study Value
I feel that I am a person of worth, at least on an equal plane with others	1 =Agree 2 =Neutral 3 =Disagree	1 =Agree 0 =Neutral -1 =Disagree
I certainly feel useless at times	1 =Agree 2 =Neutral 3 =Disagree	-1 =Agree 0 =Neutral 1 =Disagree
I feel I do not have much to be proud of	1 =Agree 2 =Neutral 3 =Disagree	-1 =Agree 0 =Neutral 1 =Disagree
I am able to do things well as most people	1 =Agree 2 =Neutral 3 =Disagree	1 =Agree 0 =Neutral -1 =Disagree
I feel that I have a number of good qualities	1 =Agree 2 =Neutral 3 =Disagree	1 =Agree 0 =Neutral -1 =Disagree
At times I feel that I am no good at all	1 =Agree 2 =Neutral 3 =Disagree	-1 =Agree 0 =Neutral 1 =Disagree
All in all, I am inclined to feel that I am a failure	1 =Agree 2 =Neutral 3 =Disagree	-1 =Agree 0 =Neutral 1=Disagree
I wish I could have more respect for myself	1 =Agree 2 =Neutral 3 =Disagree	-1 =Agree 0 =Neutral 1 =Disagree
On the whole, I feel satisfied with myself	1 =Agree 2 =Neutral 3 =Disagree	1 =Agree 0 =Neutral -1=Disagree
I take a positive attitude toward myself	1 =Agree 2 =Neutral 3 =Disagree	1 =Agree 0 =Neutral -1 =Disagree

The ten self-esteem items were combined to make variable known as SELFESTEEM. The values on the SELFESTEEM variable range from -10 to 10.

Dependent, Independent and Control Variables

The dependent variables for this study are (1) the score on the self-esteem scale, (2) the score on the measures of physical function and activities of daily living scale,(3) the score on the community integration scale, (4) the score on the working variable,(5) the score on the receipt of financial assistance variable, and (6) the score on the primary source of support variable. These variables were chosen because they are the existing variables in the LSVRSP that correspond to four of the seven domains in the theory of quality of life. The self-esteem scale, the physical functioning and activities of daily living scale, and the community integration scale measure self-esteem, physical functioning and community integration respectively. Additional dependent variables provide measures of working status, receipt of financial assistance, measures of primary source of support.

The independent variables for this study are type of VR Closure Status (Status 28, or Status 30, or Status 26) and receipt of VR services. The independent variable of receipt of services is defined by whether or not the consumer received VR services and compares all persons who received VR services under an employment plan (Status 26 and Status 28 closures) with person who did not receive services under an employment plan (Status 30 closures). These variables are treated as independent variables for this analysis because the subjects are separated into groups according to their closure outcome and according to whether or not they received VR services. Consumers who receive services are expected to show an increase in all dependent variables.

Other independent variables considered in this analysis are the types of services provided to the consumer that may explain the differences on outcome variables pertaining to quality of life domains. The service variables used are the main service categories that are provided by the state-federal vocational rehabilitation program. These service variables are commonly referred to as counseling and guidance services, training or education services, and physical and mental restoration services. It is expected that consumers who receive counseling and guidance services will show an increase in scores on the self-esteem scale. Physical and mental restoration services are expected to lead to a change in the area of physical functioning and activities of daily living. Training and education services are expected to lead to an increase in the community integration scale. A summary of the study hypotheses, variables, and test analyses can be viewed in Table 8.

Table 8 *Summary of Hypotheses, Variables, and Types of Analysis*

Domain	Hypothesis	Comparison groups	DV	Type of Analysis
Self-esteem	Those who receive VR services will show an increase in Self-esteem	Group receiving VR services (Status 26 and Status 28 closures) to group that did not receive services (Status 30 closures)	Change in mean score on Self-esteem scale	Repeated measures analysis of variance
	The Status 26 group and the Status 28 group will show an increase in self-esteem	Status 26 closure group to Status 28 closure group to Status 30 closure group	Change in mean scores on Self-esteem scale	Repeated measures analysis of variance
Physical functioning and activities of daily living	Those who receive VR services will show an increase in physical functioning and activities of daily living	Group receiving VR services (Status 26 and Status 28 closures) to group that did not receive services (Status 30 closures)	Change in mean scores on the physical functioning and activities of daily living scale	Repeated measures analysis of variance
	The Status 26 group and Status 28 group will show an increase in physical functioning and activities of daily living	Status 26 closure group to Status 28 closure group to Status 30 closure group	Change in mean scores on the physical functioning and activities of daily living scale	Repeated measures analysis of variance
Community integration	Those who receive VR services will show an increase in community integration	Group receiving VR services (Status 26 and Status 28 closures) to group that did not receive services (Status 30 closures)	Change in mean scores on the community integration scale	Repeated measures analysis of variance
	The Status 26 and Status 28 groups will show an increase in community integration	Status 26 closure group to Status 28 closure group to Status 30 closure group	Change in mean scores on the community integration scale	Repeated measures analysis of variance

Table 8 continued

Productivity	Those who receive VR services will show an increase in work status	Group receiving VR services (Status 26 and Status 28 closures) to group that did not receive services (Status 30 closures)	Change in dichotomous measure working or not working	z-test of difference of proportions
	The Status 26 group and the Status 28 group will show an increase in work status	Status 26 closure group to Status 28 closure group to Status 30 closure group	Change in dichotomous measure: working or not working	z-test of difference of proportions
	Those who receive VR services will show a decrease in financial assistance	Group receiving VR services (Status 26 and Status 28 closures) to group that did not receive services (Status 30 closures)	Change in dichotomous measure: receiving financial assistance or not receiving assistance	z-test of difference of proportions
	The Status 26 group and the Status 28 group will shown a decrease in receipt of financial assistance	Status 26 closure group to Status 28 closure group to Status 30 closure group	Change in dichotomous measure: receiving financial assistance or not receiving assistance	z-test of difference of proportion
	Those who receive VR services will show an increase in becoming their own primary source of support	Group receiving VR services (Status 26 and Status 28 closures) to group that did not receive services (Status 30 closures)	Change in dichotomous measure of individual is own primary source of support	z-test of difference of proportion
	The Status 26 group and the Status 28 group will show an increase in becoming their own primary source of support	Status 26 Closure group to Status 28 Closure group to Status 30 closure group	Change in dichotomous measure of individual is own primary source of support	z-test of difference of proportion

Table 8 continued

Physical functioning and activities of daily living	An increase in physical and mental restoration service units will be associated with an increase in physical functioning and activities of daily living	Among those that receive VR services (Status 26 and Status 28 closures), the group that receives 2 or more units of physical and mental restoration services compared to group that receive 1 unit compared to group that receives no units	Change in mean score on physical functioning and activities of daily living scale	Repeated measures analysis of varianc
Community integration	An increase education and training units will be associated with an increase in community integration	Among those that receive VR services (Status 26 and Status 28 closures), the group that receive 1 or more units of education and training services compared to group that receive no units	Change in mean score on community integration scale	Repeated measures analysis of variance
Self-esteem	An increase in guidance and counseling service units will be associated with an increase in self-esteem	Among those that receive VR services (Status 26 and Status 28 closures), the group that receives 2 or more units of guidance and counseling services compared to group that received 1 or less units	Change in mean score on self-esteem scale	Repeated measures analysis of variance

This analysis also considers several background factors as possible control variables. Three of these variables are the common demographic variables of gender, race, and age. For the purposes of analysis, race is separated into the categories of white, and nonwhite; age is separated into four age ranges. In addition, consumers will also be compared based on whether or not they had a previous VR case.

A separate control variable is the primary disability of the applicant. For the purposes of this study, this variable was divided into seven categories. Those with visual

and hearing impairments were placed into the sensory disability category. Persons with spinal cord injuries, cerebral palsy, muscular dystrophy, amputations and other disabilities involving the orthopedic disabilities were placed in the orthopedic disabilities category. A separate category of all other physical disabilities was comprised of those with allergic, endocrine system, and metabolic an nutritional diseases. This category also included those with diseases of the blood and blood forming organs, conditions from neoplasms not elsewhere classified, epilepsy and other disorders of the nervous system not elsewhere classified, and speech disorders. The psychiatric disability category included those with diagnoses of psychosis, neurosis, personality disorders, mood disorders, alcohol or substance abuse, autism, and other mental disorders not classified elsewhere. Mental retardation, learning disabilities, and traumatic brain disabilities each made up a separate disability category.

The last two control variables also pertain to the issue of disability. Consumers will be compared based on whether their primary disabilities are congenital or acquired. In addition, consumers will also be compared based on the length of time between acquiring the disability and applying for VR services.

Chapter V – Results

Sample Characteristics

This study utilized the secondary data set for the LSVRSP. In order for an individual case to be selected for this study, the subject's case had to enter Status 02 (application status) during the LSVRSP data collection period. In addition, the subject's case also had to be closed during the LSVRSP data collection period in one of the three following outcomes: the consumer received services and achieved an employment outcome (Status 26 closure); the consumer received services but did not achieve an employment outcome (Status 28 closure); or the consumer was determined to be eligible for services but dropped out before receiving services (Status 30 closure).

Descriptive data for the sample is presented in two formats. The research question of this study is that the services provided by the VR program are associated with an improvement in the quality of life of consumers. Thus, data will be grouped according to those who receive services, which includes Status 26 and Status 28 closures in one group, and those who did not receive services, which include the Status 30 closures, in a separate group. However, some research suggests that effects differ for those with and those without an employment outcome. Therefore, descriptive data will also be separated by the three status closure groups.

Detailed information concerning the following seven descriptive characteristics will be provided: (1) prior VR closures, (2) gender, (3) race, (4) age at application for services, (5) age at onset of disability, (6) primary disability, and (7) number of years disabled at time of application. This information will provide an overview of the characteristics of the representative sample. Analysis of these descriptive variables will help to identify any differences between those who receive VR services and those who do

not. Significant differences between services groups on these characteristics may suggest the need for additional controls in testing the main hypotheses.

Prior VR closures. Of those who received services during this study, only 13.6 percent had previous cases open to VR. Of those who did not receive services, only 12.2 percent had previous cases open to VR. This information is shown in Table 9.

Table 9 *Crosstabulation of Prior VR Closures and Receipt of Services*

			VR Services received	
			No services received (Status 30 closures	Received Services (Status26 and Status 28
Prior VR closures	Yes	Count	44	137
		% within VR Services received	12.2%	13.6%
	No	Count	317	874
		% within VR Services received	87.8%	86.4%
Total		Count	361	1011
		% within VR Services received	100.0%	100.0%

A Pearson's chi-square value of .431 with a significance level of .511 demonstrated no relationship between previous cases open to VR and the receipt of services. This information is represented in Table 10.

Table 10 *Chi-Square Test for Significance of Prior VR Closures and Receipt of Services*

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.431[a]	1	.511		
Continuity Correction[b]	.320	1	.571		
Likelihood Ratio	.438	1	.508		
Fisher's Exact Tes				.587	.288
Linear-by-Linear Association	.431	1	.512		
N of Valid Cases	1372				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 47.62.

b. Computed only for a 2x2 table

When the variable of prior VR closures is crosstabulated with the closure status variable, 17 percent of those closed as Status 28 had prior VR closures compared to 12.2 percent of the Status 30 closures and 11.5 percent of the Status 26 closures. These results are displayed in Table 11.

Table 11 *Crosstabulation of Prior VR Closures and Current VR Closure Status*

			VR Status at End of Data Collection		
			26.00	28.00	30.00
Prior VR closures	Yes	Count	72	65	44
		% within VR Status at End of Data Collection	11.5%	17.0%	12.2%
	No	Count	556	318	317
		% within VR Status at End of Data Collection	88.5%	83.0%	87.8%
Total		Count	628	383	361
		% within VR Status at End of Data Collection	100.0%	100.0%	100.0%

A Pearson's chi-square of 6.730 had s significance level of .035, indicating that a statistically significant relationship exists between having previous cases open to VR and the type of VR closure obtained during this study. These results are shown in Table 12.

Table 12 *Chi-Square Tests of Prior VR Closures and Current VR Closure Status*

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.730[a]	2	.035
Likelihood Ratio	6.464	2	.039
Linear-by-Linear Association	.486	1	.486
N of Valid Cases	1372		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 47.62.

The results of a z-test of difference of proportions displayed in Table 13. demonstrate that persons with Status 28 closures are significantly more likely to have prior VR closures than are those closed as Status 26.

Table 13 *Comparison of Difference of Proportions for Prior VR Closures and VR Closure Status*

		VR Status at End of Data Collection		
		26.00	28.00	30.00
		(A)	(B)	(C)
Prior VR closures	Yes		A	
	No	B		

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

*Gender***.** This sample included a roughly even number of men and women. Among those who received services, 51.8 percent were male and 48.2 percent were female. Of those who did not receive services, 52.5 percent were male and 47.5 percent were female. These results are shown in Table 14.

Table 14 *Gender and VR Services Received Crosstabulation*

			VR Services received	
			Received Services (Status26 and Status 28)	No services received (Status 30 closures
Client Gender	Male	Count	528	191
		% within VR Services received	51.8%	52.5%
	Female	Count	492	173
		% within VR Services received	48.2%	47.5%
Total		Count	1020	364
		% within VR Services received	100.0%	100.0%

A Pearson's chi-square value of .054 with a significance value of .817 indicates that there is no significant relationship between gender and the receipt of VR services. Table 15 displays these results.

Table 15 *Chi-Square Test of Gender and VR Services Received*

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.054[a]	1	.817		
Continuity Correction[b]	.029	1	.864		
Likelihood Ratio	.054	1	.816		
Fisher's Exact Test				.855	.432
Linear-by-Linear Association	.054	1	.817		
N of Valid Cases	1384				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 174.90.

b. Computed only for a 2x2 table

When gender is crosstabulated with VR Status, 50.6 percent of those who were closed 50.6 percents of those closed as Status 26 53.6 percent closed as Status 28, and 52.5 percent closed as Status 30 were male. A Pearson's chi square value of .906 with a significance value of .636 indicates that there is no significant relationship between gender and VR Status outcome. This data is displayed in Tables 16 and 17.

Table 16 Client Gender and VR Closure Status Crosstabulation

			VR Closure Status		
			26.00	28.00	30.00
Client Gender	Male	Count	320	208	191
		% within VR Closure Statusn	50.6%	53.6%	52.5%
	Female	Count	312	180	173
		% within VR Closure Status	49.4%	46.4%	47.5%
Total		Count	632	388	364
		% within VR Closure Status	100.0%	100.0%	100.0%

Table 17 *Chi-Square Tests of Client Gender and VR Closure Status*

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.906[a]	2	.636
Likelihood Ratio	.907	2	.636
Linear-by-Linear Association	.444	1	.505
N of Valid Cases	1384		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 174.90.

Race. Racial disparities do appear to exist in the state-federal vocational rehabilitation system. One of the earlier studies in this area was conducted by Atkins and Wright (1980) who demonstrated that African Americans were proportionally less likely to be accepted for VR services. Others have also shown that African Americans were less

likely to be placed in employment rehabilitated compared to their white consumers with disabilities (Herbert & Martinez,1992). Evidence of disparity in racial outcome was strong enough to warrant Section 21 of the Rehabilitation Act Amendments of 1992 to mandate that the state-federal VR program become more effective in providing services to culturally diverse populations. Subsequently, the 2000 regulations on the State Vocational Rehabilitation Program required that the program to assess its ability to provide service to those from minority backgrounds (State Vocational Rehabilitation Services Program: Final Rule, 2000).

Although there has been a reported increase in the number of studies on diversity in the VR system (Lewis, Shamburger, Head, Armstrong, & West,2007), recent research demonstrates that racial disparities continue to exist in the VR program (Rosenthal, Ferrin,Wilson, & Frain, 2005; Kolakowsky-Hayner, 2007; Jones, 2008; Hasnain and Balcazar 2009). Thus, race continues to be an important demographic variable to consider in the evaluation of the VR program.

This study's sample reflected the racial distribution of the national population according to the 1990 U.S. Census. A little over 80 percent of the individuals were in the white racial category, and 18.9 percent fell into all other racial categories. Almost 82 percent of those who received services were white and 79.3 percent of those who did not receive services were white. Only 18.5 percent of those who received services and 20.7 percent of those who did not receive services were in the all other racial categories. A Pearson's chi-square value of .805 with a significance value of .370 demonstrates no significant relationship between race and the receipt of VR services. Table 18 and Table 19 display this information.

Table 18 *Race and VR Services Received Crosstabulation*

			VR Services received	
			Received Services (Status26 and Status 28	No services received (Status 30 closures
RACE	White	Count	828	284
		% within VR Services received	81.5%	79.3%
	All other	Count	188	74
		% within VR Services received	18.5%	20.7%
Total		Count	1016	358
		% within VR Services received	100.0%	100.0%

Table 19 *Chi-Square Tests of Race and VR Services Received*

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.805[a]	1	.370		
Continuity Correction[b]	.671	1	.413		
Likelihood Ratio	.795	1	.373		
Fisher's Exact Test				.390	.206
Linear-by-Linear Association	.805	1	.370		
N of Valid Cases	1374				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 68.26.

b. Computed only for a 2x2 table

When the racial categories were compared across VR status closure outcomes, 84.4 percent of the Status 26 closures, 76.7 percent of the Status 28 closures, and 79.3 percent of the Status 30 closures were of the white race. The all other racial category comprised 15.6 percent of the Status 26 closures, 23.3 percent of the Status 28 closures, and 20.7 percent of the Status 30 closures. A Pearson's chi-square value of 10.146 with a

significance value of .006 indicates that a significant relationship exists between race and VR closure status. This information can be observed in Tables 20 and Table 21.

Table 20 *Race and VR Closure Status Crosstabulation*

			VR Closure Status		
			26.00	28.00	30.00
Race	White	Count	532	296	284
		% within VR Closure Status	84.4%	76.7%	79.3%
	All other	Count	98	90	74
		% within VR Closure Status	15.6%	23.3%	20.7%
Total		Count	630	386	358
		% within VR Closure Status	100.0%	100.0%	100.0%

Table 21 *Chi-Square Test of Race and VR Closure Status*

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.146[a]	2	.006
Likelihood Ratio	10.167	2	.006
Linear-by-Linear Association	5.383	1	.020
N of Valid Cases	1374		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 68.26.

A z test for difference of proportions shows that those closed as Status 26 are significantly more likely to be white whereas those closed as Status 28 are significantly more likely to be in the all other racial category. There is no significant difference in race for those closed as Status 30. This is shown in Table 22.

Table 22 *Comparison of Proportions for Race and VR Closure Status*

		VR Status at End of Data Collection		
		26.00	28.00	30.00
		(A)	(B)	(C)
Race	White	B		
	All other		A	

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

Age. The State Vocational Rehabilitation Services Program, Final Rule (2001) does not stipulate age requirements for applying for services. This regulation does require that individual state VR agencies coordinate services with the local education system in order facilitate students' transition from school to VR services and subsequently to work. On the other end of the age continuum, individuals are more likely to acquire a disability as they age, and they may need services in order to remain employed. Older persons are remaining in the workforce longer. These issues require that the VR system be familiar with the age of consumers in order to be able to gauge how age relates to VR services and outcomes.

The subjects selected for this study ranged in age from 15 to 91 years of age at the time of application. The mean age was 37.61 years of age. The mean age of persons who received services is 38.43 and the mean age of those who did not receive services is 35.32. A one way analysis of variance for mean difference of age between those who received services and those who did not yields an F of 11.822 with a significance level of

.001, indicating that the mean age of those who received services is significantly higher than those who did not. However, this difference tends to be mostly at the upper age range. This information is displayed in Tables 23 and 24.

Table 23 *Age at Application and Receipt of Services Descriptives*

					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
No services received (Status 30 closures	361	35.32	12.422	.654	34.04	36.61	15	84
Received Services (Status26 and Status 28	1007	38.43	15.436	.486	37.48	39.38	15	91
Total	1368	37.61	14.760	.399	36.83	38.39	15	91

Table 24 *Age at Application and Receipt of Services One Way ANOVA*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2568.013	1	2568.013	11.882	.001
Within Groups	295235.540	1366	216.131		
Total	297803.553	1367			

Subjects were separated into four age brackets based on age at the time of application for VR services. The youngest age group is comprised of those in the age of transition, which ranges from 15 to 21 years of age. This group comprised 16.5 percent of the individuals in this study. The next age group is made up of those 22 to 44 years of age. This is the age when persons traditionally have entered the workforce, and at 53.7

percent, this group comprises a little over half of the total sample. The third age group is comprised of the 45 to 64 year olds. Persons this age have usually been in the workforce for some time. This age group comprises 25.1 percent of the sample. The 65 and over age group, which is often considered retirement age, comprises only 4.5 percent of the total sample

When the age at the time of application variable was compared with the receipt of VR services variable, 15.7 percent of those who received services and 19.4 percent of those who did not receive services were in the 15 to 21 age group. Fifty-three percent of those who received services and 55.7 percent of those who did not receive services were in the 22 to 44 age group. A little over one fourth (25.6 percent) of those receiving services and 23.8 percent of those who did not receive services were in the 45 to 64 age group. Only 5.7 percent of those who received services were in the 65 and over age group. Among those who did not receive services, only 1.1 percent were in the 65 and over age group. A Pearson's chi square value of 15.222 had a significant value of .002, indicating a relationship exists between the variable of age and receipt of services. A z test of the difference of proportions demonstrates that those in the 65 and over age group are significantly more likely to receive services. Other age groups do not show a significant difference. This data can be observed in Table 25, Table 26, and Table 27.

Table 25 *Age and VR Services Received Crosstabulation*

			VR Services received	
			Received Services (Status26 and Status 28	No services received (Status 30 closures
Age range	15 to 21	Count	158	70
		% within VR Services received	15.7%	19.4%
	22 to 44	Count	534	201
		% within VR Services received	53.0%	55.7%
	45 to 64	Count	258	86
		% within VR Services received	25.6%	23.8%
	65 and over	Count	57	4
		% within VR Services received	5.7%	1.1%
Total		Count	1007	361
		% within VR Services received	100.0%	100.0%

Table 26 *Chi-Square of Age and VR Services Received*

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.222[a]	3	.002
Likelihood Ratio	18.860	3	.000
Linear-by-Linear Association	10.001	1	.002
N of Valid Cases	1368		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 16.10.

Table 27 *Age Range and VR Services Comparison of Proportions*

		VR Services received	
		No services received (Status 30 closures	Received Services (Status26 and Status 28
		(A)	(B)
Age Range	15 to 21		
	22 to 44		
	45 to 64		
	65 and over		A

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

When the variable of age at application is compared to the VR status outcome variable, the mean age of persons closed as Status 26 is 39.63; the mean age of those closed as Status 28 is 36.46; and the mean age of persons closed as Status 30 is 35.32. A one way analysis of variance for the difference of the mean age between status groups yields an F of 11.502 with a significance level of .000. A post hoc comparison with Bonferonni adjustment indicates that the mean age of those in the Status 26 Group is significantly different from the mean age of the Status 28 group and the Status 30 group at the .05 level. However, the mean age of the Status 28 group is not significantly different from the Status 30 group at the .05 level. This information is displayed in Table 28, Table 29, and Table 30

Table 28 *Age and VR Closure Status Descriptives*

					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
26	626	39.63	16.412	.656	38.34	40.91	15	91
28	381	36.46	13.472	.690	35.11	37.82	16	84
30	361	35.32	12.422	.654	34.04	36.61	15	84
Total	1368	37.61	14.760	.399	36.83	38.39	15	91

Table 29 *Age and VR Closure Status One Way ANOVA*

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	4935.525	2	2467.762	11.502	.000
Within Groups	292868.028	1365	214.555		
Total	297803.553	1367			

Table 30 *Post Hoc Multiple Comparisons of Age and VR Closure Sstatus*

Table 30

Post Hoc Multiple Comparison of Age at application and VR Closure Status

Bonferroni

(I) VR Closure Status	(J) VR Closure Status	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
26.00	28.00	3.162*	.952	.003	.88	5.44
	30.00	4.305*	.968	.000	1.98	6.63
28.00	26.00	-3.162*	.952	.003	-5.44	-.88
	30.00	1.143	1.076	.864	-1.44	3.72
30.00	26.00	-4.305*	.968	.000	-6.63	-1.98
	28.00	-1.143	1.076	.864	-3.72	1.44

*. The mean difference is significant at the 0.05 level.

When the variable of age at application is compared to the VR status outcome variable, 14.1 percent of the Status 26 closures, 18.4 percent of the Status 28 closures, and 19.4 percent of the Status 30 closures were in the age range of 15 to 21. A little over half (52.1 percent) of those in the Status 26 closure group, 54.6 percent of those in the Status 28 closure group and 55.7 percent of those in the Status 30 group were in the 22 to 44 age group. Twenty-six percent of the Status 26 group, 24.9 percent of the Status 28 group and 23.8 percent of the Status 30 group were between the ages of 45 to 64. Only 7.8 percent of the Status 26 group, 2.1 percent of the Status 28 group and 1.1 percent of the Status 30 group were age 65 or over. A Pearson's chi-square value of 35.686 with a significance level of .000 indicates there is a relationship between age group and VR status outcome. A z test of difference of proportions indicates there those in the 65 and over age group are significantly more likely to be closed as Status 26 as opposed to Status 28 or Status 30. This information is displayed in Table 31, Table 32, and Table 33.

Table 31*Age and VR Closure Status Crosstabulation*

			VR Closure Status		
			26.00	28.00	30.00
Age at application	15 to 21	Count	88	70	70
		% within VR Closure Status	14.1%	18.4%	19.4%
	22 to 44	Count	326	208	201
		% within VR Closure	52.1%	54.6%	55.7%
	45 to 64	Count	163	95	86
		% within VR Closure Status	26.0%	24.9%	23.8%
	65 and over	Count	49	8	4
		% within VR Closure	7.8%	2.1%	1.1%
Total		Count	626	381	361
		% within VR Closure Status	100.0%	100.0%	100.0%

Table 32 *Chi-Square Test of Age and VR Closure Status*

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	35.688[a]	6	.000
Likelihood Ratio	37.913	6	.000
Linear-by-Linear Association	19.970	1	.000
N of Valid Cases	1368		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 16.10.

Table 33 *Age and VR Closure Status Comparison of Proportions*

		VR Status at End of Data Collection		
		26.00	28.00	30.00
		(A)	(B)	(C)
Age at application	15 to 21			
	22 to 44			
	45 to 64			
	65 and over	B C		

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

Age at onset of primary disability. This sample contained persons with congenital disabilities and persons with acquired disabilities. At least 22.9 percent of persons in the total sample were born with their disabilities or became disabled before their second birthday. Forty-six percent became disabled over the age of two years. The age at which disability was acquired is unknown for a little over 31 percent.

When the age at onset of disability was crosstabulated with the services variable, 35.7 percent of those that received services and 26.6 percent of those who did not receive

services were either born with their disabilities or acquired them before their second birthday. A little over 64 percent of those who received services and 73.4 percent of those who did not acquired their disability at age two or older. A Pearson's chi-square of 7.080 with a significance value of .008 indicates that there is a significant relationship between age that the disability occurred and the receipt of services. This information is displayed in Table 34 and Table 35.

Table 34 Age Disability Occurred and VR Services

			VR Services received	
			No services received (Status 30 closures	Received Services (Status26 and Status 28
Age disability occurred	Before 2 years of age	Count	68	249
		% within VR Services received	26.6%	35.7%
	Age 2 and older	Count	188	448
		% within VR Services received	73.4%	64.3%
Total		Count	256	697
		% within VR Services received	100.0%	100.0%

Table 35 *Chi-Square Test of Age Disability Occurred and VR Services*

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7.080[a]	1	.008		
Continuity Correction[b]	6.673	1	.010		
Likelihood Ratio	7.261	1	.007		
Fisher's Exact Test				.008	.005
Linear-by-Linear Association	7.073	1	.008		
N of Valid Cases	953				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 85.15.

b. Computed only for a 2x2 table

A z-test of difference of proportions indicates that those disabled before the age of two had a greater proportion of persons receiving services than did those who became disabled at age two or older. This data is displayed in Tables 36 and Table 37.

Table 36 *Comparison of Column Proportions of Age Disability Occurred and VR Services*

		VR Services received	
		No services received (Status 30 closures	Received Services (Status26 and Status 28
		Column N %	Column N %
Age disability occurred	Before 2 years of age	26.6%	35.7%
	Age 2 and older	73.4%	64.3%

Table 37 *Comparison of Proportions of Age of Disability and VR Services Received*

		VR Services received	
		No services received (Status 30 closures	Received Services (Status26 and Status 28
		(A)	(B)
Age that disability occurred	Before 2 years of age		A
	Age 2 and older	B	

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

When the variable of age of onset of disability was compared to the VR status outcome variable, 37.8 percent of the Status 26 closures, 32.3 percent of the Status 28

closures and 26.6 percent of the Status 30 closures acquired their disabilities before their second birthday. A little over 62 percent of the Status 26 closures, 67.7 percent of the Status 28 closures, and 73.4 percent of the Status 30 closures became disabled at age 2 or older. A Pearson's chi-square value of 9.261 with a significance level of .01 indicates a strong relationship between age of onset of disability and the type of VR closure achieved. This data is shown in Table 38 and Table 39.

Table 38 Age that Disability *Occurred and VR Closure Status Crosstabulation*

			VR Closure Status			
			26.00	28.00	30.00	Total
Age that disability occurred	Before 2 years of age	Count	165	84	68	317
		% within VR Closure Status	37.8%	32.3%	26.6%	33.3%
	Age 2 and older	Count	272	176	188	636
		% within VR Closure Status	62.2%	67.7%	73.4%	66.7%
Total		Count	437	260	256	953
		% within VR Closure Status	100.0%	100.0%	100.0%	100.0%

Table 39 *Chi-Square Test of Age Disability Occurred and VR Closure Status*

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.261[a]	2	.010
Likelihood Ratio	9.384	2	.009
Linear-by-Linear Association	9.249	1	.002
N of Valid Cases	953		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 85.15.

A z-test for significance of proportions indicates that those who have congenital disabilities or acquire them before age two have a greater proportion closed as Status 26 than Status 30. This information is shown in Tables 40 and 41.

Table 40 *Comparison of Proportions Percentages of Age Disability Occurred and VR Closure Status*

			VR Status at End of Data Collection		
			26.00	28.00	30.00
Age disability occurred	Before 2 years of age	Column N %	37.8%	32.3%	26.6%
	Age 2 and older	Column N %	62.2%	67.7%	73.4%

Table 41 *Comparison of Proportions of Age Disability Occurred and VR Closure Status*

		VR Status at End of Data Collection		
		26.00	28.00	30.00
		(A)	(B)	(C)
Age disability occurred	Before 2 years of age	C		
	Age 2 and older			A

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

Primary disability For the purposes of this study, the variable of primary disability was divided into seven categories. The largest percentage of consumers, 28.3 percent, had a primary disability that was grouped into the category of psychiatric disabilities. This disability category included diagnoses of psychosis, neurosis, personality disorders, mood disorders, alcohol or substance abuse, autism, and other mental disorder not classified elsewhere. Those with orthopedic disabilities such as spinal cord injuries, cerebral palsy, amputations, and other orthopedic disabilities comprised the second largest disability category with 26.7 percent of the consumers. Those with sensory disabilities such as hearing and visual impairments comprised the third largest disability

category with 16.2 percent of the consumers. Those with learning disabilities made up 15.6 of the total sample. Persons with mental retardation made up 7.4 percent of the total sample. Persons with all other physical disabilities included those with allergic, endocrine system, metabolic and nutritional diseases. Also included were diseases of the blood and blood forming organs, conditions from neoplasms not elsewhere classified, epilepsy and other disorder of the nervous system not elsewhere classified, and speech disorders. This group comprised 3.4 percent of the total sample. Persons with traumatic brain injuries as a primary disability comprised only 2.5 percent of the total sample.

The disability groups were separated by those who received services and those who did not. Those with sensory disabilities comprised 20 percent of those who received services and 5.5 percent of those who did not receive services. Almost 25 percent of those who received services and 32.4 percent of those who did not receive services had an orthopedic disability, and 2.6 percent of those receiving services and 5.5 percent of those not receiving services had a disability that fell into the all other physical disabilities category. Only 7.8 of those receiving services and 6 percent of those not receiving services had a disability of mental retardation. Those with learning disabilities made up 14.6 percent of those receiving services and 18.4 percent of those not receiving services. Persons with psychiatric disabilities comprised 28.3 percent of those who received services and 28.3 percent of those who did not receive services. Persons with traumatic brain injuries comprised on 2 percent of the group that received services and 3.8 percent of the group that did not receive services. This information is shown in Table 42.

Table 42 *Primary Disability and VR Services Received Crosstabulation*

			VR Services received	
			Received Services (Status26 and Status 28	No services received (Status 30 closures
Primary Disability	Sensory Disabilities including visual and hearing impairments	Count	204	20
		% within VR Services received	20.0%	5.5%
	Orthopedic disabilities including amputations	Count	251	118
		% within VR Services received	24.6%	32.4%
	All other physical disabilities	Count	27	20
		% within VR Services received	2.6%	5.5%
	Mental Retardation	Count	80	22
		% within VR Services received	7.8%	6.0%
	Learning disability	Count	149	67
		% within VR Services received	14.6%	18.4%
	Psychiatric disabilities including alcohol and substance abuse	Count	289	103
		% within VR Services received	28.3%	28.3%
	Traumatic Brain Injury	Count	20	14
		% within VR Services received	2.0%	3.8%
Total		Count	1020	364
		% within VR Services received	100.0%	100.0%

A Pearson's chi-square of 54.958 with a significance level of .000 indicated a significant relationship exists between disability and receipt of VR services. A z-test of difference of proportions demonstrates that persons with sensory disabilities were more likely to receive services. Persons with orthopedic disabilities, all other physical disabilities, and traumatic brain injuries were significantly less likely to receive services. This information can be viewed in Table 43 and Table 44.

Table 43 *Chi-Square Test of Primary Disability and VR Services Received*

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	54.958[a]	6	.000
Likelihood Ratio	61.976	6	.000
Linear-by-Linear Association	7.942	1	.005
N of Valid Cases	1384		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.94.

Table 44 *Comparison of Proportions of Primary Disability and VR Services Received*

		VR Services received	
		No services received (Status 30 closures	Received Services (Status26 and Status 28
		(A)	(B)
Primary Disability	Sensory Disabilities including visual and hearing impairments		A
	Orthopedic disabilities including amputations	B	
	All other physical disabilities	B	
	Mental Retardation		
	Learning disability		
	Psychiatric disabilities including alcohol and substance abuse		
	Traumatic Brain Injury	B	

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

When the variable of primary disability was crosstabulated with VR Closure status, 27.4 percent of the Status 26 closures, 8 percent of the Status 28 closures, and 5.5

percent of the Status 30 closures had a sensory disability. Almost 25 percent of the Status 26 closures, 24.2 percent of the Status 28 closures and 32.4 percent of the Status 30 closures had orthopedic disabilities. Only 2.5 percent of the Status 26 closures, 2.8 percent of the Status 28 closures, and 5.5 percent of the Status 30 closures fell into the all other physical disabilities category. Persons with mental retardation comprised 9.2 percent of the Status 26 closures, 5.7 percent of the Status 28 closures, and 6 percent of the Status 30 closures. Those with learning disabilities made up 12.2 percent of the Status 26 closure group, 18.6 percent of the Status 28 closure group, and 18.4 percent of the Status 30 closure group. Persons with psychiatric disabilities made up 23.1 percent of the Status 26 group, 36.9 percent of the Status 28 group, and 28.3 percent of the Status 30 group. Individuals with traumatic brain injuries made up less than one percent of the Status 26 group, 3.9 percent of the Status 28 group and 3.8 percent of the Status 30 group. This data is displayed in Table 45.

Table 45 *Primary Disability and VR Closure Status Crosstabulation*

			VR Closure Status		
			26.00	28.00	30.00
Primary Disability	Sensory Disabilities including visual and hearing impairments	Count	173	31	20
		% within VR Closure Status	27.4%	8.0%	5.5%
	Orthopedic disabilities including amputations	Count	157	94	118
		% within VR Closure Status	24.8%	24.2%	32.4%
	All other physical disabilities	Count	16	11	20
		% within VR Closure Status	2.5%	2.8%	5.5%
	Mental Retardation	Count	58	22	22
		% within VR Closure Status	9.2%	5.7%	6.0%
	Learning disability	Count	77	72	67
		% within VR Closure Status	12.2%	18.6%	18.4%
	Psychiatric disabilities including alcohol and substance abuse	Count	146	143	103
		% within VR Status at End of Data Collection	23.1%	36.9%	28.3%
	Traumatic Brain Injury	Count	5	15	14
		% within VR Status at End of Data Collection	.8%	3.9%	3.8%
Total		Count	632	388	364
		% within VR Status at End of Data Collection	100.0%	100.0%	100.0%

A Pearson's chi-square of 146.446 with a significance value of .000 indicate that there is a significant relationship between type of primary disability and closure outcome. These results are shown in Table 46.

Table 46 Chi-Square of Primary Disability and VR Closure Status

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	146.446[a]	12	.000
Likelihood Ratio	151.137	12	.000
Linear-by-Linear Association	41.325	1	.000
N of Valid Cases	1384		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.94.

A z-test of difference of proportions demonstrates that persons with sensory disabilities have a higher proportion of 26 closures than 28 closures and a higher proportion of 28 closures than 30 closures. Those with orthopedic disabilities have a higher proportions of Status 30 closures than Status 26 closures and a higher proportion of 26 closures compared to 28 closures. Those in the all other disabilities category has a higher proportion of Status 30 closures compared to Status 26 closures. Persons with mental retardation showed no significance difference in proportions among the closure statuses. The learning disability group had a greater proportion of Status 28 closures compare to Status 26 closures. They also had a greater proportion of Status 30 closures compared to Status 26 closures. The group with psychiatric disabilities had a greater proportion of Status 28 closures compared to Status 26 closures and a greater proportion of Status 26 closures to Status 30 closures. Those with traumatic brain injuries had a greater proportions of persons closed as Status 28 compared to Status 26 and a greater number of Status 30 compared Status 26 closures. This data is displayed in Table 47.

Table 47 *Comparison of Proportions of Primary Disability and Closure Status*

		VR Status at End of Data Collection		
		26.00	28.00	30.00
		(A)	(B)	(C)
Primary Disability	Sensory Disabilities including visual and hearing impairments	B C		
	Orthopedic disabilities including amputations			A B
	All other physical disabilities			A
	Mental Retardation			
	Learning disability		A	A
	Psychiatric disabilities including alcohol and substance abuse		A C	
	Traumatic Brain Injury		A	A

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

Number of years disabled at time of application for VR services. The length of time that persons in this sample had been disabled at the time of application for VR services ranged from under one year to 66 years. The mean number of years that persons in the sample had been disabled was 14.59 years. At the time of application, at least 14.6 percent of the sample had been disabled for one year or less. At least 19.7 percent had been disabled between two and 10 years, and 23.2 percent had been disabled between 11 and 30 years. Eleven percent had been disabled for 31 years or more. The length of time of disability at application could not be determined for 31.5 percent of the sample.

Individuals who had been disabled for less than two years before applying for VR services comprised 21.1 percent of those who received services and 22 percent of those who did not receive services. Those who had been disabled for 2 to 10 years made up 27.1 percent of those who did not receive services and 33.3 percent of those who did not receive services. Those who had been disabled for 11 to 30 years prior to applying for VR services comprised 34.1 percent of the group receiving services and 33.3 percent of the group that did not receive services. Persons who had been disabled 31 years and over before applying for services comprised 17.7 percent of the group that received services and 11.4 percent of the group that did not receive services. This data is in Table 48.

Table 48 *Length of Time with Disability and VR Services Received*

			VR Services received	
			Received Services (Status26 and Status 28	No services received (Status 30 closures
Length of time with disability at time of application	1 and under	Count	146	56
		% within VR Services received	21.1%	22.0%
	2-10	Count	188	85
		% within VR Services received	27.1%	33.3%
	11-30	Count	236	85
		% within VR Services received	34.1%	33.3%
	31 and over	Count	123	29
		% within VR Services received	17.7%	11.4%
Total		Count	693	255
		% within VR Services received	100.0%	100.0%

A Pearson chi-square of 7.318 with a significance value of .062 indicates no significant relationship between number of years with a disability and the receipt of

services at the .05 significance level. However, a z-test of difference of proportions indicates that those who had been disabled for 31 or more years before applying for services was significantly more likely to receive services. This data can be viewed in Table 49 and Table 50.

Table 49 *Chi-Squared Test of Length of Time with Disability and VR Services Received*

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.318[a]	3	.062
Likelihood Ratio	7.593	3	.055
Linear-by-Linear Association	3.867	1	.049
N of Valid Cases	948		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 40.89.

Table 50 *Comparison of Proportions of Length of Time with Disability and VR Services*

		VR Services received	
		No services received (Status 30 closures)	Received Services (Status26 and Status 28)
		(A)	(B)
Length of time with disability at time of application	1 and under		
	2-10		
	11-30		
	31 and over		A

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

The percentage of life with disability at the time of application was calculated by subtracting the age at the time of onset of disability from the age and application and dividing the difference by the age at time of application. The percentage of life with disability ranged from 100 percent or since birth to zero indicating the disability occurred

the same year that the person applied for VR services. The mean percentage of time with disability at application for those who did not receive services was .3965. The mean percentage of life with disability at application for those who received services was .4766. This data is displayed in Table 51.

Table 51 *Descriptives for Life with Disability and VR Services*

					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
No services received (Status 30 closures	254	.3965	.40631	.02549	.3462	.4467	.00	1.00
Received Services (Status26 and Status 28	692	.4766	.43619	.01658	.4440	.5092	.00	1.00
Total	946	.4551	.42963	.01397	.4277	.4825	.00	1.00

A one way analysis of variance was then conducted on the difference of means. An F of 6.505 with a significance level of .011 indicates that the percentage of life with disability was significantly different for that received services and those who did not. This information is displayed in Table 52.

Table 52 One *Way ANOVA for Percentage of Life with Disability by VR Service Groups*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.194	1	1.194	6.505	.011
Within Groups	173.238	944	.184		
Total	174.431	945			

When length of disability at applications is crosstablulated with VR closure status, persons disabled for a year of less comprised 22.8 percent of the Status 26 closures, 18.2 percent of the Status 28 closures, and 22 percent of the Status 30 closures. Those disabled for 2 to 10 years at the time of application for services comprised 24.4 percent of the Status 26 closures, 31.8 percent of the Status 28 closures, and 33.3 percent of the Status 30 closures. Those disabled for 11 to 30 years at application made up 33.1 percent o the Status 26 closures, 35.7 percent of the Status 28 closures, and 33.3 percent of the Status 30 closures. Those disabled for 31 or more years comprised 19.8 percent of the Status 26 group, 14.3 percent of the Status 26 closures, and 11.4 percent of the Status 30 closures. A Pearson's chi-square of 15.267 with a significance value of .018 indicates that there is a significant relationship between length of time with disability at the time of application and type of VR closure. A z-test for difference of proportions demonstrates that persons disabled between 2 and 10 years had a greater proportion of persons closed as Status 30 compared to those closed as Status 26. Those aged 31 and over had a greater proportion of those closed as 26 compared to those closed a Status 30. This information can be viewed in Table 53, Table 54, and Table 55.

Table 53 *Length of Time with Disability and VR Closure Status Crosstabulation*

			VR Closure Status		
			26.00	28.00	30.00
Proportion of life with disability at time of application	1 and under	Count	99	47	56
		% within VR Closure Status	22.8%	18.2%	22.0%
	2-10	Count	106	82	85
		% within VR Closure Status	24.4%	31.8%	33.3%
	11-30	Count	144	92	85
		% within VR Closure Status	33.1%	35.7%	33.3%
	31 and over	Count	86	37	29
		% within VR Closure Status	19.8%	14.3%	11.4%
Total		Count	435	258	255
		% within VR Closure Status	100.0%	100.0%	100.0%

Table 54 *Chi-Square Test of Length of Time with Disability and VR Closure*

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.267[a]	6	.018
Likelihood Ratio	15.511	6	.017
Linear-by-Linear Association	3.783	1	.052
N of Valid Cases	948		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 40.89.

Table 55 *Comparison of Proportions for Lengths of Time with Disability and VR Closure Status*

		VR Status at End of Data Collection		
		26.00	28.00	30.00
		(A)	(B)	(C)
Length of time with disability at time of application	1 and under			
	2-10			A
	11-30			
	31 and over	C		

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

The percentage of life with disability at the time of application was crosstabulated with VR outcome status variable. The mean percentage of time with a disability at application for those who closed Status 26 was .4892. The mean percentage of time with a disability for those closed as Status 28 was .4554, and the mean percentage of time with disability at application for those closed as Status 30 was .3965. This information is displayed in Table 56.

Table 56 Descriptives for Percentage of Life with Disability According to VR Closure Status

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
26.00	434	.4892	.44364	.02130	.4473	.5311	.00	1.00
28.00	258	.4554	.42337	.02636	.4035	.5073	.00	1.00
30.00	254	.3965	.40631	.02549	.3462	.4467	.00	1.00
Total	946	.4551	.42963	.01397	.4277	.4825	.00	1.00

A one way analysis of variance on the difference of means provides an F of 3.756 with a significance level of .024 indicates that there is a significant difference means of the three groups. A post hoc comparison using a Bonferroni adjustment provides a significance level of .948, indicating that the difference in mean percentage of life with disability for those closed as Status 26 and those closed as Status 28 was not statistically significant at the .05 level. However, a significance level of .019 indicates that the mean difference of those closed as Status 26 and those closed as Status 30 was statistically significant at the .05 level. A significant level of .359 indicates that difference n mean percentage of life with a disability at application was not statistically significant for those

closed Status 28 and those closed Status 30. This information is displayed in Table 57 and Table 58.

Table 57 *One Way ANOVA for Percentage of Life with Disability and VR Closure Status*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.378	2	.689	3.756	.024
Within Groups	173.053	943	.184		
Total	174.431	945			

Table 58 *Post Hoc Comparison of VR Closure Status and Percentage of Life with Disability*

(I) VR Status at End of Data Collection	(J) VR Status at End of Data Collection	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
26.00	28.00	.03379	.03368	.948	-.0470	.1146
	30.00	.09275*	.03384	.019	.0116	.1739
28.00	26.00	-.03379	.03368	.948	-.1146	.0470
	30.00	.05896	.03787	.359	-.0318	.1498
30.00	26.00	-.09275*	.03384	.019	-.1739	-.0116
	28.00	-.05896	.03787	.359	-.1498	.0318

*. The mean difference is significant at the 0.05 level.

In summary, an analysis of this descriptive data provides specific information concerning the characteristics of this study's sample. There is no significant relationship between having a previous case open to VR and receiving services. Persons closed as 26 are less likely to have prior VR closures than are those closed as Status 28. No gender differences are observed in this study. No significant differences are noted between race and the receipt of services, yet a greater proportion of those closed as Status 26 are of the white race. The mean age of those who went on to receive services is significantly higher

than the mean age of those who did not receive services. In addition, the mean age of the Status 26 group is significantly higher than the mean age of the other two status groups. Those who apply for services at age 65 or older are more likely to receive services, and a greater proportion of those in this age group are closed as Status 26 rather than Status 28 or Status30.

Those who acquired their disabilities before the age of two are more likely than the older age group to receive services and have their cases closed as Status 26 Persons with sensory disabilities are more likely to receive services and are more likely to have their cases closed as Status 26 than any other disability group. Those with orthopedic disabilities, all other physical disabilities, and traumatic brain injuries were less likely to receive services and had a greater proportion of cases closed as Status 30. Persons with learning disabilities were more likely to be closed as status 28 or status 30. Those with psychiatric disabilities are more likely to be closed as Status 28 than Status 26; however, this disability group is also more likely to be closed as 28 than Status 30.

In this study, the relationship between length of time with disability and receipt of services begins to approach significance at the .062 alpha level. Those who had been disabled for 31 or more years are more likely to receive services and are also more likely to be closed as Status 26 over Status 30. Individuals disabled for 2 to 10 years are more likely to be closed as status 30 than status 26.

Length of Time Between Pretest and Posttest Measures

Length of time between pretest and posttest measure are needed to demonstrate if certain type of cases remain in service longer than others. In addition this measure shows that some individuals do not have as much time to show a change on a measure as others.

Length of time between measures was calculated by subtracting the date the person applied for VR services from the date the person's VR case was closed. This is measured in days. For those that received VR services, the number of days a case was open to VR ranged from 40 to 33313 with a mean of 625.3149. The number of days a case that did not receive services ranged from 16 to 1174. This information is displayed in Table 59

Table 59 *Descriptives for Number of Days from Application to Closure*

					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
No services received (Status 30 closures	328	346.7409	221.39758	12.22464	322.6920	370.7897	16.00	1174.00
Received Services (Status26 and Status 28	959	625.3149	1601.77354	51.72397	523.8096	726.8203	40.00	33313.00
Total	1287	554.3186	1392.30147	38.81003	478.1806	630.4565	16.00	33313.00

A one-way analysis of variance provided an F value of 9.852 with a significance level of .002. This indicates that the case of those who received VR services is remains in open significantly more days than the case of those who do not receive services. This is shown in Table 60.

Table 60 *One-Way Analysis of Variance on number of days VR Case was Open for Service Groups*

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.897E7	1	1.897E7	9.852	.002
Within Groups	2.474E9	1285	1925251.746		
Total	2.493E9	1286			

The length of the Status 26 cases ranged from 75 days to 314458 days with a mean of 590.7893. The length of the Status 28 cases ranged from 40 days to 33313 days with a mean of 682.5069. The length of the Status 30 cases 16 days to 1174 days with a mean of 346.7409. This information is displayed in Table 61.

Table 61 *Descriptives Number of Days VR Case was Open by VR Closure Status*

					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
26.00	598	590.7893	1506.55536	61.60763	469.7953	711.7833	75.00	31458.00
28.00	361	682.5069	1748.81709	92.04300	501.4974	863.5164	40.00	33313.00
30.00	328	346.7409	221.39758	12.22464	322.6920	370.7897	16.00	1174.00
Total	1287	554.3186	1392.30147	38.81003	478.1806	630.4565	16.00	33313.00

A one-way analysis of variance provide an F value of 5.418 with a significance level of .005, indicating that there is a significant difference in the number of days between Status groups that a VR case remains open. This data is shown in Table 62.

Table 62 *One-Way Analysis of Variance Between Status Groups on Number of Days from Application to Closure*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.086E7	2	1.043E7	5.418	.005
Within Groups	2.472E9	1284	1925276.373		
Total	2.493E9	1286			

A post hoc comparison between the number of days a case is open per VR status closure indicates that there is a significant difference between the number of days a Status 30 case is open from the number of days as Status 26 case is open and the number of days a Status 28 case is open. However, there is no significance in the number of days a case is open in Status 26 and in Status 28. This information is displayed in Table 63.

Table 63 *Post Hoc Comparsion Between VR Statuses on Number of Days from Application to Closure*

(I) VR Status at End of Data Collection	(J) VR Status at End of Data Collection	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
26.00	28.00	-91.71763	92.48082	.965	-313.4054	129.9701
	30.00	244.04844*	95.33767	.032	15.5125	472.5844
28.00	26.00	91.71763	92.48082	.965	-129.9701	313.4054
	30.00	335.76607*	105.84385	.005	82.0455	589.4866
30.00	26.00	-244.04844*	95.33767	.032	-472.5844	-15.5125
	28.00	-335.76607*	105.84385	.005	-589.4866	-82.0455

*. The mean difference is significant at the 0.05 level.

Type of Services Received

During data acquisition for the LSVRSP, 58 separate consumer services were identified and grouped according to six major service categories. These six categories are (a) counseling, guidance and placement; (b) diagnostic and evaluations services; (c) education and training services; (d) physical and mental restoration services; (e) transportation, housing, and maintenance; and (f) other services. Diagnostic and evaluation services are received by all cases because they are provided to determine consumer eligibility for VR services and to determine primary and auxiliary services needed to obtain a vocational outcome. Transportation, housing, maintenance, and other services are considered to be auxiliary services and can only be provided in conjunction with a primary service. The three major categories of (a) counseling guidance and placement; (b) physical and mental restoration services; and (c) education and training services are considered to be primary services that are required to obtain a vocational objective. These primary services comprise the service variables used in the current study.

The LSVRSP identified the number of units of each service provided to a consumer. This number of units of each service provided to a case is available in the STATUS file of the LSVRSP. The number of units is used as a measure in this study to determine the amount of each service received by a consumer. Only consumers who received VR services (Status 26 and Status 28 closures) are considered in this analysis. A detailed list of the specific services identified by the LSVRSP and used in this study can be seen in the Appendix.

Guidance and counseling. Guidance and counseling is a primary service provided to most consumers. It is usually provided by VR personnel. With the exception of counseling and guidance provided to determine eligibility for VR services, all other forms of counseling and guidance identified in the LSVRSP are included in this service category for the current study. This includes counseling about types of services needed to obtain a vocational outcome along with the costs and dates associated with these services. It includes the counseling provided in developing the individualized written rehabilitation plan. It also includes counseling pertaining to job development, job placement, and job search training.

In the study sample, the number of guidance and counseling units received by consumers ranged from 0 to 12 with a mean of 2.0255. The mean number of guidance and counseling service units received by the Status 26 group is 2.0696, and the mean number of units received by the Status 28 group is 1.9536. This is displayed in Table 64.

Table 64 *Counseling and Guidance Units Received by VR Status*

	VR Status at End of Data Collection	N	Mean	Std. Deviation	Std. Error Mean
Counseling and Guidance service units	26.00	632	2.0696	1.66769	.06634
	28.00	388	1.9536	1.58739	.08059

The results of a means difference test for independent samples yields an F value of .182 with a significance level of .670, indicating that there is no significance between the mean number of guidance and counseling units received by the Status 26 group and the Status 28 group. This is shown in Table 65.

Table 65 *Independent Samples Test for Guidance and Counseling Units by VR Status*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Counseling and Guidance service units	Equal variances assumed	.182	.670	1.098	1018	.272	.11601	.10562	-.09124	.32327
	Equal variances not assumed			1.111	849.843	.267	.11601	.10438	-.08886	.32088

Some form of guidance and counseling is expected to be provided to all persons receiving VR services. Nevertheless, there are cases which receive more units of this service. In order to compare cases receiving more and less guidance and counseling services, cases were classified according to those receiving 0 to 1 units and those receiving 2 or more units. Those receiving the least services (0 to 1 units) of guidance and counseling comprised 51.4 percent of the sample and those receiving 2 or more units comprised 48.6 percent. The crosstabulation of number of guidance and counseling service units by VR closure status is displayed in Table 66.

Table 66 *Counseling and Guidance Service Units and VR Closure Status Crosstabulation*

			VR Closure Status		
			26.00	28.00	Total
Counseling and Guidance Services Units	One or less units	Count	318	206	524
		% within VR Closure Status	50.3%	53.1%	51.4%
		% of Total	31.2%	20.2%	51.4%
	Two or more units	Count	314	182	496
		% within VR Closure Status	49.7%	46.9%	48.6%
		% of Total	30.8%	17.8%	48.6%
Total		Count	632	388	1020
		% within VR Closure Status	100.0%	100.0%	100.0%
		% of Total	62.0%	38.0%	100.0%

A z-test of difference of proportions shows no significant difference between the proportion of guidance and counseling units received by the Status 26 group and the Status 28 group. This is observed in Table 67 and Table 68.

Table 67 *Comparison of Proportions of Guidance and Counseling Units Received by VR Status*

		VR Status at End of Data Collection	
		26.00	28.00
		Column N %	Column N %
Counseling and Guidance Services Units	One or less units	50.3%$_a$	53.1%$_a$
	Two or more units	49.7%$_a$	46.9%$_a$

Note: Values in the same row and subtable not sharing the same subscript are significantly different at p< 0.05 in the two-sided test of equality for column proportions. Cells with no subscript are not included in the test. Tests assume equal variances.[1]

1. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

Table 68 *Comparison of Guidance and Counseling Unit Received by VR Status*

		VR Status at End of Data Collection	
		26.00	28.00
		(A)	(B)
Counseling and Guidance Services Units	One or less units		
	Two or more units		

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.
a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

Physical and mental restoration. Physical and mental restoration includes the actual medical services received as a result of a consumer's participation in VR. It does not include diagnostic or medical evaluations provided prior to the actual provision of treatment although these services may be listed on the individualized written rehabilitation plan. This service category includes psychological and psychiatric treatment, physical therapy, speech and communication therapy, orientation and mobility therapy, occupational therapy, assistive technology devices, assistive technology devices, and substance abuse treatment. In the study sample, the number of physical and mental restoration units received by consumers ranged from 0 to 43 with a mean of 1.3069. The mean number of physical and mental restoration service units received by the Status 26 group is 1.5222 and the mean number of units received by the Status 28 group is .9562 This information is shown in Table 69.

Table 69 *Physical and Mental Restoration Service Units Received by VR Status*

	VR Status at End of Data Collection	N	Mean	Std. Deviation	Std. Error Mean
Physical and Mental Restorations service units	26.00	632	1.5222	3.25165	.12934
	28.00	388	.9562	3.28738	.16689

The results of a means difference test for independent samples yields and F value of 5.459 with a significance level of .02. This indicates that the Status 26 group received significantly more units of physical and mental restoration units than the Status 28 group received. The results of this test are shown in Table 70.

Table 70 *Independent Samples Test for Physical and Mental Restoration Services by VR Status*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Physical and Mental Restorations service units	Equal variances assumed	5.459	.020	2.687	1018	.007	.56597	.21059	.15272	.97921
	Equal variances not assumed			2.680	811.880	.008	.56597	.21115	.15151	.98042

In order to compare cases receiving more and less physical and mental restoration services, cases were classified according to those receiving 0 units, those receiving 1unit,

and those receiving 2 or more units. Those receiving 0 units of the service comprised 59.2 percent of the total sample. Those receiving 1 unit comprised 17 percent of the total sample. Those receiving 2 or more units comprised 23.8 percent of the sample. A crosstabulations of units received by VR closure status is shown in Table 71.

Table 71 *Crosstabulation of Physical and Mental Restoration Units by VR Status*

			VR Closure Status		
			26.00	28.00	Total
Physical and Mental Restoration Units	No units	Count	329	275	604
		% within VR Closure Status	52.1%	70.9%	59.2%
		% of Total	32.3%	27.0%	59.2%
	One unit	Count	119	54	173
		% within VR Closure Status	18.8%	13.9%	17.0%
		% of Total	11.7%	5.3%	17.0%
	Two or more units	Count	184	59	243
		% within VR Closure Status	29.1%	15.2%	23.8%
		% of Total	18.0%	5.8%	23.8%
Total		Count	632	388	1020
		% within VR Closure Status	100.0%	100.0%	100.0%
		% of Total	62.0%	38.0%	100.0%

A z-test of difference of proportions indicates that the subjects who receive one or two or more units of physical or restoration services are more likely to be closed as Status 26 whereas those who receive no units of this service of more likely to be closed as Status 28. This information is displayed in Table 72 and Table 73.

Table 72 *Comparison of Proportions of Physical and Mental Restoration Units by VR Status*

		VR Status	
		26.00	28.00
		Column N %	Column N %
Physical and Mental Restoration Units	No units	52.1%$_a$	70.9%$_b$
	One unit	18.8%$_a$	13.9%$_b$
	Two or more units	29.1%$_a$	15.2%$_b$

Note: Values in the same row and subtable not sharing the same subscript are significantly different at p< 0.05 in the two-sided test of equality for column proportions. Cells with no subscript are not included in the test. Tests assume equal variances.[1]

1. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

Table 73 *Comparison of Proportion of Physical and Mental Restoration Units by VR Status*

		VR Status at End of Data Collection	
		26.00	28.00
		(A)	(B)
Physical and Mental Restoration Units	No units		A
	One unit	B	
	Two or more units	B	

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

Education and training services. The primary area of education and training covers a multitude of services, and a few of these services may not initially appear to be training. This area includes supported employment, transitional employment, on-the-job training or trial work, work adjustment training, work hardening, literacy instruction, instruction in English as a second language, instruction in lip reading, instruction in

reading Braille, tutoring, elementary and secondary education, GED preparation, business or vocational training, two-year or community college program, and four-year college or university program.

In the study sample, the number of education and training units received by consumers ranged from 0 to 14 with a mean of .8137. The mean number of education and training units received by the Status 26 group is .8766 and the mean number of units received by the Status 28 group is .7113. This is displayed in Table 74.

Table 74 *Mean of Education and Training Units Received byVR Status*

	VR Status at End of Data Collection	N	Mean	Std. Deviation	Std. Error Mean
Employment Training Service units	26.00	632	.8766	1.79645	.07146
	28.00	388	.7113	1.47123	.07469

The results of a means difference test for independent samples yields an F value of 4.442 with a significance value of .035. This indicates that the mean number of units of education and training services is significantly greater for the Status 26 closures group. This information is displayed in Table 75.

Table 75 *Independent Samples Test for Education and Training Units and VR Status*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Employment Training Service units	Equal variances assumed	4.442	.035	1.525	1018	.128	.16524	.10837	-.04741	.37789
	Equal variances not assumed			1.599	937.812	.110	.16524	.10337	-.03762	.36810

In order to compare those receiving more and less education and training services, cases were classified according to those receiving either 0 units or 1 or more units of this service. The majority of the sample, 66.3 percent did not receive educational and training services compared to 33.7 percent of those who received at least one unit of this service. A crosstabulation of education and training services units by the VR outcome status is shown in Table 76.

Table 76 *Crosstabulation of Education and Training Units by VR Status*

			VR Status		
			26.00	28.00	Total
Educational and Training Services Units	No units	Count	412	264	676
		% within VR Status at End of Data Collection	65.2%	68.0%	66.3%
		% of Total	40.4%	25.9%	66.3%
	One or more units	Count	220	124	344
		% within VR Status at End of Data Collection	34.8%	32.0%	33.7%
		% of Total	21.6%	12.2%	33.7%
Total		Count	632	388	1020
		% within VR Status at End of Data Collection	100.0%	100.0%	100.0%
		% of Total	62.0%	38.0%	100.0%

A z-test of difference of proportions indicates no difference in the proportion of service units received by the Status 26 group and the Status 28 group. This is displayed in Table 77 and 78.

Table 77 *Comparison of Proportions of Education and Training Units by VR Status*

		VR Status	
		26.00	28.00
		Column N %	Column N %
Educational and Training Services Units	No units	65.2%$_a$	68.0%$_a$
	One or more units	34.8%$_a$	32.0%$_a$

Note: Values in the same row and subtable not sharing the same subscript are significantly different at p< 0.05 in the two-sided test of equality for column proportions. Cells with no subscript are not included in the test. Tests assume equal variances.[1]

1. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

Table 78 *Comparison of Proportions of Physical and Mental Restorations Units by VR Status*

		VR Status at End of Data Collection	
		26.00	28.00
		(A)	(B)
Educational and Training Services Units	No units		
	One or more units		

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.
a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

Hypothesis testing

Self-esteem A hypothesis of this study is that those individuals who receive VR services will show a significant increase in self-esteem scores compared to those who did not receive services. To test this hypothesis, a repeated measures analysis of variance is used to compare the time one mean scores and the time two mean scores of those who received services (Status 26 and Status 28 closures) and those who did not (Status 30 closures).The scores on the self-esteem scale ranged from -10 to 10. The mean self-esteem score of those who did not receive services decreased slightly from 4.2081 to 4.1267, whereas the mean score of those who received services increased from 4.8173 to 5.3295. Although the F test results show a trend toward significance consistent with the hypothesis, an F value of 1.377 with a significance level of .241 demonstrates that the mean scores on the self-esteem scale did not differ significantly at the .05 level. In addition, an F value of 2.615 with a significance level of .106 indicates no significant

interaction between self-esteem scores and the receipt of services. These results are displayed in Tables 79 and 780.

Table 79 *Descriptive Statistics for Self Esteem at Time 1 and Time 2 for Service Group Categories*

	VR Services received	Mean	Std. Deviation	N
Self-esteem Time 1	No services received (Status 30 closures	4.2081	4.83661	221
	Received Services (Status26 and Status 28	4.8173	4.67778	613
	Total	4.6559	4.72513	834
Self-esteem Time 2	No services received (Status 30 closures	4.1267	5.47990	221
	Received Services (Status26 and Status 28	5.3295	4.82427	613
	Total	5.0108	5.03110	834

Table 80 ANOVA *Self-Esteem Change by Service Groups*

Source	dvesteem	Type III Sum of Squares	df	Mean Square	F	Sig.
Dvesteem	Linear	15.072	1	15.072	1.377	.241
dvesteem * Services_Group	Linear	28.626	1	28.626	2.615	.106
Error(dvesteem)	Linear	9108.846	832	10.948		
Intercept		27742.058	1	27742.058	762.290	.000
Services_Group		266.663	1	266.663	7.327	.007
Error		30279.004	832	36.393		

The profile plot in Figure 1 shows that those who receive services, the Time 1 mean score of 4.8173 increases to 5.3295 at Time 2. However, the Time 1 mean score of 4.2081 decreased to 4.1267 at Time 2 for the group that did not receive services.This interaction, although not significant, is consistent with the hypothesis that those receiving services will show an increase in mean scores on the self-esteem scale.

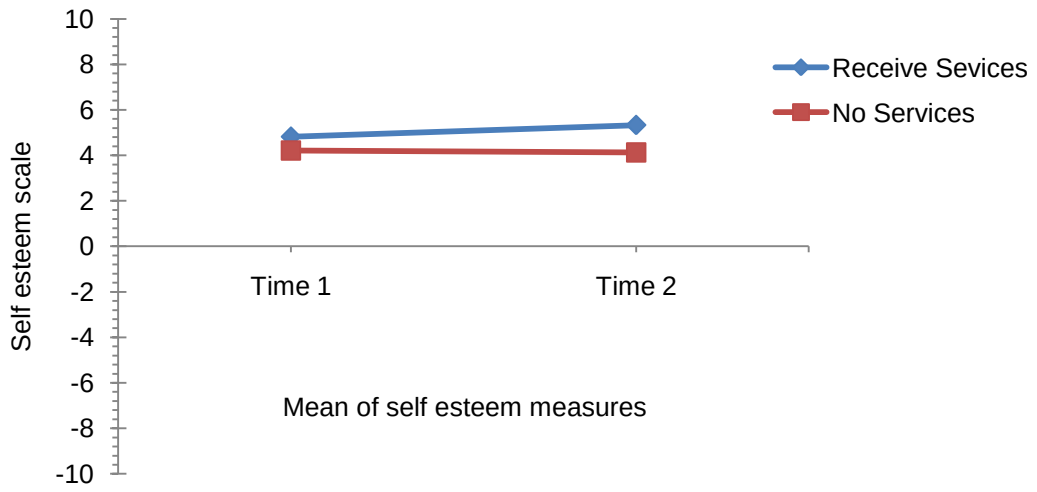

Figure 1. *Change in mean scores on self-esteem scale for service groups*

To examine the effects of race on self-esteem, this analysis was also conducted on just white subjects in the sample. The mean of the group that did not receive VR services decreased slightly from 4.2784 to 3.9773. The mean of the VR services group increased from 4.8456 to 5.3301. The interaction of VR status with scores on this measure produces an F value of 3.566 with a significance level of .059. This is not quite significant at the .05 level. However, the analysis on the white racial category is closer to significance than the analysis on all racial categories.

To test for differences between the Status 26, Status 28, and Status 30 groups, a second repeated analysis of variance was conducted that separated the subjects into the three groups based on VR closure outcome status. As expected, the mean score for the Status 26 closure group showed an increase from 5.2067 at Time 1 to 6.1801 at Time 2. Inconsistent with the hypothesis, the mean score for the Status 28 group decreased from

3.8377 at Time 1 to 3.4503 at Time 2. The means score of the Status 30 group decreased slightly from 4.2081 to 4.2367. This information is displayed in Table 81.

Table 81 *Descriptive Statistics for Self-Esteem at Time 1 and Time 2 by VR Status*

	VR Status at End of Data Collection	Mean	Std. Deviation	N
Self-esteem Time 1	26.00	5.2607	4.45759	422
	28.00	3.8377	5.00524	191
	30.00	4.2081	4.83661	221
	Total	4.6559	4.72513	834
Self-esteem Time 2	26.00	6.1801	4.13384	422
	28.00	3.4503	5.65186	191
	30.00	4.1267	5.47990	221
	Total	5.0108	5.03110	834

The mean score on the self esteem variable yields an F value of.773 with a significance value of .380 indicating no significant difference in self-esteem. However, an F value of 6.508 with a significance value of .002 indicates a significant interaction of self-esteem with status outcome. This information is illustrated in Table 82.

Table 82 *Analysis of Variance in Change in Self-Esteem by VR Closure Status*

Source	dvesteem	Type III Sum of Squares	df	Mean Square	F	Sig.
Dvesteem	Linear	8.367	1	8.367	.773	.380
dvesteem * PCURSTAT	Linear	140.910	2	70.455	6.508	.002
Error(dvesteem)	Linear	8996.562	831	10.826		
Intercept		30190.712	1	30190.712	860.810	.000
PCURSTAT	1400.465	2	700.233	19.965	.000	
Error	29145.201	831	35.072			

Although the significant interaction effect is consistent with the hypothesis, the effect is limited to the Status 26 closure group. The analysis shows that the Status 28 group had a slight decrease in score on the Self-esteem scale is inconsistent with the hypothesis that all those receiving services will show an increase. Also consistent with the direction of the hypothesis, the Status 30 closure group also shows a fairly flat line between scores on the Self-esteem scale. This information is illustrated in Figure 2.

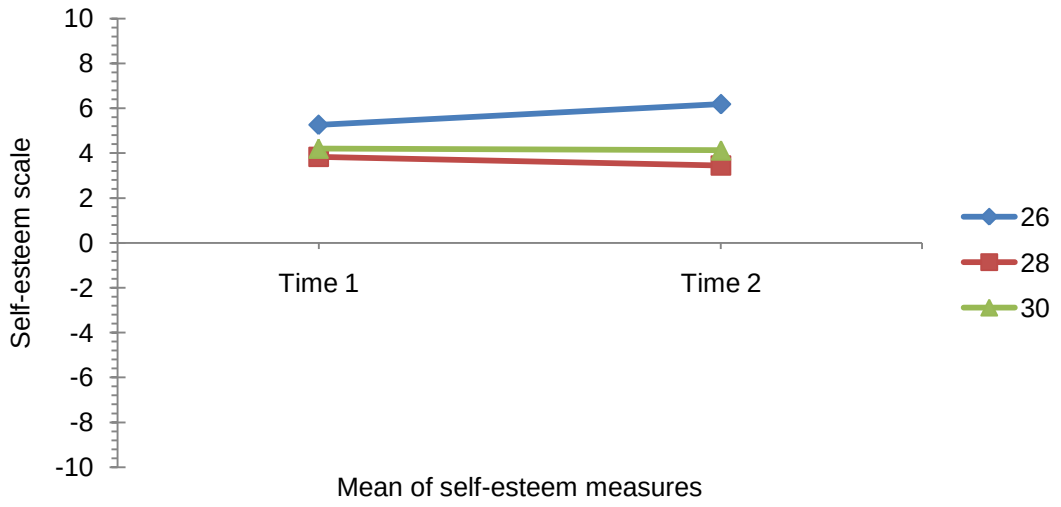

Figure 2. *Change in mean scores on self-esteem scale for VR closure status groups*

This analysis was also conducted on only the white subjects in the sample. The mean of the Status 26 group increased from 5.4033 to 6.3260. The mean of the Status 28 group decreased from 3.5513 to 3.0192. The mean of the Status 30 group decreased 4.2784 to 3.9773. The interaction effect produced an F value of 6.947 with a significance value of .001, indicating that the results are significant at the.05 level. The results of the analysis on the white subjects are similar to the results that included all races.

Therefore, when subjects are separated by those who received services and those who did not, the analysis shows improvement in self esteem, but this interaction is not significant at the .05 level. When subjects are separated according to VR closure statuses, the significant interaction effect is consistent with the hypothesis of the study. However, this positive effect is limited only to those who are closed as Status 26. The Status 28 group shows a decrease in self-esteem at Time 2. Consistent with the hypothesis, the Status 30 group shows little change from Time one to Time two. The pattern of results using only the white subjects in the analysis is similar to that of the analysis that utilizes all races.

Physical functioning and activities of daily living. According to the hypothesis, individuals who receive VR services will show a significant increase in scores on the physical functioning and activities of daily living scale compared to those who did not receive service. The range of the physical functioning and activities of daily living scale ranged from 0 to 23. The mean score of persons who did not receive services was 20.4835.at Time one and 20.2308 at Time two. The mean score of those who received services was 20.2990 at Time one and 20.3093 at Time two. These results are displayed in Table 83.

Table 83 *Descriptive Statistics for Physical Functioning and Activities of Daily Living at Time 1 and Time2*

	VR Services received	Mean	Std. Deviation	N
Physical Functioning and Activities of Daily Living Time 1	No services received (Status 30 closures	20.4835	2.95282	91
	Received Services (Status26 and Status 28	20.2990	3.49652	388
	Total	20.3340	3.39781	479
Physical Functioning and Activities of Daily Living Time 2	No services received (Status 30 closures	20.2308	3.28660	91
	Received Services (Status26 and Status 28	20.3093	3.49488	388
	Total	20.2944	3.45306	479

A repeated measures analysis of variance was used to compare the time one mean scores and the time two mean score of those who received services and those who did not. Although the mean scores of those who received services increased slightly, an F of .632 with a significance level of .427 indicates that the mean scores on the physical functioning and activities of daily living scale did not differ significantly. An F value of .744 with a significance level of .389 indicates no significant interaction between self-esteem scores and the receipt of services. These results are displayed in Table 84.

Table 84 *ANOVA in Change in Physical Functioning and Activities of Daily Living by Service Groups*

Source	dvpfadl	Type III Sum of Squares	df	Mean Square	F	Sig.
Dvpfadl	Linear	2.166	1	2.166	.632	.427
dvpfadl * Services_Group	Linear	2.550	1	2.550	.744	.389
Error(dvpfadl)	Linear	1635.573	477	3.429		
Intercept		243741.458	1	243741.458	12136.805	.000
Services_Group		.414	1.	414	.021	.886
Error		9579.513	477	20.083		

The plot profile in Figure 3 displays the time one and time two mean scores on the physical functioning and activities of daily living scale. The line plots of the two groups appear almost identical. In addition, little change from time one to time two is observed.

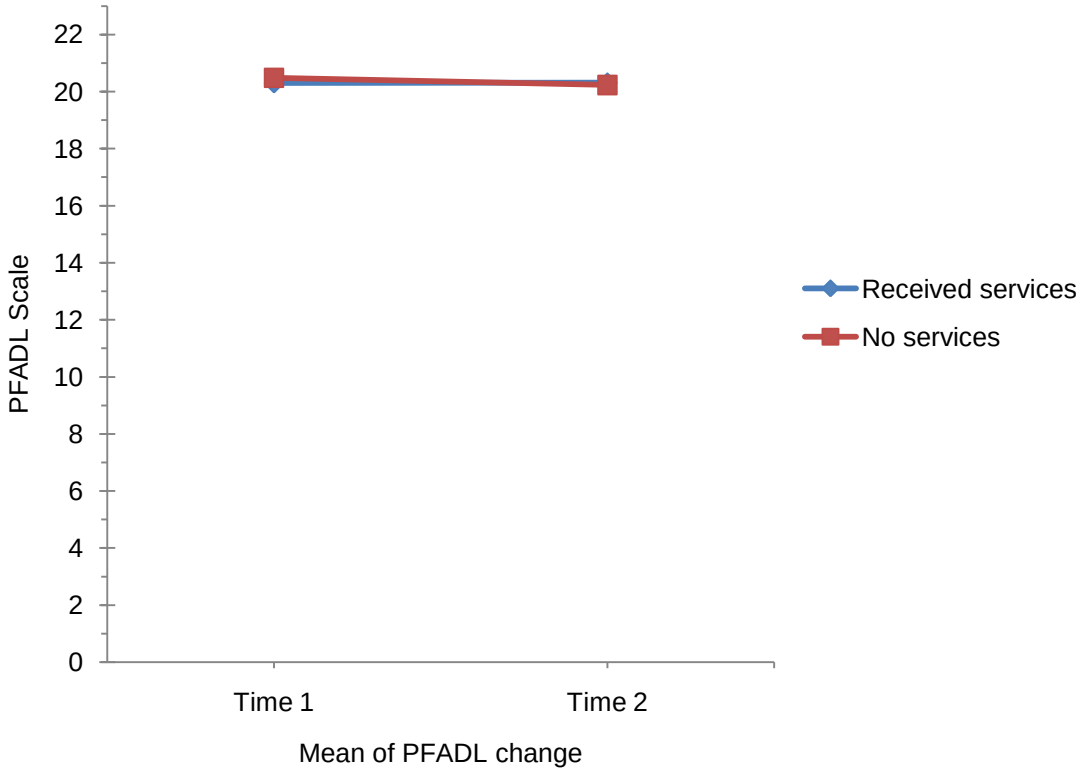

Figure 3. *Change in mean scores on physical functioning and activities of daily living for service categories*

This analysis was conducted on the white racial category. The means of both service groups remained relatively flat from Time one to Time two. The interaction between service group and score on the physical functioning and activities of daily living scale produced and F value of .361 with a p value of .258. This is a similar pattern to the as seen with the all race sample. Although the analysis of those in the white racial category is not significant, the increase for the all racial category was very slight. o test this hypothesis that the mean scores of the Status 26 closures would be greater than the Status 28 and that the mean scores of the Status 28 would be greater than the Status 30 closures, an additional repeated measures analysis of variance was conducted on the three groups based on VR closure outcome status. The mean score for the Status 26 increased

slightly from 20.440 to 20.4840. The mean of the Status 28 group decreased from 20.3986 to 19.9928. The mean score of the Status 30 group decreased from 20.4835 to 20.2308. This information is displayed in Table 85.

Table 85 *Descriptive Statistics for Physical Functioning and Activities of Daily Living at Time 1 and Time 2 by VR Closure Status*

	VR Status at End of Data Collection	Mean	Std. Deviation	N
Physical Functioning and Activities of Daily Living Time 1	26.00	20.2440	3.48728	250
	28.00	20.3986	3.52373	138
	30.00	20.4835	2.95282	91
	Total	20.3340	3.39781	479
Physical Functioning and Activities of Daily Living Time 2	26.00	20.4840	3.38579	250
	28.00	19.9928	3.67572	138
	30.00	20.2308	3.28660	91
	Total	20.2944	3.45306	479

The repeated analysis of variance on the physical functioning and activities of daily living scale yields an F value of 1.160 with a significance level of .282, indicating that the means scores on this scale do not differ significantly However, an F value of 3.104 with a significance level of .046 indicates there is a significant interaction between mean scores on this scale and VR closure outcome status. This information is displayed in Table 86.

Table 86 *ANOVA in Physical Functioning and Activities of Daily Living by VR Closure Status*

Source	dvpfadl	Type III Sum of Squares	df	Mean Square	F	Sig.
Dvpfadl	Linear	3.939	1	3.939	1.160	.282
dvpfadl * PCURSTAT	Linear	21.092	2	10.546	3.104	.046
Error(dvpfadl)	Linear	1617.031	476	3.397		
Intercept		333779.285	1	333779.285	16594.015	.000
PCURSTAT		5.454	2	2.727	.136	.873
Error		9574.472	476	20.114		

Figure 4 indicates that those closed Status 26 show a slight tendency for Status 26 mean scores to go up from time one and time two mean scores. However, there is a tendency for the Status 28 group and the Status 30 group scores to decline.

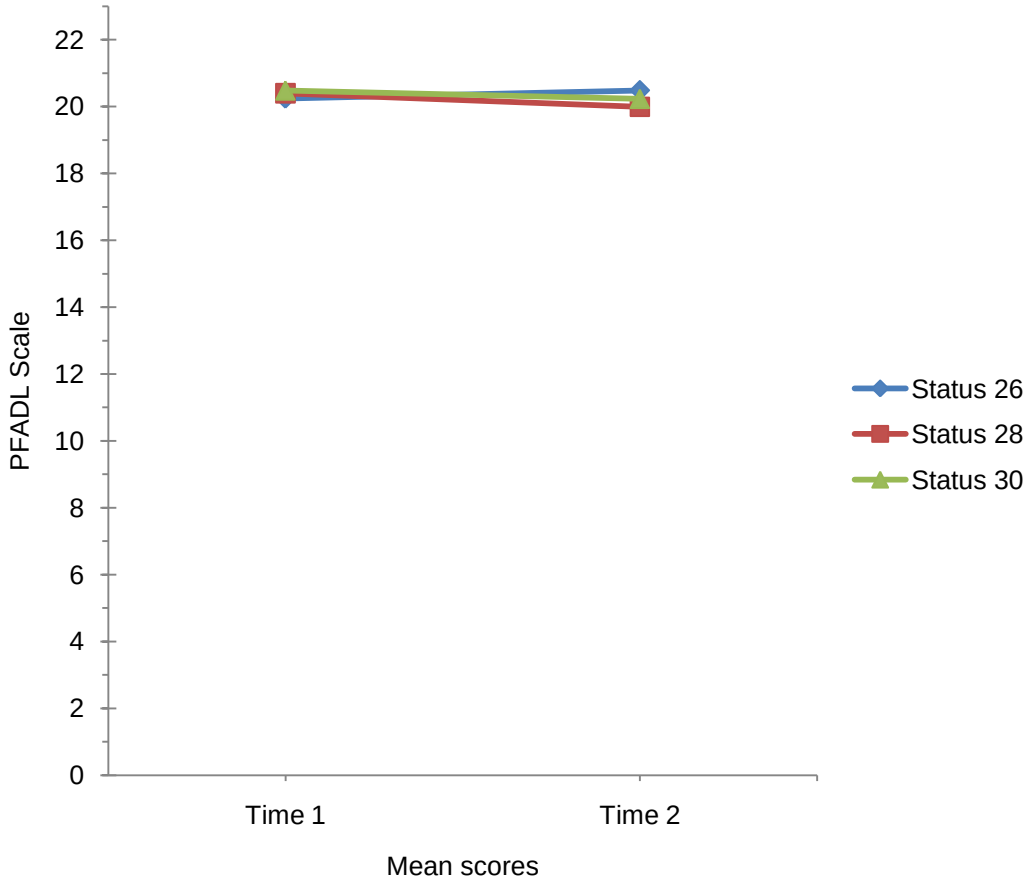

Figure 4. *Change in mean scores on physical functioning and activities of daily living for VR Closure status groups*

To examine the effects of race on this measure when the subjects are separated by VR closure status, the analysis was conducted only subjects in the white racial category. The mean of the Status 26 group increased from 20.3252 to 20.4854. The mean of the Status 28 group decreased from 20.5888 to 20.0208. The mean of the Status 30 group decreased from 20.5775 to 20.2958. The interaction produced an F value of 3.214 with a p value of .041, indicating a significant interaction between VR closure status and scores on the Physical Functioning and Activities of Daily Living Scale. These results of this analysis using only the white subjects are similar to those found with subjects of all racial categories.

Thus, it is observed that when subjects are separated by those who receive services and those who did not, the analysis shows little increase in physical functioning and activities of daily living from time one to time two. There is a slight decrease in means for those who did not receive services. The interaction effects for the time one and time two measures for the two groups is not significant at the .05 level. When the groups are separated according to VR closure status, there is a significant interaction effect, and there is a very slight tendency for the Status 26 group to go up. However, this tendency to increase at time two only holds for the Status 26 group. The Status 28 group has a tendency to decline, which is not consistent with the hypothesis. The analysis conducted on the all white group produces a similar pattern to the one conducted on subjects in all racial categories.

The analysis on physical functioning and activities of daily living may be limited by a number of issues. Individuals may apply for VR services in order to maintain their current functioning. The scale used is assessing improvement in functioning. It does not assess retaining current functioning. In addition, the items in the scale are used in many surveys of persons with disabilities, but the measures may not address changes in the functional status of persons with psychiatric disabilities (Overman & Schmidt-Davis, 2006). Twenty-eight percent of the persons in this sample had psychiatric disabilities.. Therefore, consumers may have obtained benefits in the physical functioning and activities of daily living, but these benefits may not be assessed by the items available in the LSVRSP.

Community integration. A repeated measures analysis of variance is used to test the hypothesis that individuals who receive VR services will show a significant increase in scores on the community integration scale compared to those who did not receive services. The range of the community integration scale was 0 to 12. The mean score of those who received services was 6.2541 at time one and 6.5649 at time two. The mean score of the group that did not receive services was 5.7831 at time one and 6.4361 at time two. These results are displayed in Table 87.

Table 87 *Descriptive Statistics for Community Integration at Time 1 and Time 2 for Service Groups*

	VR Services received	Mean	Std. Deviation	N
Community Integration Time 1	No services received (Status 30 closures	5.7831	2.27567	219
	Received Services (Status26 and Status 28	6.2541	2.18028	616
	Total	6.1305	2.21405	835
Community Integration Time 2	No services received (Status 30 closures	6.4361	2.38699	219
	Received Services (Status26 and Status 28	6.5649	2.38743	616
	Total	6.5311	2.38656	835

The test of main effects produces an F value of 28.426 which is significant at the .01 level. This indicates that the mean scores for two service groups differed significantly. A test of the interaction between the services group and the means scores on the community integration scale yields an F score 3.581 with a significance level of .059 just misses significance at the .05 level. This information can be viewed in Table 88.

Table 88 *ANOVA in Community Integration by Service Groups*

Source	dvcommunity	Type III Sum of Squares	df	Mean Square	F	Sig.
Dvcommunity	Linear	75.045	1	75.045	28.426	.000
dvcommunity * Services_Group	Linear	9.454	1	9.454	3.581	.059
Error(dvcommunity)	Linear	2199.171	833	2.640		
Intercept		50642.318	1	50642.318	6390.925	.000
Services_Group		29.063	1	29.063	3.668	.056
Error		6600.774	833	7.924		

The profile plot in Figure 5 shows that the mean scores on the community integration scale slightly increases from the mean of 6.2541 to 6.5649 for those who received services. Although movement in this direction is consistent with the original hypothesis, the group that did not receive services also showed improvement. The group that did not receive services had lower means scores for time one and time two but showed a greater rate of increase from time one to time two. Although not significant, it is notable that movement in this direction for the group that did not receive services is inconsistent with the hypothesis

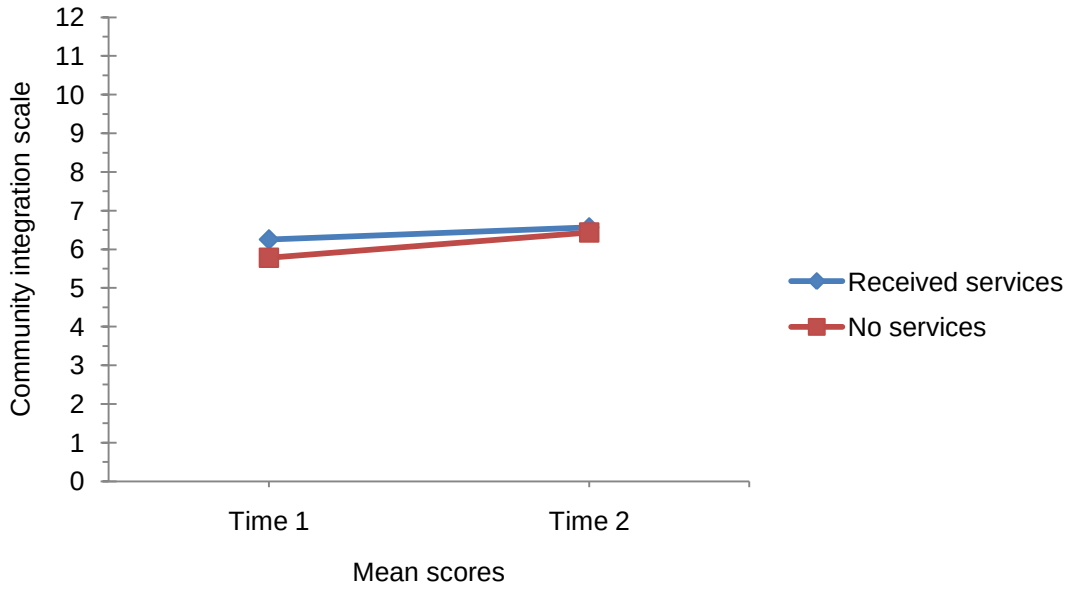

Figure 5. *Change in mean scores on community integration scale*

The effects of race on the measure of community integration was also examined by conducting this analysis on just white subjects in the sample. The mean of the group that did not receive VR services was 5.7655 at time one and 6.3475 at time two. The mean score of the group that did receive services was 6.2298 at time one and 6.5683 at time two. The interaction between receipt of services and scores on the community integration scale produce and F value of 1.437 with a significance level of .231. Unlike the analysis for all races, the analysis for the white subjects is not close to being significant. To test the hypothesis that the mean scores of the Status 26 closures would be greater than the Status 28 closure and that the mean scores of the Status 28 closures would be greater than the Status 30 closures, repeated measures analysis of variance was conducted on the three separate groups based VR closure status. The mean of the Status 26 group was 6.3412 at time one and 6.7547 at time two. The mean of the

Status 28 group was 6.0644 at time one and 6.1521 at time two. The mean for Status 30 group was 5.7831 for time one and 6.4361 at time two. This data is displayed in Table 89.

Table 89 *Descriptive Statistics for Community Integration at Time 1 and Time 2 by VR Closure Outcome*

	VR Closure Status	Mean	Std. Deviation	N
Community Integration Time 1	26.00	6.3412	2.18713	422
	28.00	6.0644	2.15878	194
	30.00	5.7831	2.27567	219
	Total	6.1305	2.21405	835
Community Integration Time 2	26.00	6.7547	2.42971	422
	28.00	6.1521	2.24389	194
	30.00	6.4361	2.38699	219
	Total	6.5311	2.38656	835

The test of main effects yields an F value of 20.906 with a significance level of .000 indicating that the mean scores for the three groups differed significantly. In addition, an F of 3.31 with a significance level of .044 indicates there was a significant interaction between VR closure status and mean scores on the community integration scale. This information is shown in Table 90.

Table 90 *ANOVA in Community Integration by VR Closure Status*

Source	dvcommunity	Type III Sum of Squares	df	Mean Square	F	Sig.
Dvcommunity	Linear	55.083	1	55.083	20.906	.000
dvcommunity * PCURSTAT	Linear	16.510	2	8.255	3.133	.044
Error(dvcommunity)	Linear	2192.114	832	2.635		
Intercept		58253.269	1	58253.269	7400.205	.000
PCURSTAT		80.462	2	40.231	5.111	.006
Error		6549.375	832	7.872		

The plot profile in Figure 6 shows that all three status groups had an increase in mean scores from time one to time two. However, the Status 28 increase was very slight. The Status 30 group had a tendency to show a greater increase than the Status 28 group.

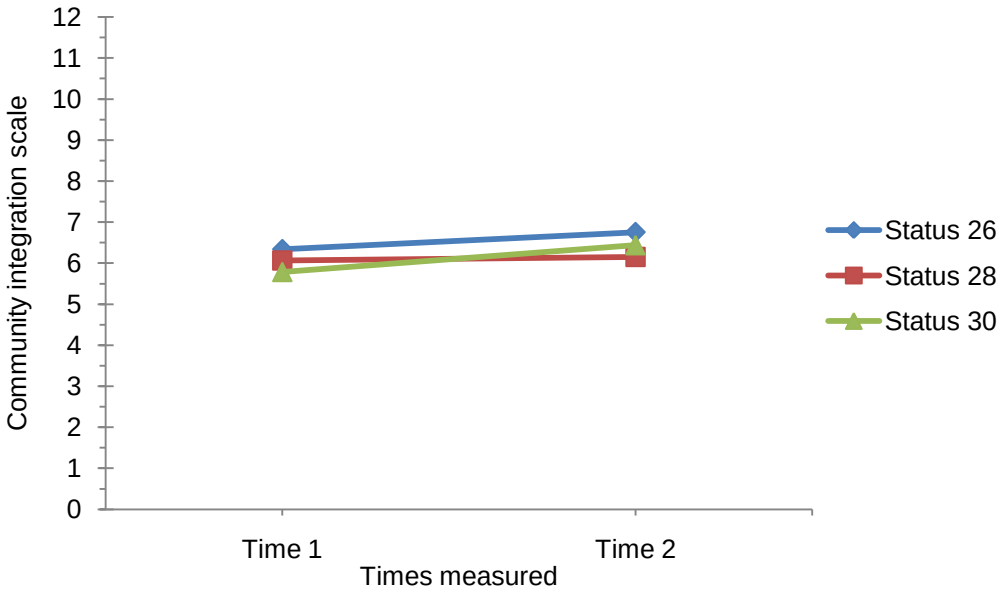

Figure 6. *Change in mean scores on community integration scale for VR closure status groups*

To examine the effects of race on the measure of community integration, this analysis was also conducted on just the subjects in the white racial category. The mean of the Status 26 group was 6.2831 at time one and 6.7472 at time two. The mean of the Status 28 group was 6.1076 at time one and 6.1582 at time two. The mean of the Status 30 group was 5.7655 at time one and 6.3475 at time two. The interaction effect produced an F value of 2.454 with a significance level of .087. Unlike the significant effect found in the analysis using all racial categories, the analysis only approaches significance.

The analysis of the means scores for community integration shows that those who receive services and those who do not both show improvement at time two. After separating the groups by VR closure status, the Status 26 group has a tendency to

increase at time two but the Status 28 group shows little change. The Status 30 group also has a tendency to increase at time two. A similar pattern is also seen with the all white racial category; however, the results of the white racial category analysis just misses significance for the VR closure status group. The white racial category group that receives services does not show as much improvement as the category of all races. These outcomes are inconsistent with the hypothesis that those who receive services will show a significant increase.

Change in work status. To test the hypothesis that the receipt of services is associated with an increase in employment, the working variable is used. This variable measures the change in work status from application to closure. This dichotomous measure is analyzed with a z-test of difference of proportions

The client categories are separated by those who received services (Status 26 and Status 28 closures) and those who did not receive services (Status 30). Almost 7 percent of those who did not receive services and 9.9 percent of the group that did receive services were working at application but not at closure. Almost 75 percent of those who did not received services (Status 30) had no change in work status while 55 percent of those who received services (Status 26 and Status 28) had no change in employment status. Almost 19 percent of those who did not receive services and 34 percent of those who did receive services were not working at application but were working at closure. This information is displayed in Table 91.

Table 91 *Comparison of Proportion of Change in Work Status by VR Services Category*

		VR Services received	
		No services received (Status 30 closures	Received Services (Status26 and Status 28
		Column N %	Column N %
Change in work status	Working at application but not at closure	6.8%$_a$	9.9%$_a$
	No change in work status	74.4%$_a$	55.2%$_b$
	Not working at application but working at closure	18.8%$_a$	35.0%$_b$

Note: Values in the same row and subtable not sharing the same subscript are significantly different at p< 0.05 in the two-sided test of equality for column proportions. Cells with no subscript are not included in the test. Tests assume equal variances.[1]

1. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

A z-test of comparison of proportions indicates that those who did not receive services were significantly more likely to not have a change in work status. Consistent with the test hypothesis, the group that received services was significantly more likely to go from not working to working. This test is displayed in Table 92.

Table 92 *z-test Comparison of Proportions of Change in Work Status by VR Services Received Category*

		VR Services received	
		No services received (Status 30 closures	Received Services (Status26 and Status 28
		(A)	(B)
Change in work status	Working at application but not at closure		
	No change in work status	B	
	Not working at application but working at closure		A

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.
a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

To examine the effects of race on this variable, this analysis was also conducted on just the sample of subjects in the white racial category. Consistent with the analysis conducted on the sample of all races, those not working at application but working at closure were significantly more likely to have received services. The white racial category was also consistent with the all racial category group in that those that showed no change in work status were more likely to have not received services.

To continue to examine the hypothesis that those who received services will show a greater increase in employment, a z-test on difference of proportions was also conducted on the change in work status among the three VR closure status groups. The group that was working at application but not at closure contained 9.3 percent of the Status 26 closures, 11.1 percent of the Status 28 closures, and 6.8 percent of the Status 30 closures. The group that showed no change in work status was comprised of 47.5 percent

of the Status 26 closures, 72 percent of the Status 28 closures, and 74.4 percent of the status 30 closures. The group that went from not working at application to working at closure contained 43.2 percent of the Status 26 closures, 16.9 percent of the Status 28 closures, and 18.8 percent of the Status 30 closures. This information is displayed in Table 93.

Table 93 *Comparison of Proportions of Change in Work Status by VR Closure Category*

		VR Status at End of Data Collection		
		26.00	28.00	30.00
		Column N %	Column N %	Column N %
Change in work status	Working at application but not at closure	9.3%$_a$	11.1%$_a$	6.8%$_a$
	No change in work status	47.5%$_a$	72.0%$_b$	74.4%$_b$
	Not working at application but working at closure	43.2%$_a$	16.9%$_b$	18.8%$_b$

Note: Values in the same row and subtable not sharing the same subscript are significantly different at p< 0.05 in the two-sided test of equality for column proportions. Cells with no subscript are not included in the test. Tests assume equal variances.[1]

1. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

A z-test comparison of proportion of change in work status by VR closure demonstrates that the proportion of the Status 26 group that was not working at application but working at closure is significantly greater than the Status 28 and Status 30 groups. Given that the attainment of an employment outcome is in the definition of a Status 26 closure, these results are not unexpected. The Status 28 group and the Status 30 group were significantly more likely than the Status 26 group to show no change in work status. This z-test is demonstrated in Table 94.

Table 94 *z-test Comparison of Proportions of Change in Work Status by VR Closure Status*

		VR Status at End of Data Collection		
		26.00	28.00	30.00
		(A)	(B)	(C)
Change in work status	Working at application but not at closure			
	No change in work status		A	A
	Not working at application but working at closure	B C		

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

This analysis was also conducted on only those in white racial category. Those in the working at application but not at closure comprised 10.1 percent of the Status 26 group, 10.5 percent of the Status 28 group, and 5.4 percent of the Status 30 group. The group that showed no change comprised 46.9 percent of the Status 26 group, 73.1 percent of the Status 28 group, and 75.5 percent of the Status 30 group. Those not working at application but working at closure comprised 43 percent of the Status 26 group, 16.4 percent of the Status 28 group, and 19 percent of the Status 30 group. The general pattern of results is the same as with analysis conducted on the all sample containing all racial categories.

Financial assistance variable. To test the hypothesis that the receipt of services is associated with a decrease in financial assistance, the financial assistance variable is used. The financial assistance variable measures if a change occurs in receipt of financial

assistance. Because this is a dichotomous measure, a z-test of difference of proportions is used to analyze this measure.

The client categories are separated by those who received services and those who did not receive services. The group that was not receiving financial assistance at application but was receiving assistance at closure consisted of 15.1 percent of those who did not receive VR services and 20.4 percent received VR services. The group that showed no change in receipt of financial assistance consisted of 69.7 percent of those who did not receive services and 68.2 percent who did receive services. The group that was receiving financial assistance at application but not at closure consisted of 15.1 percent of those who did not receive services and 11.3 percent of those who did receive services. This information is displayed in Table 95.

Table 95 *Comparison of Proportion of Change in Receipt of Financial Assistance by VR Services Category*

		VR Services received	
		No services received (Status 30 closures	Received Services (Status26 and Status 28
		Column N %	Column N %
Change in financial assistance received	Not receiving at application but receiving at closure	15.1%$_a$	20.4%$_a$
	No change in financial assistance	69.7%$_a$	68.2%$_a$
	Receiving assistance at application but not closure	15.1%$_a$	11.3%$_a$

Note: Values in the same row and subtable not sharing the same subscript are significantly different at p< 0.05 in the two-sided test of equality for column proportions. Cells with no subscript are not included in the test. Tests assume equal variances.[1]

1. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

A z-test comparison of proportion of change in receipt of financial assistance by receipt of VR services demonstrates that there no significant change between the groups from application to closure. This data is shown in Table 96.

Table 96 *z-test Comparison of Proportions of Change in Receipt of Financial Assistance by VR Services Received*

		VR Services received	
		No services received (Status 30 closures (A)	Received Services (Status26 and Status 28 (B)
Change in financial assistance received	Not receiving at application but receiving at closure		
	No change in financial assistance		
	Receiving assistance at application but not closure		

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.
a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

To examine the effects of race on the variable of receipt of financial assistance, this analysis was also conducted on just the sample of subjects in the white racial category. Consistent with the analysis conducted on the sample of all races, there was no significant difference in the group that received services and the group that did not.

To continue to examine the hypothesis that those who received services will show a decrease in financial assistance, a second z-test on difference of proportions is also conducted on the three VR closure status groups. Those not receiving financial assistance at application but was receiving assistance at closure contained 24.4 percent of the Status

26 group, 11.7 percent of the Status 28 group, and 15.1 percent of the Status 30 group. Those showing no change in receipt of financial assistance contained 67.9 percent of the Status 26 closure group, 68.9 percent of the Status 28 group, and 69.7 percent of the Status 30 group. Those receiving assistance at application but not at closure comprised 7.7 percent of the Status 26 group, 19.4 percent of the Status 28 group, and 15.1 percent of the Status 30 closure group. This information is shown in Table 97.

Table 97 *Comparison of Proportion of Change in Receipt of Financial Assistance by VR Closure Status*

		VR Status at End of Data Collection		
		26.00	28.00	30.00
		Column N %	Column N %	Column N %
Change in financial assistance received	Not receiving at application but receiving at closure	24.4%	11.7%	15.1%
	No change in financial assistance	67.9%	68.9%	69.7%
	Receiving assistance at application but not closure	7.7%	19.4%	15.1%

The Status 26 group was significantly more likely than the Status 28 group and the Status 30 group to be receiving financial assistance at application and at closure. Thus, when the groups are separated by status, only the Status 26 group shows an increase at financial assistance at closure. This data pertaining to this analysis is displayed in Table 98.

Table 98 *z - test Comparison of Difference of Proportion of Receipt of Financial Assistance by VR Closure Status*

		VR Status at End of Data Collection		
		26.00	28.00	30.00
		(A)	(B)	(C)
Change in financial assistance received	Not receiving at application but receiving at closure	B C		
	No change in financial assistance			
	Receiving assistance at application but not closure		A	A

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

This analysis was also conducted on the subjects in the white racial category. Those not receiving financial assistance at application but receiving assistance at closure comprised 24.7 percent of the Status 26 group, 10.1 percent of the Status 28 group and 14.9 percent of the Status 30 group. Among those that showed no change in receipt of financial assistance, 67.4 percent comprised status 26 group, 68.6 percent comprised the Status 28 group, and 69.7 percent comprised the Status 30 group. Among those that were receiving assistance at application but not at closure, 8 percent comprised the Status 26 group, 21.3 comprised the Status 28 group, and 15.4 percent comprise the Status 30 group. The pattern of results for the analysis on those in the white racial category was consistent with that of the analysis conducted on all racial categories. The Status 26 was significantly more likely than the Status 28 and Status 30 groups to change from not

receiving assistance at application to receiving it at closure. The Status 28 group and the Status 30 group was more likely to be receiving at application but not at closure.

The results of this analysis are inconsistent with the hypothesis that those who receive services would show a decrease in financial assistance. This outcome may be because individuals with disabilities are not aware of the various public and private sources of financial aid available to them. Rehabilitation counselors often refer their clients for financial assistance and assist in completing applications. Such financial assistance provides income while individuals complete a vocational rehabilitation program. Financial assistance usually ceases after the individual works for a period of time and earns substantial income. However, this study assessed change in financial assistance at closure from the VR program. Some providers of financial assistance allow a longer period of time before totally discontinuing benefits.

Primary source of support. To test the hypothesis that those who received services will be more likely to become their own primary source of support, the variable of primary source of support is used. Those who are their own primary source of support are coded as yes and those whose primary source of support come from other sources are coded as no. This dichotomous variable is assessed using a z-test of difference of proportions.

The client categories are separated by those who received services and those who did not. Those who were their own primary source of support at application but not at closure comprised 13.7 percent of the group that did not receive services and 10.3 percent of the group that received services. The group that showed no change comprised 71.4 percent of those who did not receive services and 68.8 percent of those who receive

services. Those who changed to being their own primary source of support at closure comprised 15 percent of the group that did not receive VR services and 21 percent of the group that did receive services. This data is displayed in Table 99.

Table 99 *Comparison of Proportion of Change in Primary Support by VR Service Category*

		VR Services received	
		No services received (Status 30 closures	Received Services (Status26 and Status 28
		Column N %	Column N %
Change in primary source of support	Supporting self at application but not at closure	13.7%$_a$	10.3%$_a$
	No change	71.4%$_a$	68.8%$_a$
	Supporting self at closure only	15.0%$_a$	21.0%$_b$

Note: Values in the same row and subtable not sharing the same subscript are significantly different at p< 0.05 in the two-sided test of equality for column proportions. Cells with no subscript are not included in the test. Tests assume equal variances.[1]

1. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

A z-test of comparison of proportions indicated that those who received services were significantly more likely to be their own primary source of support at closure. This information is displayed in Table 100.

Table 100 *z-test Comparison of Proportion of Change in Primary Source of Support by VR Service Category*

Comparisons of Column Proportions[a]

		VR Services received	
		No services received (Status 30 closures)	Received Services (Status26 and Status 28)
		(A)	(B)
Change in primary source of support	Supporting self at application but not at closure		
	No change		
	Supporting self at closure only		A

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.
a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

This analysis was also conducted on just the subjects in the white racial category. Those that were their own primary source of support at application but not at closure comprised 13.6 percent of the group that did not receive services and 10.7 percent of the group that received services. Those that showed no change in primary source of support comprised 71.7 percent of the group that did not receive services and 68.8 percent of the group that did receive services. Those that changed to being their own primary source of support comprised 14.7 percent of the group that did not receive services and 20.5 percent of the group that did receive services.

The z-test showed that there was no significant difference between the group that received services and the group that did not. This is inconsistent with the hypothesis and.with the pattern of results observed with the sample that contained all races, which indicated that persons who received VR services were more likely to become their own

primary source of support. This indicates that race does have an impact on this variable. Persons in the white racial category tend to show no change on this variable.

To further examine the hypothesis that receipt of VR services will be associated with a greater increase in primary support of self, a second z-test on difference of proportions is conducted on the three VR closure status groups. Those who were their primary source of support at application but not at closure comprised 5.8 percent of the Status 26 closure group; 20.1 percent of the Status 28 closure group, and 13.7 percent of the Status 30 closure group. Those who showed no change comprised 69.3 of the Status 26 group, 67.6 percent of the Status 28 group, and 71.4 percent of the Status 30 group. Those who changed to become their own primary source of support at closure comprised 24.9 percent of the Status 26 group, 12.3 of the Status 28 group, and 15 percent of the Status 30 group. This data is displayed in Table 101.

Table 101 *Comparison of Proportion of Change in Primary Source of Support by VR Closure Status*

		VR Status at End of Data Collection		
		26.00	28.00	30.00
		Column N %	Column N %	Column N %
Change in primary source of support	Supporting self at application but not at closure	5.8%$_a$	20.1%$_b$	13.7%$_b$
	No change	69.3%$_a$	67.6%$_a$	71.4%$_a$
	Supporting self at closure only	24.9%$_a$	12.3%$_b$	15.0%$_b$

Note: Values in the same row and subtable not sharing the same subscript are significantly different at p< 0.05 in the two-sided test of equality for column proportions. Cells with no subscript are not included in the test. Tests assume equal variances.[1]

1. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

A z-test comparison of proportions shows that the Status 26 group is significantly more likely to be their own primary source of support at closure than the Status 28 and the Status 30 groups. This test is displayed in Table 102.

Table 102 *z- test Comparison of Proportion of Change in Primary Source of Support VR Closure Status*

		VR Status at End of Data Collection		
		26.00	28.00	30.00
		(A)	(B)	(C)
Change in primary source of support	Supporting self at application but not at closure		A	A
	No change			
	Supporting self at closure only	B C		

Results are based on two-sided tests with significance level 0.05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

This analysis was also conducted on those in the white racial category. Those supporting themselves at application but not at closure comprised 5.7 percent of the Status 26 group, 22 percent of the Status 28 group, and 13.6 percent of the Status 30 group. Those that showed no change on this variable comprised 69.5 percent of the Status 26 group, 67.3 percent of the Status 28 group, and 71.7 percent of the Status 30 group. The pattern of results for this analysis is consistent with that conducted on the sample containing persons of all racial categories. A z-test comparison of proportions shows that the Status 26 group is significantly more likely to be their own primary source of support at closure than the Status 28 and the Status 30 groups. Improvement in this variable is only seen among the Status 26 group.

Impact of Specific VR Services on Domains of Life

Physical and mental restoration services and physical functioning and activities of daily living. The third hypothesis of this study is that consumers who receive physical and mental restoration services will show a significant increase in their scores on the physical functioning and activities of daily living scale as compared to those who receive other VR services but did not receive physical and mental restoration services. A repeated measures analysis of variance was conducted to assess this hypothesis. Because this analysis involves the receipt of specific VR services, it is limited to consumers who were closed Status 26 and Status 28. Individuals who received no service units of physical and mental restoration services were compared to those receiving one unit and to those receiving two or more units.

Attrition of subjects at time two was an issue for this particular service category. Out of 1020 consumers that received VR services, the number of subjects with known

measured values on this scale was 953 or 93.4 percent at time one. This decreased to 404 or 39.6 percent at time two. Examination of the data did not reveal an obvious reason for this attrition. However, the loss of subjects is a limitation in interpreting these results. Table 103 represents the number and percentages of subjects available at both times of measurement,

Table 103 *PFADL Cases at Time 1 and Time 2*

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Client * Physical Functioning and Activities of Daily Living Time 1	953	93.4%	67	6.6%	1020	100.0%
Client * Physical Functioning and Activities of Daily Living Time 2	404	39.6%	616	60.4%	1020	100.0%

The scores on the physical and mental restoration scale range from 0 to 23. The mean score of all subjects at time one was 20.2990 and 20.3093 at time two. The mean score of those who did not receive physical and mental restoration services decreased slightly from 20.8728 at time one to 20.8465 at time two. The mean score of those who received one unit of this service decreased from 20.6833 to 20.3000. The mean score of those who received two or more units of this service increased from 18.7600 to 19.0900. This data is shown in Table 104.

Table 104 *Descriptive Statistics for PFADL Time1 and Time 2*

	Physical and Mental Restoration Units	Mean	Std. Deviation	N
Physical Functioning and Activities of Daily Living Time 1	No units	20.8728	2.88953	228
	One unit	20.6833	2.77697	60
	Two or more units	18.7600	4.56185	100
	Total	20.2990	3.49652	388
Physical Functioning and Activities of Daily Living Time 2	No units	20.8465	3.06725	228
	One unit	20.3000	2.97618	60
	Two or more units	19.0900	4.32772	100
	Total	20.3093	3.49488	388

A repeated measures analysis of variance was used to compare the time one mean score and the time two mean score of those who received no units of this service, one unit of this service, and two or more units. The mean of all subjects from time one to time two increased only slightly, but an F of .029 with a significance level of .866 indicates that there is no significant difference between time one and time two for all subjects. An F value of 1.390 with a significance value of .250 indicates no significant interaction between physical functioning and the number of services received. However, an F of 13.395 with a significance level of .000 indicates the between subjects effects of number of units of physical and mental restoration services was significant. This data is displayed in Table 105.

Table 105 *ANOVA in PFADL by Number of Physical and Mental Restoration Units*

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Physical_ Functioning and ADL	Sphericity Assumed	.102	1	.102	.029	.866
	Greenhouse-Geisser	.102	1.000	.102	.029	.866
	Huynh-Feldt	.102	1.000	.102	.029	.866
	Lower-bound	.102	1.000	.102	.029	.866
Physical Functioning and ADL * Number of PMRS units	Sphericity Assumed	9.912	2	4.956	1.390	.250
	Greenhouse-Geisser	9.912	2.000	4.956	1.390	.250
	Huynh-Feldt	9.912	2.000	4.956	1.390	.250
	Lower-bound	9.912	2.000	4.956	1.390	.250
Error (Physical Functioning and ADL)	Sphericity Assumed	1373.068	385	3.566		
	Greenhouse-Geisser	1373.068	385.000	3.566		
	Huynh-Feldt	1373.068	385.000	3.566		
	Lower-bound	1373.068	385.000	3.566		
Intercept		234004.917	1	234004.917	11932.884	.000
Number of PMRS Units		525.343	2	262.671	13.395	.000
Error		7549.884	385	19.610		

A post hoc study of multiple comparisons using a Bonferroni adjustment shows that the mean difference of scores between those who receive two or more units of services and those who received no units of service was significant at the .000 level. The difference between means of those who received two or more units and those who received one unit was significant at the .007 level. The mean difference between those

who received no units and those who received one unit of physical and mental restoration services was not significant. This information is displayed in Table 106.

Table 106 *Post Hoc Comparison of Groups Receiving More and Less Units of Physical and Mental Restoration Services*

Bonferroni

(I) Physical and Mental Restoration Units	(J) Physical and Mental Restoration Units	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
No units	One unit	.3680	.45434	1.000	-.7245	1.4604
	Two or more units	1.9346*	.37557	.000	1.0316	2.8377
One unit	No units	-.3680	.45434	1.000	-1.4604	.7245
	Two or more units	1.5667*	.51134	.007	.3372	2.7962
Two or more units	No units	-1.9346*	.37557	.000	-2.8377	-1.0316
	One unit	-1.5667*	.51134	.007	-2.7962	-.3372

Based on observed means.

The error term is Mean Square(Error) = 9.805.

*. The mean difference is significant at the .05 level.

The line plot in Figure 7. shows that the line between the mean of time one and the mean of time two for those who receive no physical and mental restoration services is relatively flat, indicating no change in function. The line between measurements for those receiving one unit actually decreases slightly. Those who receive two or more services are lower on the scale at time one and show a greater increase than the other two groups.

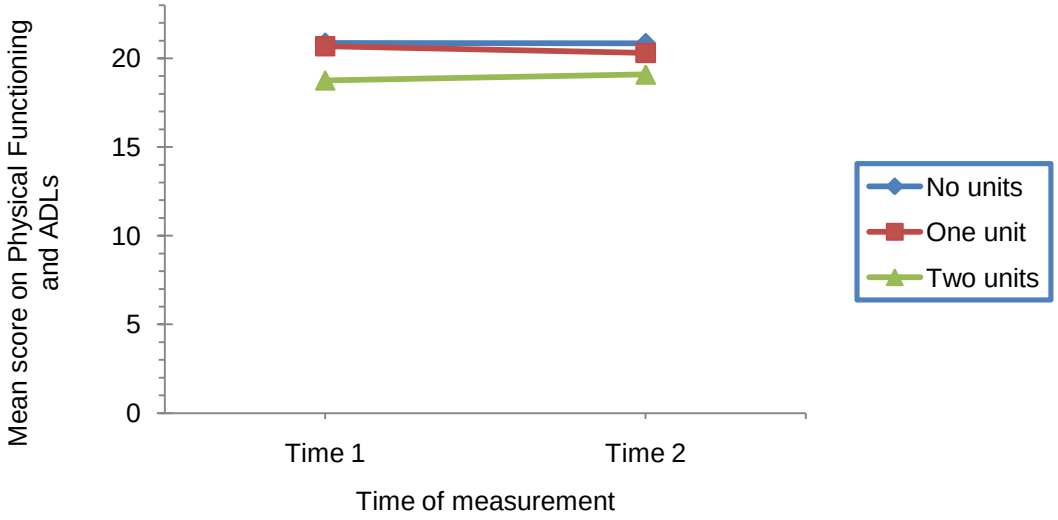

Figure 7. *Interaction of physical and mental restoration units on mean scores on physical functioning and activities of daily living*

A correlation was conducted between the scores on the physical functioning and activities of daily living scale and the number of service units received. The mean score on the scale was 20.2450 with a range of 0 to 23. The mean number of physical and restoration units 1.3069 with a range of 0 to 43. The means are displayed in Table 107.

Table 107 *Descriptive Statistics for PFADL and Physical and Mental Restoration Units*

	Mean	Std. Deviation	N
Physical Functioning and Activities of Daily Living Time 2	20.2450	3.54998	404
Physical and Mental Restorations service units	1.3069	3.27523	1020

The Pearson Product Moment Correlation Coefficient is -.046 with a significance level of .355. Any relationship that exists between the number of units and scores on the

physical function and activities of daily living is a negative one; however, this relationship is not significant. The data for this correlation is displayed in Table 108.

Table 108 *Correlation PFADL and Units of Physical and Mental Restorations Service*

		Physical Functioning and Activities of Daily Living Time 2	Physical and Mental Restorations service units
Physical Functioning and Activities of Daily Living Time 2	Pearson Correlation	1	-.046
	Sig. (2-tailed)		.355
	N	404	404
Physical and Mental Restorations service units	Pearson Correlation	-.046	1
	Sig. (2-tailed)	.355	
	N	404	1020

The result of the repeated measures analysis of variance between the number of units of physical and mental restoration services and the mean scores on the physical functioning and activities of daily living scale shows no significant interaction. This is inconsistent with the hypothesis that increase in physical restoration services will show an increase in physical functioning and activities of daily living. The mean scores for all groups is fairly high at time one, and there is little room for more improvement in this area. It is possible that physical and mental restoration services allowed consumers to maintain the level they had at time one rather than decline. However, data does not allow for the evaluation of maintaining current physical status.

Education and training services and community integration. The fourth hypothesis of this study is who those who receive education and training services will show a greater increase in scores on the community integration scale than consumers who

received VR services but did not receive education and training services. A repeated measures analysis of variance was conducted to assess this hypothesis. Individuals who received no education and training service units were compared to those receiving one or more units.

Attrition of subjects for this group was not as great as for the physical functioning and activities of daily living. Out of 1020 total subjects 954 or 93.5 percent had known values on this measure at time one. This decreased to 634 or 62.2 percent at time two. This information is displayed in Table 109.

Table 109 *Community Integration Cases Available at Time 1 and Time 2*

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Client * Community Integration Time 1	954	93.5%	66	6.5%	1020	100.0%
Client * Community Integration Time 2	634	62.2%	386	37.8%	1020	100.0%

The range of the community integration scale is 0 to 12. The mean score of the subjects who received no education and training services increased slightly from 6.3131 to 6.4238. The mean score of those who obtained one or more units of increased from 6.1276 to 6.8673. This data is shown in Table 110.

Table 110 *Descriptive Statistics for Community Integration and Educational and Training Service Units*

	Educational and Training Services Units	Mean	Std. Deviation	N
Community Integration Time 1	No units	6.3131	2.14875	420
	One or more units	6.1276	2.24672	196
	Total	6.2541	2.18028	616
Community Integration Time 2	No units	6.4238	2.41122	420
	One or more units	6.8673	2.31279	196
	Total	6.5649	2.38743	616

A repeated measures analysis of variance was used to compare the time one mean score and the time two mean score of those who received no units of education and training services and those who received one or more units. The mean of all subjects from time one to time two increased. An F of 19.151 with a significance level of .000 indicates a significant difference between time one and time two for all subjects. An F value of 10.477 with a significance value of .000 indicates that the interaction of community integration and the number of education and training units is significant. Those who received education and training services did show an increase in mean score on the community integration scale. This data is shown in Table 111.

Table 111 *ANOVA in Community Integration by Number of Educational and Training Units*

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Community_integration	Sphericity Assumed	48.334	1	48.334	19.151	.000
	Greenhouse-Geisser	48.334	1.000	48.334	19.151	.000
	Huynh-Feldt	48.334	1.000	48.334	19.151	.000
	Lower-bound	48.334	1.000	48.334	19.151	.000
Community_integration * Education and Training service units	Sphericity Assumed	26.443	1	26.443	10.477	.001
	Greenhouse-Geisser	26.443	1.000	26.443	10.477	.001
	Huynh-Feldt	26.443	1.000	26.443	10.477	.001
	Lower-bound	26.443	1.000	26.443	10.477	.001
Error(Community_ integration)	Sphericity Assumed	1549.666	614	2.524		
	Greenhouse-Geisser	1549.666	614.00	2.524		
	Huynh-Feldt	1549.666	614.00	2.524		
	Lower-bound	1549.666	614.00	2.524		
Intercept		44242.033	1	44242.033	5602.872	.000
Education and training Service Units		4.447	1	4.447	.563	.453
Error		4848.336	614	7.896		

The line plot in Figure 8 shows that those who receive one or more units of education and training services have a higher score on the community integration scale at time 2. The mean score of the group that receives these services starts at a slightly lower point on the scale than the group that does not receive this service. However, at time two, the mean score of the group that receives the service exceeds the mean score of the group that did not receive the services. The line between the mean scores for the group that did not receive education and training services remains relatively flat.

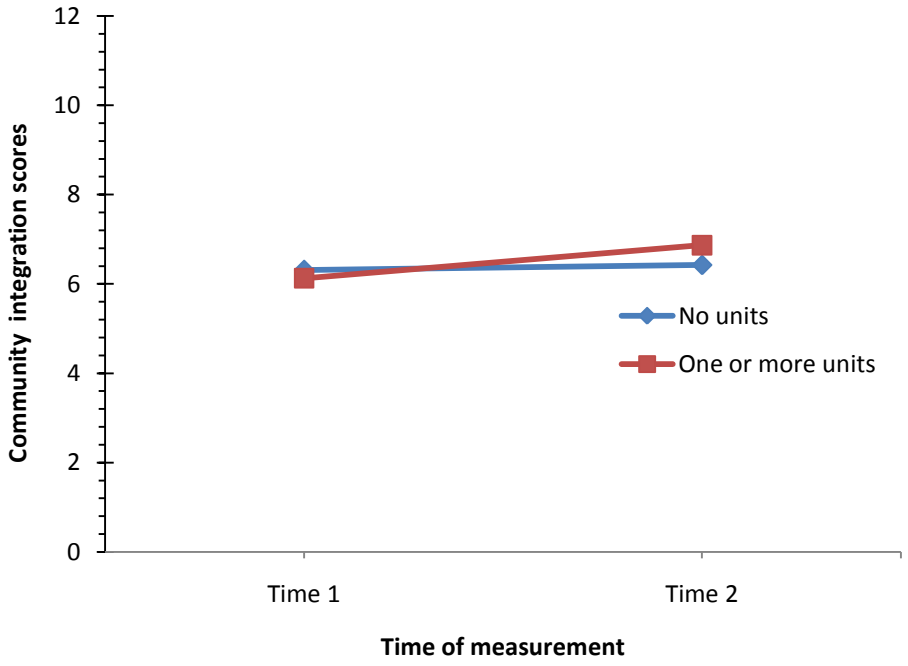

Figure 8. *Interaction of education and training units on community integration scores*

A correlation was conducted between the scores on the community integration scale and the mean number of employment training service units. The mean of the scores on the community integration scale was 6.5584 with a range of 0 to 12. The mean of the

number of employment and training units was .8137. This descriptive data is displayed in Table 112.

Table 112 *Descriptive Statistics for Community Integration Score and Employment and Training Service Units*

Descriptive Statistics

	Mean	Std. Deviation	N
Community Integration Time 2	6.5584	2.36928	634
Employment Training Service units	.8137	1.68134	1020

The Pearson Product Moment Correlation Coefficient is .051 with a significance level of .200. This indicates little correlation between the two variables. The relationship is not significance. These results are shown in Table 113.

Table 113 *Correlation of Community Integration Scores and Number of Employment and Training Service Units*

		Community Integration Time 2	Employment Training Service units
Community Integration Time 2	Pearson Correlation	1	.051
	Sig. (2-tailed)		.200
	N	634	634
Employment Training Service units	Pearson Correlation	.051	1
	Sig. (2-tailed)	.200	
	N	634	1020

The results of a repeated measures analysis of variances indicate that there is a significant difference between the receipt of education and training service units and the mean scores on the community integration scale. Those who receive more education and training units have a tendency to show an increase in scores on the community integration

scale. This is consistent with the hypothesis that more units of education and training services is related to an increase in community integration scores.

It is interesting to note that additional an additional analysis was conducted comparing the units of education and training services with scores on the self-esteem scale. No significant interaction was observed between number of education and training units and self-esteem.

Counseling and guidance services and scores on self-esteem scale. The fifth hypothesis of this study is that consumers who receive two or more units of counseling and guidance services will show a significant increase in their scores on the self-esteem scale compared to those who receive other VR services but receive one or less units of this service. A repeated measures analysis of variance was conducted to assess this hypothesis.

At time one the number of subjects with known measures was 932 or 91.4 percent of the total sample. At time two, the number of subjects was 644 or 63.1 percent. This information is displayed in Table 114.

Table 114 *Community Integration Cases Available at Time 1 and Time 2*

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Client * Self-esteem Time 1	932	91.4%	88	8.6%	1020	100.0%
Client * Self-esteem Time 2	644	63.1%	376	36.9%	1020	100.0%

The scores on the self-esteem scale ranged from -10 to 10. The mean score for those receiving one or less units of guidance and counseling services increased from 4.7273 to 5.1003. The group that received two or more units of this service increased from 4.9150 at time one to 5.5782 at time two. This data is shown in Table 115.

Table 115 *Descriptive Statistics for Self-Esteem and Counseling and Guidance Service Units*

	Counseling and Guidance Services Units	Mean	Std. Deviation	N
Self-esteem Time 1	One or less units	4.7273	4.86977	319
	Two or more units	4.9150	4.46636	294
	Total	4.8173	4.67778	613
Self-esteem Time 2	One or less units	5.1003	4.99396	319
	Two or more units	5.5782	4.62878	294
	Total	5.3295	4.82427	613

A repeated measures analysis of variance was used to compare the time one means score and the time two mean score of the group that received one or less units of guidance and counseling to the group that received two or more units of counseling and guidance. The mean of all subjects increased from time one to time two. An F value of 7.951 with a significance level of .005 indicates a significant difference between time one and time two for all subjects. An F of 6.24 with a significance level of .430 indicates no significant interaction between guidance and counseling units and the means scores on the self-esteem scale. This data is displayed in Table 116.

Table 116 *ANOVA in Community Integration by Number of Educational and Training Units*

Source		Type III Sum of Squares	Df	Mean Square	F	Sig.
Self_esteem	Sphericity Assumed	82.153	1	82.153	7.951	.005
	Greenhouse-Geisser	82.153	1.000	82.153	7.951	.005
	Huynh-Feldt	82.153	1.000	82.153	7.951	.005
	Lower-bound	82.153	1.000	82.153	7.951	.005
Self_esteem * Counseling and guidance	Sphericity Assumed	6.443	1	6.443	.624	.430
	Greenhouse-Geisser	6.443	1.000	6.443	.624	.430
	Huynh-Feldt	6.443	1.000	6.443	.624	.430
	Lower-bound	6.443	1.000	6.443	.624	.430
Error(Self_esteem)	Sphericity Assumed	6313.136	611	10.332		
	Greenhouse-Geisser	6313.136	611.000	10.332		
	Huynh-Feldt	6313.136	611.000	10.332		
	Lower-bound	6313.136	611.000	10.332		
Intercept		31588.459	1	31588.459	906.917	.000
Counseling and guidance		33.891	1	33.891	.973	.324
Error		21281.502	611	34.831		

The line plot in Figure 9 shows that the mean scores of both groups increased from time one to time two. Those who received one or less units of guidance and counseling services had a lower mean score at time one than the group that received two or more services. The group that received two or more services had a higher mean score at time one and showed a greater increase at time two. Although the group that received

services does show a greater increase in mean scores, the difference between these groups is not significant. Therefore, this hypothesis is not proven.

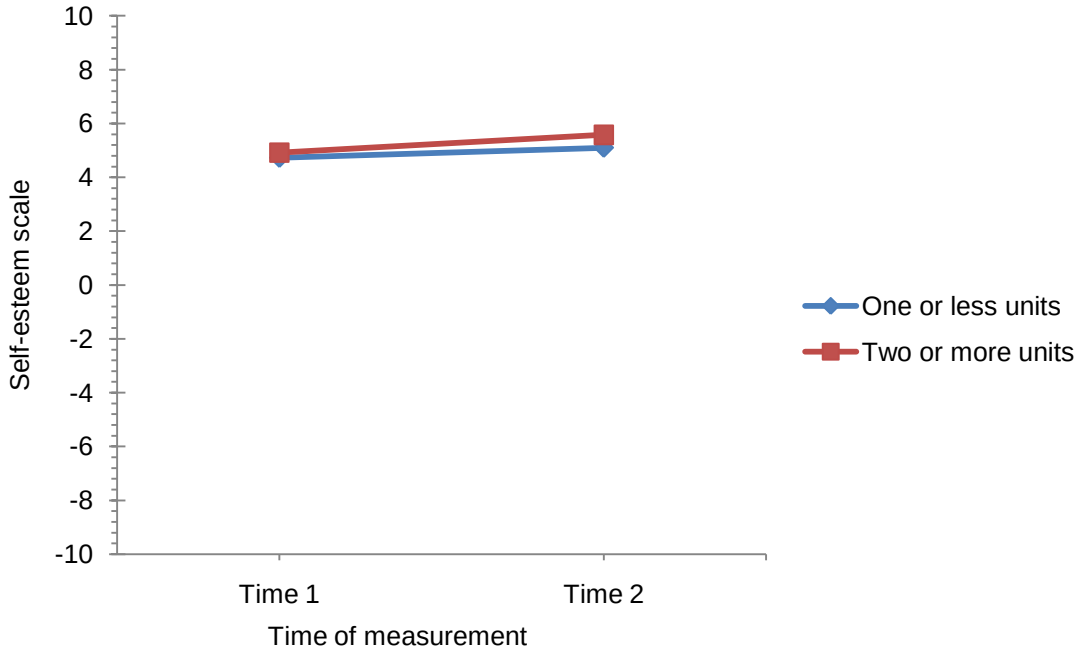

Figure 9. *Interaction of counseling and guidance units on self-esteem*

In addition to a repeated measures analysis of variance, a correlation was conducted between the scores on the self esteem scale and the number of counseling and guidance units. The mean score on the self-esteem scale is 5.3183 in a range of -10 to 10 scale. The mean number of counseling and guidance units is 2.0255 with a range of 0 to 12. This information is shown in Table 117.

Table 117 *Descriptive Statistics for Self Esteem Scores and Counseling and Guidance Units*

Descriptive Statistics

	Mean	Std. Deviation	N
Self-esteem Time 2	5.3183	4.81375	644
Counseling and Guidance service units	2.0255	1.63779	1020

The Pearson correlation value is .031 with a significance of .426 indicating there is no correlation between the number of guidance and counseling units received and scores on the self-esteem scale. This information is displayed in Tables 118.

Table 118 *Correlations of Self-Esteem Scores and Counseling and Guidance Units*

		Self-esteem Time 2	Counseling and Guidance service units
Self-esteem Time 2	Pearson Correlation	1	.031
	Sig. (2-tailed)		.426
	N	644	644
Counseling and Guidance service units	Pearson Correlation	.031	1
	Sig. (2-tailed)	.426	
	N	644	1020

The result of the repeated measures analysis of variance and the correlation between number of units and scores on the self-esteem scale indicates that there is no significant relationship between these two variables. This is inconsistent with the test hypothesis that increased units of guidance and counseling will be associated with an increase in score on the self-esteem scale.

Chapter VI-Discussion

The research question of this study is to examine the impact of the state-federal vocational rehabilitation program on the quality of life of its consumers. Theories of quality of life assume that life is made up of various domains and that improvement in one domain will improve overall life quality. This study used the results of the Longitudinal Study of the Vocational Rehabilitation Services Program to assess if VR services would result in an improvement in the four life domains of self-esteem, community integration, physical and mental restoration, and productivity. The study used five hypotheses to assess the research question.

Discussion of Test Hypotheses and Results

The first hypothesis is that those persons who receive vocational rehabilitation services (Status 26 and Status 28 closures) will report a greater increase in quality of life than those who do not receive services (Status 30 closures). This was assessed by the pretest and posttest scores of those who received services and those who did not on measures of self-esteem, community integration, physical functioning and activities of daily living and productivity. The second hypothesis asks whether any effect of receiving vocational rehabilitation services I n the quality of life holds equally well for those who achieve an employment outcome (Status 26 closures) and those who do not (Status 28 closures).

When the consumers were separated according to receiving VR services (Status 26 and Status 28 closures) and not receiving VR services (Status 30 closures), only two measures showed a significant increase for those receiving services: change in work

status and change in primary source of support. These two measures are proxies for the life domain of productivity.

The measure of change in receipt of financial assistance was considered a third proxy for the life domain of productivity. There was no significant difference between the group of subjects that received VR services and the group that did not receive VR services. There is concern that this variable may not be measuring productivity but another quality of life domain.

On the measures of self-esteem no significant change was observed between the group that received VR services and the group that did not. However, the measure of self-esteem just misses being significant when the analysis was conducted on the sample of those in the racial category. This suggests that persons in the white racial category may be more likely to show an increase in self-esteem after receiving VR services.

On the measure of community integration, both the group that received VR services and the group that did not showed an increase, but those receiving VR services did not increase more than those without services. The analysis on the white racial category showed a similar pattern between the two service groups. However, this effect did not approach significance.

With regard to the measure of physical functioning and activities of daily living, no significant change was noted for those who received VR services and those that did not.

With the exception of gains in productivity, those receiving VR services do not show an increase in the quality of life domains relative to those not receiving services.

Being of the white race appears to reduce gains received in the area of becoming one's primary source of financial support.

When the groups were separated according to VR closure status, the Status 26 group had a significant increase in self-esteem, whereas the Status 28 group showed a slight decrease Thus, VR services is associated with improvement in self-esteem but only for those who obtained employment through VR services.

On the physical functioning and activities of daily living scale, the Status 26 group shows a minimal increase in scores. Those who do not obtain employment (Status 28) and those who do not receive VR services show a slight decrease. Thus, VR services is associated with mild increase in physical functioning and activities of daily living, but this increase is only for those who obtain an employment outcome (Status 26 closures).

On the community integration scale, the Status 26 group showed an increase whereas the Status 28 group remained the same. However, the Status 30 group, which did not receive services, showed an even greater increase than the Status 26 group. An analysis on the sample of subjects in the white racial category does not produce a significant difference between the groups. Thus, the increase cannot be attributed to receipt of VR services.

With regard to productivity measure, the Status 26 group was significantly more likely show a change from not working to working. . Both the Status 28 group and the Status 30 group showed no change in work status. Race did not appear to impact this measure. On the primary source of support variable, thethe Status 26 groupwas more likely than the Status 28 and the Status 30 groups to become their own primary source of support. Race did not appear to affect this outcome. Thus, VR services improved these

productivity measures for those who obtained employment through VR, but there was no effect on the productivity of the Status 28 group.

The Status 26 group was significantly more likely to be receiving financial assistance than either the Status 28 or the Status 30 group. The Status 28 group shows a decrease in financial assistance. However, the study hypothesis indicated that those receiving VR services would receive less financial assistance. This is the only measure where the Status 28 group shows an increase and the Status 26 group shows a decrease.

It is possible that VR services actually assists consumers in obtaining financial assistance; thus, increasing their quality of life on a separate life domain not measured in this study. Consumers may not be aware of various types of financial assistance that are available to them until they apply for VR services. Rehabilitation counselors refer consumers to other service providers that provide financial assistance and assist consumers in completing applications for assistance. This assistance provides needed income while the consumer completes the vocational rehabilitation program. In addition, the Social Security Administration provides various work incentives that allow recipients to receive certain benefits while working (Social Security Online, www. Socialsecurity.gov). This makes it possible for consumer to be working and receiving financial assistance at the time their case is closed from VR. Therefore, this particular variable may be assessing the life domain of material well-being rather than productivity.

The results in this study are consistent with those of Bränholm et al. (1991) and Fugl-Meyer et al. (1991). Both of these studies found that those who receive vocational rehabilitation services and obtain employment report higher levels of life satisfaction whereas those who receive services but do not obtain employment actually showed a

decrease in life satisfaction. The current study shows a relationship between attainment of employment (Status 26 closure) and the measures of self-esteem, physical functioning and activities of daily living, and the productivity measure of change in work status and change in primary source of support. The results suggest that the achievement of an employment outcome is a major factor in achieving quality.

Additional hypotheses of this of the current study tested whether specific aspects of VR services are linked to improvement in specific domains of quality of life One specific relationship assessed was that between physical and mental restoration services and the score on the physical functioning and activities of daily living scale. The group that received more units of this particular service did show a slight increase in physical functional and activities of daily living and those who received fewer units of this service showed a slight decrease on this measure. However, the results show no significant interaction between the number of units of physical and mental restoration services received and the mean score on the physical functioning and activities of daily living.

This study does contain limitations in evaluating the impact of VR services on the functioning level of consumers. This study measures increase or improvement in functioning. However, it is not taking into consideration that physical restoration services may be provided to maintain consumers at their current level or keep their functioning from deteriorating at a greater rate.

In addition, the use of the physical functioning and activities of daily living scale for persons with certain disabilities may be limited. Although the items contained in this scale are used in many surveys of individuals with disabilities, they may not be sensitive measures of changes in the functional status of persons with psychiatric disabilities

(Overman & Schmidt-Davis, 2006). A large percentage (28.3 %) of the subjects in this study had psychiatric disabilities. Therefore, consumers may have obtained benefits in the physical functioning and activities of daily living, but theses benefits may not be assessed by the items available in the LSVRSP.

This study also assessed the relationship between education and training services and results on the community integration scale. Both the group that receive no units of education and training services and the group that received one or more units of this service showed an increase in mean scores on community integration. However, there is a significant interaction between the number of units of services and the means on community integration scale. The group that received one or more units of this service had a greater rate of increase than the group that received no service. Therefore, the results of this test are consistent with the test hypothesis.

The final relationship assessed was that between guidance and counseling services and self-esteem. Contrary to expectations, both the group that received one or less unit of guidance and counseling and the group that received two or more units show an increase in mean scores, and there is a significant difference in the mean of all scores from time one to time two. The study results do not show a significant interaction between the number of units of guidance and counseling and mean score on the self-esteem scale.

The implications of this test indicate that the number of guidance and counseling units do not have an impact on self-esteem. However, all consumers receive some form of guidance and counseling. Both groups showed a significant increase from time one to time two. It is may be that consumers receive the amount of guidance and counseling units that they need to reach a homeostatic level of self-esteem. More units of this service

may not increase the consumer's self-esteem beyond its homeostatic level. This would be consistent with Cummins (2003) theory of homeostasis.

Limitations of the Study

This particular study utilized a secondary data set from the Longitudinal Study of the Vocational Rehabilitation Services Program. This data set obtained a national sample from forty different VR offices in the 48 contiguous United States. This sample allows for generalization to the entire state-federal VR program. However, state VR program practices vary from state to state. Practices also vary between offices within the same state and between counselors within the same office. It is possible that individual state VR programs have larger effects for consumers for some of these quality of life indicators that are not apparent in a sample of this sort which averages across the implementation of all VR programs around the nation. The results of this study must be interpreted with caution. The study itself is not experimental in design. Although subjects were selected through a stratified, random sample, individual subjects cannot be assigned to a treatment and control group. There may be some unobservable, inherent differences in the groups that may impact the results. Thus, direct cause and effect cannot be concluded.

To control for some of these limitations, a Status 30 group that did not receive services was used as a comparison group. Although the individuals in this group had similar disabilities and were determined eligible for VR services, they may have had hidden characteristics that made them different from those who went on to receive VR services. It is also possible that this group received similar services from a source other than the state-federal VR program. However, the Status 30 group only showed a

significant increase in community integration scale and a significant change on the receipt of financial assistance variable (which had limitations discussed earlier). This indicates that any alternative services the Status 30 group may have received did not have an impact on other quality of life domains.

The issue of attrition was of concern with the physical functioning and activities of daily living measurement. The valid number of subjects for time one was reduced by around 60 percent. However, there was no significant difference between the pretest mean of those who had a posttest score and those who did not have a posttest score. Thus, attrition did not appear to impact findings on this measure.

The original scales in the LSVRSP were not specifically designed to measure the construct of quality of life. Thus, the current study was limited to the number of domains that could be measured. In addition, the physical functioning and activities of daily living scale may not have registered changes in functioning for persons with certain disabilities.

The self-esteem scale and the community integration scale also have potential limitations. These scales appear to measure traditional western culture values that may not be accepted by individuals of other cultures. For example, the self-esteem scale asks the respondent to acknowledge having pride in a personal accomplishment. In cultures that are more community-oriented and less individualistic, such an admission may be seen as arrogant and undesirable. This study looked at race, but not at ethnicity and cultural orientation. However, the United States is a diverse nation consisting of many communities that adhere to different cultural values. It is possible that the instruments used may not be sensitive to cultural values pertaining to quality of life.

Some of the demographic variables also pose limitations in this study. The length of time between pretest and posttest measures is significantly greater for Status 26 and Status 28 closure that it is for Status 30 closures. This study does not control for time between measures. Thus, it is possible that the Status 30 group may also show an improvement in measures if measures at a later date were assessed.

The demographic of race also poses a limitation for this study. Eighty percent of the sample was in the white racial category. The percentages in the other racial categories were so small that they were combined for analysis. The descriptive results on race demonstrate that Status 26 closures are more likely to be white. Previous literature also demonstrates that racial disparities exist (Rosenthal et al, 2005; Kolakowsky-Hayner, 2007, Jones, 2008; Hasnain and Balcazar 2009).

This analysis does not directly test for the possibility that the effects of VR services on quality of life may differ depending on race. However, racial disparities do exist in Status 26 outcomes. Therefore, it is important to consider the how VR services influence the quality of life for consumers.

A separate analysis was conducted on the subsample of those in the white racial category for each dependent variable. The pattern of results obtained on these separate analyses is similar to those of the larger sample. However, the current analysis is limited in that it does not assess these differences between those in the other than white racial categories.

Implications and Significance of the Study

The intention of this study was to demonstrate that all consumers receiving VR services would show an improvement in quality of life. The actual results tend to indicate

that improvement in quality of life is associated with the achievement of an employment outcome. This does not suggest that the state-federal vocational rehabilitation program should not seek to improve the quality of life of its consumers. Focusing on quality of life issues to improve an individual's behavior, knowledge, skills, and self-esteem would be the first step in a socio-ecological model to change the VR program (McLeroy, et al. 1988).

Once individual interventions are addressed, the VR program can begin to address environmental issues that will help to lead to lasting change in the individual and in the VR program. The first level of environmental issues to be analyzed is those within the intrapersonal domains of life. VR practitioners must be cognizant of how family, friends, coworkers, and others can reinforce both positive and negative outcomes for the consumer. It is incumbent upon the VR professional to identify sources of positive support and to provide services that will facilitate positive relationships.

The next level of analysis to consider in the socio-ecological model is that of the organization or the institution. One typically thinks of the organization as providing the procedures and guidance that direct the behavior of the VR practitioner. However, as the VR practitioner begins to implement strategies to improve the consumer's intrapersonal and intrapersonal domains of life, the practices of the overall organization will begin to evolve. Procedures will adapt to accommodate positive outcomes, and what was once a new and innovative practice will become the standard for the organization.

As the organization changes, the community will begin to change. Community in this instance refers to the relationship among various organizations and networks. . Often these existing organizations must compete for available resources while serving many of

the same consumers. Other institutions will begin to recognize that the VR program is instituting procedures that will address quality of life issues. As a result, these organizations may begin to implement a practice of cooperating with VR for the benefit of mutual consumers.

When the community of organizations begins to work together, the local, state, and national laws will be adjusted to accommodate this change. Consumer satisfaction surveys required of the VR program may begin to reflect positively on this new attention to quality of life. More research on impact of VR services on the quality of life of consumers will be encouraged. If the ensuing research demonstrates a positive relationship between services and quality of life outcomes, public policy makers will be encouraged to develop regulations and policies that focus on change in quality of life. In addition to employment outcomes, program evaluation of the state-federal VR program will begin to evaluate the overall improvement in the life as of the consumer.

Implications for Program Evaluation and VR.

The current state-federal VR program utilizes the Status 26 as one of its main criteria for success. Consumer earnings at closure are also assessed, but there is no national comparion of significant differences from application to closure. Consumer satisfaction surveys are conducted by individual states, but again there is no national standardization for this measure. Individual state VR programs determine what they will assess with consumer satisfaction surveys, and rehabilitation counselors may not have access to the survey results that pertain to their performance. There is no standard for assessing any improvement in quality of life domains.

The lack of measurement of other consumer outcomes promotes a state of dissonance for the rehabilitation counselor. This profession tends to value providing services to aid persons with disabilities to improve the overall quality of their lives. The mission statement of the Department of Rehabilitation Counseling at Virginia Commonwealth University includes the following statement: "Department of Rehabilitation Counseling endeavors to enhance the personal, social, and economic independence of individuals with disabilities." (http://www.rehab.vcu.edu/ataglance/mission.html, 2008). This indicates that rehabilitation counselors from this program would seek to address these quality of life issues. However, the emphasis on obtaining employment for consumers may result in counselors selectively seeking consumers who can be easily placed in employment while avoiding persons who are more significantly disabled.

Although the current study indicates that improvement in quality of life measures are observed in those who obtain employment (Status 26 closures) but not in those who receive services but do not obtain employment, evaluation of quality of life remains a viable measure for program evaluation. Assessing consumer improvement in various domains of life may lead to better practices in rehabilitation counseling. Counselors would be more likely to focus on addressing these issues and seek obtaining quality outcomes rather than just a quantity of Status 26 closures. Improvements in certain domains do lead to employment; therefore, such measures assess consumers' progress toward employment. However, even measurement of these quality outcomes need to be operationalized and quantified so that they can be effectively measured. Utilizing standardized scales would provide data to assist in this endeavor.

Recommendations for Future Research

This study was limited by the use of an existing dataset. Only existing scales and measures pertaining to certain domains of life were available to be used to assess change in consumers' quality of life. Because the LSVRSP was not specifically designed to assess quality of life, the scales that existed did not cover many life domains in the quality of life theories. In addition, these scales had limitations that have been covered. It is recommended that future research be designed that with the specific objective of measuring quality of life domains. This would provide a more global measurement of the construct described in the quality of life theories. A research study of this magnitude would require much time and planning to implement; however, such a study would be necessary before it can be concluded that the state-federal vocational rehabilitation program does not impact quality of life of consumers who do not obtain an employment outcome.

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Appendix

List of Vocational Rehabilitation Services from LSVRSP Used in Analysis

MajorVR Service Category	Specific Service	LSVRSP Data File
Counseling and Guidance	Counseling	CGPCO
	IWRP Development	CGPID
	IWRP Amendment	CGPIA
	Job Development	CGPID
	Job Placement	CGPJP
	Job Search Training	CGPJS
Education and Training	Supported Employment	ETSSU
	Transitional Employment	ETSTE
	On-the-Job Training/Job Trial	ETSTT
	Work Adjustment Training	ETSWA
	Work Hardening	ETSWH
	Literacy Instruction	ETSLI
	Instruction in English as a Second Language	ETSSL
	Instruction in Lip Reading	ETSLR
	Instruction in Reading Braille	ETSRB
	Tutoring	ETSTU
	Elementary and Secondary Education	ETSSE
	GED Preparation	ETSGP
	Business/Vocational Training	ETSBT
	Two-Year/Community College Program	ETSCP
	Four-Year College/University Program	ETSUP
Physical and Mental Restoration	Medical Services	PRSMS
	Medical Services	PRSMS2
	Psychological/Psychiatric Treatment	PRSPT
	Physical Therapy	PRSHT
	Speech Communication Therapy	PRSCT
	Orientation/Mobility Therapy	PRSMT
	Assistive Technology Devices	PRSTD
	Assistive Technology Services	PRSTS
	Occupational Therapy	PRSOT
	Substance Abuse Treatment	PRSST

Vita

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