

## ABSTRACT

KARUNTZOS, GEORGIA TRYPHON. Vocational Status as a Moderator of Substance Abusers' Employability. (Under the direction of Donald W. Drewes.)

In response to a congressional mandate, the National Institute on Drug Abuse funded the Training and Employment Program (TEP) research study to evaluate a vocational program for methadone treatment clients. As part of the TEP study, the researchers developed the Vocational Readiness Screener (VRS), which was administered to 184 treatment clients participating in that study. This study used a structural equation modeling approach to evaluate the employability framework on which the VRS was based by testing the hypotheses that employability is comprised of multiple underlying factors and that vocational status moderates employability. The empirical evidence that supported the study hypotheses included estimates of test-retest and composite reliability, estimates of factor validity, and group differences in the covariance and inter-factor correlation matrices for the job-ready and non job-ready groups. The results showed differences in the factor loadings and in the structure of each of the latent factors in the employability model, which appear to be aligned with stages of vocational readiness. From a methodological perspective, these findings represent an analytic shift from prediction to latent variable analysis and allow for a better understanding of the moderator effects of vocational status at progressive stages in the rehabilitation process. Treatment implications for the substance abuse and vocational rehabilitation fields are also discussed.

Vocational Status as a Moderator of  
Substance Abusers' Employability

by

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This work is dedicated  
to the loving memory of my father  
Tryphon (Jerry) Karuntzos

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I obtained my undergraduate degree in Industrial/Organizational Psychology from Purdue University in 1987 and my master's degree in Human Resources and Industrial Relations from Loyola University in 1990. While pursuing my master's degree, I served as a graduate assistant for the Institute of Industrial Relations and worked as a training consultant for the Institute's external programs. Upon graduating from Loyola, I accepted a research position with the Research Triangle Institute (RTI) to collaborate on a multi-year research grant, which has led to a fulfilling career at RTI. In the fall of 1994, I was accepted into the Human Resources Development (HRD) program in the Department of Psychology at North Carolina State when I began my doctoral training under the guidance of Professor Donald W. Drewes. During this time period I have pursued my academic training and maintained a full time position with RTI as an Organizational Research Associate. Since 1990, I have served as the project director for a state-wide workplace health promotion study, as the project director for a managed care prevention program systems analysis study, as the associate project director for a multi-site evaluation of workplace substance abuse prevention programs, as co-principal investigator and project manager for an employee assistance program (EAP) study examining the impact of enhanced services on EAP utilization and workplace outcomes, as project manager for a multisite randomized field trial evaluating the effectiveness of enhanced vocational services for methadone treatment clients, and as project leader for commercial clients examining workforce trends using climate surveys and other data collection instruments. During the fall of 2002, I accepted the position of Director of

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Since then, I have had the opportunity to design and implement workforce systems to enhance our effectiveness as an organization.

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## **1.0 Introduction**

### **1.1 Problem Statement**

In light of welfare reforms enacted during the 1990s, the need for job-training and work re-entry will continue to escalate as a priority for the unemployed. In August of 1996, President Clinton signed the welfare reform bill passed by the U.S. House and Senate. Under this legislation, federal funding for welfare recipients was transferred to the states in the form of block grants, along with provisions for a maximum lifetime benefit of five years, massive reductions in the food stamp program, and a mandate that all able bodied adults work after two years of receiving financial assistance (Brooks and Buckner, 1996). The law also requires 50% of welfare recipients to move into the workforce by the year 2002.

In addition to the work requirements applicable to all welfare recipients, the law includes provisions pertaining specifically to individuals with substance abuse disorders. These provisions grant States the option to test welfare recipients for illegal drugs and impose sanctions on those who test positive; prohibit States from offering cash aid or food stamps to those convicted after August 22, 1996 of drug-related felonies, unless the State passes a law modifying this requirement; and substance abusers can no longer qualify for Supplemental Security Income (SSI) disability benefits.

Critics of the new welfare legislation argue that the overall provisions do not adequately consider the needs of the population, are based on ill-informed assumptions, and are particularly punitive to individuals with substance abuse and mental disorders. A 1993 study of welfare recipients conducted by the U.S. Department of Health and Human Services (DHHS), found that between 10 and 20% of welfare recipients have alcohol and

drug problems that may interfere with their work (Holzman, 1999). Though the federal legislation does provide for exemptions to the time-limitations and work requirements for individuals with chronic conditions, these exemptions are often limited to less than 20% of the welfare recipients across all populations with special needs that impact their ability to become employed.

In a recent commentary on State welfare reform, Halter (1996) presents supporting evidence against popular assumptions regarding welfare recipients that critics suggest were influential in passing the reform legislation. A common impression of recipients was that they are men in their twenties who have trouble keeping a job. However, according to Halter, several studies have shown that general assistance recipients come from a wide variety of backgrounds, work histories, and unemployment circumstances. Another assumption was that a significant number of individuals who lose general assistance benefits will find employment. Studies of early ('80s) State welfare reduction efforts showed mixed results, however.

Welfare reduction studies in Pennsylvania, Michigan, and Ohio indicated that more than 80% of the general assistance population did not find work in spite of the reform programs. For those who found work, earnings were often not enough to allow them to become self sufficient (Halter, 1996). These findings are consistent with current reports from state welfare administrators who indicate that efforts to reduce the welfare rolls have produced almost 30% in caseload decline across the nation. It is unclear; however, whether those leaving the welfare rolls are "better off" and whether these early reductions represent successful transition for the remaining welfare recipients (Withorn, 1998). Even the state of Wisconsin, whose welfare programs are commonly cited as

models for reform, is uncertain if it can sustain the downward trend on the welfare rolls. Through an ambitious welfare agenda that began 1987, Wisconsin reduced its welfare caseload steadily over a decade, while the overall U.S. caseload grew during the same period. However, Wisconsin officials acknowledge that with the elimination of the federal matching program (replaced by block grant funding to the State), sustained investment in the JOBS and other welfare reduction strategies was unlikely—or minimally, difficult (Wiseman, 1996).

To understand better and support State efforts to implement the new welfare legislation, the Substance Abuse and Mental Health Services Administration (SAMHSA), a component of the U.S. Department of Health and Human Services sponsored a series of workshops bringing together members of the Governor's office, welfare agencies, substance abuse treatment services, and researchers from across all 50 States. The objective of these forums was to provide a venue where issues, barriers, and strategies for meeting the provisions of the welfare legislation could be discussed. Consistent with the early reports noted in the published literature on welfare reform, states reported in workshop discussions that they are concerned that they lack the data to understand fully the circumstances under which the rolls have reduced in their states, and that the reduction seems to have reached a plateau. Uniformly, the states also reported that for those who have not found employment, substance abuse, histories of violence, and competing family obligations (e.g., child care) are significant factors, with substance abuse at the forefront (U.S. Department of Health and Human Services, 1999).

Prior to the recent reforms, eligible general assistance recipients with substance abuse problems were often referred to treatment and maintained on the welfare rolls until

rehabilitated and employed. With the term limits imposed by the new legislation, this is no longer a viable approach to vocational rehabilitation. Welfare agency counselors are faced with the challenge of finding employment for substance abusers who may not be ready to get a job due to their addictions; and even for clients whose substance use is in remission, employer biases against substance abusers, funding constraints for ancillary services (e.g., child care), and the lack of “world-of-work” skills or work histories makes placement difficult. The foremost challenge for welfare counselors of transition to work, however, is the lack of experience working with substance abuse treatment populations and the lack of understanding of what characteristics or circumstances are inherent within this population that impact their ability to find and keep work.

These challenges have been documented in earlier studies examining the impact of the Job Opportunities and Basic Skills (JOBS) program provided under the Family Support Act of 1988. In a recent report on the interorganizational relationships of JOBS program agencies, Jennings and Krane (1998) report that for a large subset of the program participants, the cooperating worksites reported problems with absenteeism, tardiness, low motivation, personal hygiene, and the use of language that was not appropriate to the workplace, as well as poor supervisory relationships. The report also documented that the characteristics of the JOBS participants included “deep-seated psychological problems” stemming from histories of substance abuse and physical abuse. This study highlights the need for welfare counselors to understand better the complexities related to histories of addiction and to better screen clients who are ill-prepared to integrate into the workforce.

In a recent study conducted by the National Center on Addiction and Substance Abuse at Columbia University (Woolis, 1998), researchers describe an intervention

strategy tailored to meet the needs of substance-abusing mothers on welfare and provide a framework that States can use to help address community and system level barriers for the successful transition from welfare to work for women involved in substance abuse treatment. This and similar studies provide information that can better prepare welfare agencies to address the needs of substance abusers. Essential elements of this framework include establishing shared understanding among leaders in human services, labor and housing departments of the issues surrounding welfare to work and substance abuse; establishing funding coordination by requiring applicants for public funds to submit joint funding proposals to demonstrate collaboration and new mechanisms of coordination for consumers; launching an education and technical assistance campaign to help service providers to understand better the unique characteristics of substance abusers, especially the needs of addicted low-income women; establishing substance abuse screening tools that provide information needed by human services, substance abuse treatment, and employment training communities; investing in an information and communication strategy that coordinates information between human service agencies while maintaining consumer confidentiality provisions; and engaging employers who too often are unaware of the issues surrounding welfare reform and substance abusers (Woolis, 1998).

While reports that provide recommendations for overcoming State-level barriers related to welfare-to-work efforts can certainly facilitate welfare-to-work initiatives, additional reports from the SAMHSA-sponsored forums indicate that better coordination between welfare agencies and substance abuse treatment facilities may be the primary facilitator for successfully integrating this population into the workforce. However, interagency coordination is clearly not a panacea. Welfare counselors are often ill-



equipped to assess the client substance abuse treatment needs so that they can make an appropriate referral, and substance abuse treatment counselors often lack the time and training to meet the ancillary needs of their clients (Dennis, Karuntzos, and Rachal, 1992).

The realities associated with the vocational rehabilitation of substance abuse treatment clients were documented empirically well before welfare reform. With the passage of federal regulations (Anti-Drug Abuse Act of 1988) mandating comprehensive treatment for substance abusers, vocational services have been a required component of comprehensive treatment plans for over a decade. Nevertheless, vocational services are often reported as an unmet need for substance abuse treatment clients (Arella, Deren, Randell, & Brewington, 1990a; Brewington, Deren, Arella, & Randell, 1990; Dennis, Karuntzos, McDougal, French, & Hubbard 1993; Hall, Loeb, LeVois, & Cooper, 1981; Hubbard and Harwood, 1981; Senay, Dorus, & Joseph, 1981).

Findings from two large-scale national studies, the Treatment Outcome Prospective Study (TOPS) conducted between 1979 and 1981 that included clients from 41 treatment programs and the Drug Abuse Treatment Outcome Study (DATOS) conducted between 1991 and 1993 that included clients from 99 programs, showed a considerable downward trend in the level of ancillary services available to treatment clients. As summarized by Ethridge and colleagues (as cited in Platt, Widman, Lidz, Rubenstein, & Thompson, 1998), vocational and educational services were received by less than half of the TOPS clients across all treatment modalities. Similarly, reports from the 1998 National Drug Abuse Treatment System Survey (NDATSS) indicate that only 35.9% of substance abuse treatment programs in the U.S. provide employment related counseling directly, and report making referrals for vocational services elsewhere only to a

“little or some extent” (Platt et al., 1998). These studies suggest that the increased trend to provide “streamlined services” (i.e., fragmented services) versus integrated services has impacted the level of ancillary care offered to clients. Furthermore, as stated earlier, high counselor case loads and the lack of specialized training in the vocational rehabilitation process often limit the ability of drug treatment counselors to provide effective vocational services, even when those services are a part of the program’s treatment protocol (Platt et al., 1998). Consequently, clinicians in both integrated and fragmented service systems rely heavily on community job-placement and vocational agencies for providing these services. Unfortunately, not all clients referred to these agencies are ready to get a job. Referrals are often made as part of the employment requirements for successful completion of treatment or on the client’s expressed interest to find a job, irrespective of the client or system obstacles for successful placement.

This problem has been exacerbated by the recent welfare reform legislation. With the imminent threat of the loss of financial benefits and the need to meet mandated quotas, state vocational agencies have become overwhelmed by referrals from treatment programs and welfare agencies, and other welfare-to-work initiatives who have not been appropriately pre-screened to benefit from work-related services (Thompson, Boeringa, & Lewis, 1995). As vocational rehabilitation counselors become overloaded, clients with a reasonable opportunity for success receive fewer services which are often delayed (Sandfort, 1999). Given the complex vocational profiles of substance abuse treatment clients, and the limited availability for services, there is a pressing need for information and tools that can be used by welfare agencies and substance abuse treatment clinicians to

assess better the immediate vocational needs of their clients, as well as make appropriate referrals to vocational rehabilitation programs.

In response to a congressional mandate for comprehensive services in drug treatment programs, the National Institute on Drug Abuse (NIDA) awarded a multiyear grant to the Research Triangle Institute (RTI) in 1990 to develop a training and employment program for methadone treatment clients. Methadone is a pharmacologic treatment for heroin addiction that blocks the effects of heroin use. Though methadone treatment programs vary in the level of services they provide, all programs dispense prescribed methadone in a closely controlled manner (i.e., clients receive a daily dose of methadone and are observed during ingestion) and most include a psychosocial treatment component with drug counseling. Few, however, have formal vocational programs as part of their treatment protocol, despite the mandate to provide such services. The RTI study was an attempt to develop, implement, and evaluate the efficacy of such a program in improving employment outcomes.

During the pilot phase of the TEP study (1990-1992), the researchers developed an instrument—the Vocational Readiness Screener (VRS; *see Appendix A*)—to be used by the clinicians to identify and triage the vocational needs of their clients. However, the validity of this instrument as a clinical tool has never been examined. The focus of this study is to examine the framework on which the VRS is based by testing the assumptions that (a) employability is comprised of multiple underlying factors and that (b) vocational status serves as a moderator of work motivation. This study also examines the reliability of the underlying factors across time. The literature review that follows summarizes the relevant vocational rehabilitation literature and identifies the central factors that affect the

employability of substance abuse treatment clients. Subsequent sections describe how the VRS was constructed, the data collection methods used, the study's theoretical framework, and the analyses for testing the hypothesized structural models.

## 2.0 Literature Review

The concept of “work readiness” is central to the field of vocational rehabilitation, yet much debate exists regarding its definition and application. Vandergoot’s (1982, 1984) early reviews of the literature provide a historical perspective of the maturing of the rehabilitation counseling profession, and highlight key studies that have influenced placement practices in vocational rehabilitation. The following discussion briefly summarizes some of these key studies and illustrates the evolution of the vocational rehabilitation field building on Vandergoot’s review.

The early work of Bitter (1968) provides the foundation for considering the complexities of vocational rehabilitation. He sees “*work* readiness” as a concept that relates to an individual’s personal attributes (i.e., possess the desire and general skills to get a job). According to Bitter, “*job* readiness,” on the other hand, involves the extent to which an individual’s qualifications fit the skill requirements of a particular job. Sinick (1969) adds the distinction between “employability” and “placeability.” In Sinick’s work, *employability* refers to someone who possess the necessary skills and work personality; *placeability* refers to the perceived attractiveness of an applicant to an employer. In this conception, labor market conditions and employer perceptions regarding disabilities influence placeability, but not employability.

In subsequent literature, Dunn (1974) defines employability as the capacity of the individual to function in a particular work situation or occupation, and placeability to the probability that the individual will obtain work in a particular occupation. With this

definition the difference between functioning on a job and obtaining a job involve different skills. Someone may be able to do a job, but not be able to land one. Dunn also distinguishes between general and specific employability which parallels Bitters definition of general work readiness and readiness for a specific job. However, Dunn extends specific employability considerations beyond a person's work skills and includes equally important environmental factors and the person's mobility within the environment containing the job. Dunn also refines the concept of placeability by including three components: the job search, employer selection procedures, and the job interview.

Andrisani (1977) introduced the concept of 'locus of control' into the rehabilitation field, and showed that the extent to which one feels "in control of" life events correlates with employment success. Similarly, Benson and Whittington (1974) found that attitudes, perceptions, motivation act in combinations to determine an individual's ability to obtain and maintain a job. They refer to this as "job readiness posture." The concepts of locus of control and job readiness posture are important because they introduce psychological traits to the factors that affect readiness to work.

Fraser (1978) reported that rehabilitation research had expanded beyond client-centered placement techniques to include factors related to counselor characteristics and agency factors. In the decade that followed Bitter's seminal work, the concept of work-readiness evolved from the notion of person-job fit to include distinctions between successfully functioning on a job and successfully obtaining a job, with the latter taking into consideration employer preferences and labor market conditions. Personal factors considered critical to work-readiness also evolved from having the appropriate skills and expressed desire to work to include other psychological factors such as self-esteem and

motivational issues. Similarly, environmental factors evolved from employer and labor market conditions to include counselor and agency factors. These early concepts laid the foundation for subsequent research in vocational rehabilitation and for the continued maturing of the field.

As reported by Vandergoot (1984), early research in vocational rehabilitation focused mainly on demonstrations of specific services directed at disability groups, but evolved to include descriptive studies on the placement process itself. Further advances in the field are evident from empirical studies evaluating the impact of specific techniques on outcomes. One such study was Roessler and Boone's (1982) evaluation of the validity of screening procedures for determining training success in a rehabilitation center. A common discrimination made in vocational evaluation facilities is that of clients' probability of completing a training program to prepare them for employment. As clients are referred to the rehabilitation center, evaluation teams make screening decisions regarding the vocational training potential of each individual. Roessler and Boone evaluated the validity of the screening criteria in a study of 77 clients enrolled at a rehabilitation center in Arkansas. Following a two week evaluation period involving interviews, psychological testing, and a series of work samples, clients admitted to the rehabilitation center were assigned by the evaluation team directly to vocational training or to a series of vocational training tryouts. Assignment was based on the evaluators' perceptions of the client's potential for training program success. The researchers hypothesized that no relationship exists between the evaluation recommendation and completion of vocational training in a rehabilitation center. This hypothesis was based on earlier studies examining the efficacy of assigning clients to direct training or long-term

evaluation (Cook, 1978). They also hypothesized that individuals referred directly to training groups would possess characteristics suggestive of greater employability (e.g., more positive work orientation, work related attitudes, and higher level of work adjustment) following the training.

Six weeks after program assignment, individuals in both groups were rated by instructors and counselors on rehabilitation outcomes and employment potential. No differences in completion or drop out rates were found between the two groups. The groups also did not differ in measures of work adjustment (e.g., amount of supervision required, realism of job goals, teamwork, acceptance of rules/authority, work tolerance, etc).

Consistent with the findings of Cook's earlier study, the results of this study suggest that in fact there was little validity for dividing people into groups of presumed higher and lower vocational training potential since there was little distinction in training program outcome for the two groups. However, the two groups differed in intelligence (i.e., "tryout" group included a higher percentage of individuals with mental retardation), lower self-confidence in their ability to succeed at work, acceptability of welfare as a form of self-support, and in perceived employer prejudice when they seek work. These factors appeared to be the distinguishing characteristics that may have manifest themselves in client statements or behaviors during the evaluation process that most likely influenced the diagnostic decisions of the evaluation team during the evaluation process. Though these factors did not appear to predict training program success, the authors conclude that such factors may have a significant effect on an individual's motivation to seek work, regardless of training program success. A noted limitation of this study was the small



sample size of the groups at follow-up (n=22-27), as well as the attrition rate of the groups from assignment to follow-up (38%-32%).

In a later study, Roessler and Bolton (1985) conducted semi-structured personal interviews with 57 former rehabilitation clients in Arkansas whose cases were closed either successfully (n=26) or unsuccessfully (n=28). Potential participants for the follow-up study were identified from computer files obtained from the Arkansas Rehabilitation Services and were stratified by type of disability (physical, intellectual, or emotional), type of services (field, office, workshop, of rehabilitation center) and sex. Of the 224 potential participants, 147 former clients were unable to be contacted, 20 declined, and 57 (25%) were interviewed. The researchers were interested in identifying factors that may bear on vocational success. Employed participants were asked a series of questions about their current jobs, their recent employment histories, and the types of problems that they encountered on the job. Unemployed participants were asked about their work histories since case closure, their recent attempts to find employment, and the obstacles that they thought were preventing them from working. All respondents were asked questions about their physical and emotional health, their views of the rehabilitation services, their perceptions of family support and encouragement, and their perceptions of employer's attitudes toward hiring disabled persons, and the amount of time spent on leisure activities. Study findings showed considerable consistency between the type of vocational training received and the type of work held at follow-up. However, most survey respondents voiced concerns about the quality of the vocational training services, including the counselor's monitoring of the service programs. Perceptions of employer-hiring attitudes, environmental factors such as moral support of family and friends, financial help, help

finding job leads, transportation, child care, housing, and teaching job-related skills were associated with employment outcomes. These findings are consistent with earlier literature stating the need to examine both personal as well as environmental factors when determining client employability. The limitations of this study include the sample size, the limited geographic area, and the retrospective assessment bias (i.e., those individuals who have had an employment success may perceive or recall their experiences more positively than those without an employment success).

In a more recent study, Thompson et al. (1995) examined some predictor variables for positive outcomes with a state vocational rehabilitation agency for 73 veterans referred by the Houston VA medical center. All veterans selected randomly had a history of substance abuse treatment. Thirty-six veterans had unsuccessful closure status, and thirty-seven veterans had successful closure designated by returning to work. Closure status as well as seven demographic variables were analyzed using Fisher Exact Test and the logistic regression procedure. Their findings suggest a number of factors that are relevant when assessing potential for successful rehabilitation with “provision of drug free housing,” “recent work history,” and “successful discharge of drug-treatment program” as significantly related ( $p < .05$ ) to an increased likelihood of returning to work.

As stated by Roessler and Bolton (1985), and as supported by this brief review of the rehabilitation literature, employment success was associated with multiple factors including (a) employability assets of the individual (e.g., abilities, skills, work histories, values, and habits); (b) elements of the work environment (e.g., job opportunities, employer attitudes, economic conditions, and aspects of the work task itself); and (c) features of the person’s social support system (e.g., family and peer encouragement).

Though there was considerable overlap in the conditions and factors impacting disabled populations served by vocational programs, substance abusing clients present unique circumstances that influence and distinguish their vocational needs from those of other disabled populations. In a study comparing vocational rehabilitation clients with substance abuse disabilities to clients with other disabilities Schwab and DiNitto (1993) found that substance abusers may have greater obstacles to employment. The study population consisted of all cases which had been accepted for rehabilitation services in the state of Texas during 1989-90. Of 26,248 cases approximately 20% had either a primary or secondary disability of substance abuse or dependence, and the remaining 21,027 had disabilities that did not include substance abuse or dependence.

When examining characteristic differences between the groups in the Texas study, the researchers found that more than three-quarters of both groups were white, but slightly more of the substance abusers were black. Fewer of the substance abusers than the “other disabilities” group were women and of Hispanic origin. Clients with other disabilities were more likely to be married and to report higher family monthly income (\$451) than substance abusers (\$206). Substance abusers were also employed for shorter periods of time (13.7 months) than the other disability group (17.9 months). Only 6.5% of substance abusers, but 20.4% of other clients received some type of publicly supported benefits at application, such as SSDI, SSI, or AFDC, and received it for longer periods of time (21 months versus 11 months respectively). Somewhat more substance abusers (69.3%) were disabled prior to the age of 22 than other clients (50.5%), and substance abusers were more likely than other clients to have a primary and secondary disability (73.1% and 42.5%, respectively). Substance abusers were also more likely to have a primary or

secondary disability that was severe, but for the other clients, more had disabilities that were catastrophic or functional. Substance abusers were more likely to reside in institutions such as halfway houses, and were substantially more likely to have criminal records (32.5%), than the other clients (3.9%).

When examining the characteristics of the services received by both substance abusers and other clients, the researchers found that the largest differences were in the number that received employment preparation or job readiness training (39.8% of substance abusers compared with 29.2% of other clients), and other “miscellaneous” training with 48.8% of substance abusers and 29.1% of other clients. This suggests that service providers perceive a greater need of job “preparation” services for substance abusers than other clients. Regarding the number of services, substance abusers received slightly more total services, but received them for smaller periods of time (10.2 months as compared with 16.12 months for other clients). Substance abusers also became employed faster than other clients (5.7 months versus 11.9 months from time of acceptance), and are slightly more likely to be supported by their own earnings at time of closure.

These findings support the assertion that substance abusers differ from other disability clients and present unique circumstances that impact their ability to become employed. Thus, the subsequent discussion will focus primarily on the issues related to the employability of substance abuse treatment clients, and will report on empirical studies in this field.

## **2.1 Employability of Substance Abuse Treatment Clients**

Though the need for vocational and other ancillary services has been well documented in the substance abuse treatment literature, empirical research examining

strategies or programs for rehabilitating substance abusers is limited. As such, the following discussion of the factors associated with vocational success of substance abusers relies heavily on evidence from observational studies. However, consistent with the vocational rehabilitation literature these reports show that personal as well as environmental factors are associated with employment outcomes. The following review is organized by key factors related to employability: vocational status/history, motivation/initiative, social support, ancillary needs, and barriers to employment.

### ***2.1.1 Vocational Status/History***

The literature documents that substance abuse treatment clients vary considerably in the types of vocational services they receive and their readiness for job placement. In an examination of a model vocational services program administered by the Connecticut Alcohol and Drug Abuse Commission in 1987, Schottenfield, Pascale, and Sokolowski (1992) describe the wide range of vocational problems of persons enrolled in substance abuse treatment when gaining and maintaining employment.

The main components of the model program included a vocational assessment and treatment planning; vocational counseling; work adjustment services; job-seeking skills; job development activities; and coordination with substance abuse treatment. The vocational assessment included appraisals of (a) the client's abilities, skills, and successes in school, training or work, (b) the client's interest in vocational goals, (c) the client's prior vocational and educational difficulties and failures, (d) the client's current motivation and interest in finding employment, and (e) the client's current problems gaining or maintaining employment or any barriers to employment.

The most common problems in gaining employment related to work-readiness included education, skills, and training deficits; erratic job history, poor interviewing and job seeking skills, emotional and psychological problems; and neuropsychological deficits. The authors report that some of the clients in the study had excellent work histories, were highly skilled, or had advanced graduate and professional training, and only developed specific employment problems late in the course of their substance abuse disorder. Other clients, however, had significant educational or skills deficits, while others lacked interpersonal and organizational skills necessary to sustain employment. The authors further note that regardless of their educational, social or work backgrounds, psychological or neuropsychological problems interfered with the vocational functioning of many the clients involved in this study.

Results from the first 2 years of this program showed that all (n=233) clients received vocational assessments and counseling: 132 clients were referred for education or skills training; 139 clients received job-seeking skill training and job development services; 120 of the 172 initially unemployed clients were successfully placed in either full or part-time employment; 37 clients left the program without gaining employment, and 106 of the 233 clients continued to be active in the vocational program, using vocational counseling, job development, or follow-up services. Findings from this study show that substance abuse treatment clients varied in the types of vocational services they received based on their work histories, training needs, and in their readiness to become employed.

In a later study evaluating the impact of a vocational program, Dennis et al., (1993) examined the vocational services provided to 249 methadone treatment clients across three treatment programs involved in a randomly controlled trial of a training and employment

program (TEP). Clients were randomly assigned to receive either the standard treatment services, or standard treatment plus vocational services from an in-house vocational specialist. The basic components of the vocational protocol included (a) a vocational needs assessment; (b) a formal vocational treatment plan; (c) access to a resource document located within the treatment program; (d) individualized counseling services from the resident vocational specialist; (e) referral to a job preparation/motivational workshop series provided by consultants at the treatment program; and (f) monetary assistance to pay for training stipends, work-related equipment, and any other ancillary needs identified by the client and counselor as necessary for vocational rehabilitation (e.g., child care, transportation costs).

The findings from the examination of short-term outcomes revealed that clients participating in the vocational program were significantly more likely across the three study sites to have received classes/educational services, referred to and received job skills services, received additional vocational assessments, and received job support services and financial assistance—confirming successful implementation of the program. As with the findings from Schottenfield, Pascale, and Sokolowski (1992), the authors concluded that clients involved in the study varied considerably in their levels of preparation for vocational services and employment. They report that the services received by the clients ranged from job development and placement, to education and training, to personal development and support services. They also concluded that the ‘timing’ of receiving these services varied with client vocational history and motivation to become vocationally involved or employed. That is, some of the study clients possessed the skills and work histories to immediately pursue employment with the support of the vocational counselor,

while other clients required further pre-vocational or training-related services before considering a job.

Findings from the TEP study were further examined by Karuntzos, Caddell, and Dennis (1994), who found differences in service needs and outcomes by gender. When comparing employment status at entry into the study, female clients (n=54) were less likely to be employed than male clients (n=59). Likewise, at admission into treatment female clients were less likely to be involved in any vocational activity such as seeking employment, and more likely to be in school or keeping house. When examining client self-report of services received at three months post the onset of the vocational program, male clients were more likely to have received job-placement and support services, and female clients were more likely to have received job-preparatory services (e.g., referred to classes). Service records also revealed that males received significantly more job-development and job-placement services. The authors of this study conclude that these data support the assertion that females and males enrolled in methadone treatment have different vocational profiles and different vocational needs, and consequently require different levels and types of vocational services.

The vocational programs described in the studies above were implemented in outpatient treatment modalities. It is important to note that as clients range in their readiness for vocational services, they also range in their severity of substance abuse disorder. For severely impaired clients, a residential setting such as a therapeutic community (TC) may be a more appropriate modality to treat their disorder. A common distinction between a TC and most outpatient treatment settings is the duration of the rehabilitation program and the residential requirement. Typical TC programs range from



18-24 months where clients reside at the treatment facility and participate in long-term substance abuse rehabilitation before they are discharged. In most cases, successful employment is an ultimate criterion for discharge, and participation in a structured vocational program is a treatment requirement. Given the duration of treatment and the residency requirement, TC vocational programs are typically implemented throughout the treatment process, and services are less individualized to the specific vocational histories of the client. However, the components of the vocational programs are similar to those implemented in outpatient settings, and vocational programs implemented in TC programs often serve as “model” programs for other treatment modalities (SAMHSA State Team Building Workshop, 1999).

Zavolta and Rogoff (1990), describe the vocational rehabilitation process in long-term, residential therapeutic community program in New York City. The program was divided into three phases: induction, primary treatment, and re-entry. During the induction phase, residents are frequently not yet emotionally or behaviorally prepared to begin formal vocational training. However, through performing job functions assigned to them in the program, residents begin to learn the basic behaviors expected of them in the “world of work.” After the three-month induction phase, residents enter the primary treatment phase for approximately 12 to 18 months. At this stage the key areas to the vocational rehabilitation process (in sequential order) include: (a) GED classes for residents without a high school degree (academically advanced residents serve as tutors for their peers); (b) academic and aptitude testing to identify interests, strengths, limitations, and aptitudes; (c) pre-vocational workshops to assist residents in developing one’s self concept in relation to career development, work attitudes, and career paths;

(d) development of a vocational treatment plan; (e) utilization of trade and business schools; (f) school adjustment groups; (g) pre-employment groups to teach interviewing and job-seeking strategies; and (h) coordination of vocational issues with clinical issues during primary treatment. The re-entry phase includes involvement with post-employment support groups, and continued integration of clinical issues with issues surrounding re-entry into the workforce. Though the length of the TC program and the requirement for all residents to complete the components in a sequential order distinguish this from the outpatient programs described above, the services provided to the clients are similar. Substance abuse treatment clients often require some level of (1) pre-vocational development to address self-esteem, motivational issues, and attitudes towards employment; (2) basic educational or skills training required for a job; (3) job-development services to prepare for job interviews and job-seeking; and (4) support from treatment and vocational counselors to adjust to vocational or work involvement.

### ***2.1.2 Motivation/Initiative***

Client motivation for treatment has long been regarded as an integral factor in the treatment of drug abuse. Several studies have described factors associated with client motivation and have concluded that motivation was multidimensional and includes client's perceptions of intrinsic and extrinsic pressures, readiness for change, and suitability of treatment programs (DeLeon and Jainchill, 1986; Prochaska and DiClemente, 1986; Miller, 1985; Simpson and Joe, 1993). When considering motivation for employment among substance abuse clients, the literature often describes client characteristics, perceptions, and work readiness as potential negative motivators for work (e.g., poor attitudes towards employment, poor problem solving skills, lack of ability to

work with others, low self-esteem, skill deficits, bad work experiences). That is, negative or problematic attitudes or circumstances lead to the lack of motivation to seek a job.

There is support for including the measures noted above as indicators of employability beyond the substance abuse literature. In a report on the burden of the psychiatrically disabled on the welfare system, Anthony and Jansen (1984) examined employment outcomes for chronically mentally ill clients. They concluded that “previous work experience was the best predictor of vocational success.” Examining the issue of added benefits as a de-motivator for vocational services, Walls (1982) analyzed the relationship between access to social welfare programs and the extent to which potential clients pursue vocational rehabilitation. Two-hundred vocational rehabilitation clients from the Baltimore and Charleston West Virginia area of varying ages, sex, education, and disabling condition were administered a benefits survey consisting of questions related to level and types of benefits received including: veteran’s benefits, benefits from previous employers, cash from government programs, housing, food, medical, education, vocational and free services. The findings in this study show that the more sources of benefits (including cash and in-kind benefits) available to clients, the less likely the successful vocational closure, in general, and the less likely the competitive labor placement. The predominant reasons for unsuccessful case closures as recorded by VR counselors were “refused services” and “failure to cooperate.” The negative incentive was the loss of benefits once the client was placed in and retains a job at minimum wage, Walls cautions against a causal interpretation of the findings since persons who are more seriously disadvantaged receive more benefits and are harder to rehabilitate. However,

this finding does suggest that cash benefits can serve as a negative factor in the vocational rehabilitation of clients, as well as a facilitative one.

In a more recent study, Braitman et al. (1995) compared barriers to employment for unemployed and employed clients in a case management program for psychiatrically impaired in Michigan. Out of a total of 782 active clients in the program, 610 were unemployed and 172 had a full or part-time job. During preliminary investigations, the researchers identified various obstacles to employment from a careful review of case records. These included (a) lack of transportation, (b) effects of illness, (c) fear of losing entitlements, (d) family support, (e) physical problems, (f) substance abuse, (g) lack of motivation (i.e., client does not follow through with links to employment and/or work related goals, (h) anxiety, and (i) non-compliance. The study case record reviewers prioritized the identified barriers to employment based upon its documented frequency and the reviewers' impression of its severity. Fear of losing entitlements, lack of family support, and problems with transportation were initially hypothesized as the main barriers to employment. However, the study findings showed that 'motivation' was the overall barrier to employment. In this study, components of motivation necessary to get and sustain a job included positive attitude, being at work on time, ability to tolerate criticism, ability to 'self-start', concentration, and vocational history. The authors concluded that a full assessment of a client's barriers and motivation must inform referrals to a traditional vocational program, and that "a more thorough assessment gives case managers better insight into client needs and the type of groundwork that is necessary to make a successful work referral."

### **2.1.3 Social Support**

Social support has been measured differently across substantive areas and from study to study, and certain aspects of social support crucial to one situation may not be important in others (Norbeck, Linsey, and Carrieri, 1981). However, social support is commonly defined as “the existence or availability of people who care and value others and can provide a constructive alternatives to the major causes of relapse to drug abuse” (Nurco, Kinlock, and Hanlon, 1994; Sarason, Levine, Basham,& Sarason, 1983).

Since the inception of the Rehabilitation Act of 1973 which authorized services to families “as necessary to the adjustment or rehabilitation of handicapped individuals” with regard to vocational rehabilitation, the family has received increased attention as a factor in the vocational rehabilitation process (Dew and Phillips, 1990). When considering the role of the spouse or family in the treatment of addictive behaviors, McCrady (1986) found a relatively small empirical literature in the areas of drug abuse, but did conclude that a trend emerged in considering the role of the spouse and family in the treatment of these types of problems. She also concluded that the empirical literature was more mixed than the enthusiastic clinical and theoretical literature in terms of the positive role of family-involved treatment. McCrady’s findings also conclude that spouses can provide support for changing certain addictive behaviors, but there was not convincing literature that demonstrates that clinician’s can change spouses’ behaviors to become supportive if they are not ready to do so. In an earlier study, Hater, Singh, and Simpson (1984) found that family and personal background variables were positively correlated with follow-up outcomes including drug use, employment, and criminality. The research team selected a stratified random sample of 1,174 opioid addicts from the Drug Abuse Reporting Program

(DARP) and conducted confidential follow-up interviews with the respondents. The outcome measures were examined with respect to three types of predictor variables, client personal background, family influences, and religion. The findings for family variables supported the hypothesis that greater family resources would be positively related to favorable outcomes, while family “disturbances” (e.g., conflicts) would be negatively related to favorable outcomes. Religion was positively correlated with general well-being, but did not account for unique variance in the outcome variables. Though the findings related to family influences support the stated hypothesis, the authors caution that this research was unable to address whether family variables such as support and family conflict contributed to follow-up outcomes or were a result of the outcome. The authors also suggest that further investigation incorporating reciprocal causation between family variables and outcomes are necessary to answer this question.

In a recent study on family dynamics among substance abusers, Brown, Kokin, Seraganian, and Shields (1995) explored gender differences among treatment clients and found that the presence of a spouse, generally perceived as an asset in treatment of the substance abuser, may have different implications for females than for males. In this study, 67 male and 18 female married substance abusers in treatment and their spouses were questioned on their substance use and psychological functioning. Study findings showed that male spouses of female clients had more symptoms of substance use and depression, less overall physical well-being, and were less inclined to help others or be involved with their children than female spouses of male clients.

Similarly, Goehl, Nunes, Quitkin, & Hilton (1993) assessed the association of social ties with substance abuse treatment outcomes. Their findings indicate that having

substance abusers in their social network threatened abstinence. The strongest predictor of illicit drug use at follow-up in methadone maintenance patients was the presence of drug-using significant others. These findings have important treatment implications. The authors conclude that “the positive effects of encouraging friends, family, and others to become involved in the recovery process must be weighed against the possible negative effects if significant others use substances” (p. 259).

In addition to family support, the literature also documents the need for support from vocational rehabilitation advocates within the treatment setting. In an analysis of a one-year vocational/educational (V/E) intervention study, Arella, Deren, Randell, & Brewington (1990b) found that “given the disproportionate vocational and educational deficits, many substance abusers in treatment are in dire need of advocates in order to overcome the many socioeconomic and cultural obstacles they face” (p.17). Additionally, the services of vocational case managers can greatly aid clients in securing employment and employment related services (Dennis, Karuntzos, and Rachal, 1992; Groah, Goodall, Kreutzer, Sherron, Wehman, 1990; ).

#### ***2.1.4 Barriers to Employment***

The discussion of client motivation earlier in this report introduced the concept of barriers to vocational success. In an often cited article on obstacles to the utilization of vocational services for drug users, Brewington, Arella, Deren, and Randell (1987) present a comprehensive review of the literature documenting potential client-, program-, and societal-level obstacles relevant to drug treatment clients. Client-level obstacles include financial disincentives (i.e., current monetary assistance for food, housing, medical and other benefits); psychological factors (e.g., mental health status, conventional attitudes

towards employment, problem solving skills); and other client characteristics (e.g., work and educational histories, illegal activity, alcohol consumption). Program-level obstacles include treatment philosophies and program priorities (though this varies considerably across modalities); staff development and coordination of vocational services; choice of strategy (e.g., centralized job placement units, in-house vocational specialists, employment-related workshops; informal networking); strategy issues related to clients involved with the criminal justice system (e.g., preparing clients to deal with interview questions regarding their criminal backgrounds); and strategy information dissemination (e.g., incorporating innovative treatment strategies into their programs). External/Societal obstacles include the special needs of women (e.g., pattern of treatment was focused on males, stereotypes of women as homemakers), and employer issues (e.g., biases against hiring substance abuse clients).

Client-program interactions pose another set of obstacles, according to Brewington et al. (1987). These include discrepant perceptions of vocational issues (e.g., client considers their disabilities as main obstacles while counselors consider unfavorable job markets, or lack of client motivation); and joint commitment to goals of the treatment.

Renwick and Krywonis (1992) and Karuntzos et al. (1995) further delineate the obstacles relevant to substance abuse treatment clients and document a fourth service system-level category of obstacles including, ill-defined eligibility requirements, inadequate performance criteria for service organizations, timing of obtaining services, and funding gaps between services and/or employment. Renwick and Krywonis (1992) also report that substance abusers typically have a poor conception of self and a weak sense of self esteem. Further, they perceive that they have less internal control over their



own lives and outcomes, compared to individuals who are not substance-dependent. Other personal characteristics associated with employment and job retention include tendencies to demand immediate gratification, low frustration tolerance, and impatience. The authors report that the interaction of these personal factors with circumstances intrinsic to the rehabilitation service system have a deleterious effect on the individual's desire to secure and retain a job.

In a follow-up study, Arella et al. (1990a) conducted a systematic organizational analysis of four methadone treatment clinics in New York City. The focus of the study was to identify formal and informal arrangements that facilitate or hinder effective utilization of vocational rehabilitation services in the treatment system. The study included 43 face-to-face staff interviews, 50 anonymous staff surveys, and 16 case file reviews. The major structural obstacles identified were (a) client vocational/educational needs are typically given lower priority compared with other service needs, (b) monitoring and supervision in relation to vocational/educational service utilization was generally lacking, (c) the prevalence of critical deficits in counselor's vocational rehabilitation skills (e.g., assessment and case load management) relate to inadequate and/or inappropriate referral to community-based vocational agencies, and (d) fiscal disincentives both for the program and the client.

In an examination of the client self-report data from the TEP study, French, Dennis, McDougal, Karantzou, & Hubbard (1992) supported the earlier findings of Brewington et al. (1987), and documented that commonly reported barriers to receiving training or employment from study participants included continued illicit drug use, criminal record, illegal activities, negative leisure activities, interpersonal skills, language

barriers, family problems, work attitude, health problems, appearance, racial or gender discrimination, medication other than methadone, and the current economy.

Schottenfield, Pascale, and Sokolowski (1992) reported similar client problems related to gaining and maintaining employment in the vocational services program administered by the Connecticut Alcohol and Drug Abuse Commission discussed earlier. The most common problems were lack of transportation; competing responsibilities such as child and family care; and other barriers such as criminal records, poor health, and discrimination in hiring based on history of substance abuse, criminal record, or ethnic or minority backgrounds.

### ***2.1.5 Ancillary Needs***

Substance abusers often require additional support to overcome barriers to employment. In the treatment literature, these services or tangible items are often referred to as “ancillary needs.” These needs are distinguished from barriers in that “needs” are supportive services, resources, or other tangible items that an individual may require to secure a job (e.g., child care, transportation), while “barriers” are circumstances or problems that block the successful transition to employment, e.g., criminal records, poor appearance, employer biases, psychological factors (Karuntzos, Caddell, and Dennis, 1994). Dennis et al. (1993) provide a listing of the supportive or ancillary services received by clients enrolled in the TEP study. These services included transportation, childcare driving privileges, special work or training equipment, food and clothing allowances, medical care/eye glasses, legal assistance, registration fees and educational materials, and professional certification fees.

In an earlier study of methadone client interest in ancillary services, Hargreaves (1980) surveyed treatment clients in three methadone programs that lacked well developed, systematic ancillary services. All three programs, however, had at least one part-time paraprofessional vocational rehabilitation counselor who worked with clients interested in finding work. In this study, ancillary services were defined as services or programs desired by the clients that were beyond the standard methadone treatment. Of the 661 in these programs, 269 agreed to complete a 19-item inventory of their interest in ancillary services. The top four rated ancillary activities, with at least 50% of the participants expressing strong interest, were information on how to address legal problems, vocational assistance in finding a job, specialized classes or tutoring to help with basic education or job training, and short-term, part-time paid jobs to gain some actual work experience. The remaining 14 activities were non-vocationally related with from 22% to 48% expressing strong interest in these activities. Non-vocationally related activities requested by at least 30% of the respondents included client input on improving treatment services, groups on understanding how the body works, relaxation techniques, resource guide to the city, individual counseling, current themes in psychology, fun and games, and sports programs. This study did not assess client desires for ancillary services that are directly related to vocational rehabilitation; however, study findings documented that substance abuse treatment clients do express interest in services related to finding a job or enrolling in training.

## **2.2 Summary of Literature Review**

Variables associated with vocational success of substance abuse treatment clients have been well documented. As with many underemployed populations noted in the

vocational rehabilitation literature, substance abusers vary considerably in their employment histories and training; often lack the necessary support mechanisms that enable them to find and keep a job; have varying levels of motivation or initiative for vocational rehabilitation; often lack the financial resources for child care, transportation, supplies, or equipment that may be required for a particular job; and often face multiple barriers to getting and holding a job, including criminal records, illicit drug use, health problems, and poor work attitudes.

The literature provides ample evidence that vocational evaluations and vocational assessment tools used to determine the vocational needs of substance abusers should include measures relevant to vocational success noted in the summary above. The following discussion will describe the TEP study and the approach taken by the TEP researchers to develop the Vocational Readiness Screener (VRS) building on the information provided in this review.

### **3.0 Background of the TEP Study**

As noted in the introduction, the National Institute on Drug Abuse (NIDA) awarded a multiyear grant to the Research Triangle Institute (RTI) in 1990 to develop a training and employment program (TEP) for methadone treatment clients. The study included a 2-year pilot phase followed by a 3-year randomized field trial. The main purpose of the TEP study was to develop and evaluate a vocational protocol that can be used by vocational clinicians and substance abuse treatment program counselors to engage their clients in vocational activity. As part of the pilot phase of this study, the researchers developed a screening tool that was used during the study to collect pre-and post intervention data, and that also has the potential to serve as a clinical tool to assist in the vocational rehabilitation process. This study examines the framework on which this instrument was based and tests the construct reliability and validity of the underlying factors across time. The remainder of this section presents the methodology used in the TEP study and the steps taken to develop the VRS.

#### **3.1 Participating Treatment Programs**

The four methadone treatment programs originally participating in the TEP study were selected to include a range of organizational structures, client demographic mixes, labor markets, and levels of existing vocational and employment resources in the local community. The program in Buffalo, NY was a hospital-based program operated by the Sisters of Charity Hospital. The program in Pittsburgh, PA was a free-standing, non-profit program operated by PBA Inc., The Second Step. The Program in Santa Clara County, San Jose, was located in three freestanding clinics operated by the county's Bureau of

Drugs and Alcohol (part of the Health Department). The fourth program originally participating in the TEP pilot study was located in Milwaukee and operated by the Milwaukee County Mental Health Complex until it was closed on January 1, 1993. The data collected from the Buffalo and Pittsburgh treatment programs is used in the current study.

“Standard treatment” in the two participating programs included development of treatment plans within 15 to 30 days after admission, two to three 30 to 40 minute drug use abstinence counseling sessions with each client per month, and monthly urine tests conducted randomly. Clients in the program in Buffalo also participated in one to four 90 minute group counseling sessions per week. In methadone dosage, both programs averaged 45 to 60 mg/day during the pilot study, going up to 80 mg/day on a case-by-case basis. Both programs provided take home medication privileges to fewer than 10% of their clients, with the Pittsburgh program providing take home privileges only for those clients who were employed full-time and had a conflict in scheduling.

### **3.2 TEP Study Subjects**

To get a range of clients in terms of vocational readiness and motivation to participate in the study, clients were recruited by two primary methods: (a) each counselor was asked to recommend two clients from his or her current caseload who would benefit from participating in the TEP protocol; and (b) a random sample of all current remaining clients enrolled in treatment at the time of random selection.

Within each sample/site block, clients were randomly assigned to receive either standard methadone treatment (STD) or standard treatment plus the TEP protocol (TEP).

All clients participating in the study at these two sites completed the VRS prior to random assignment to study group.

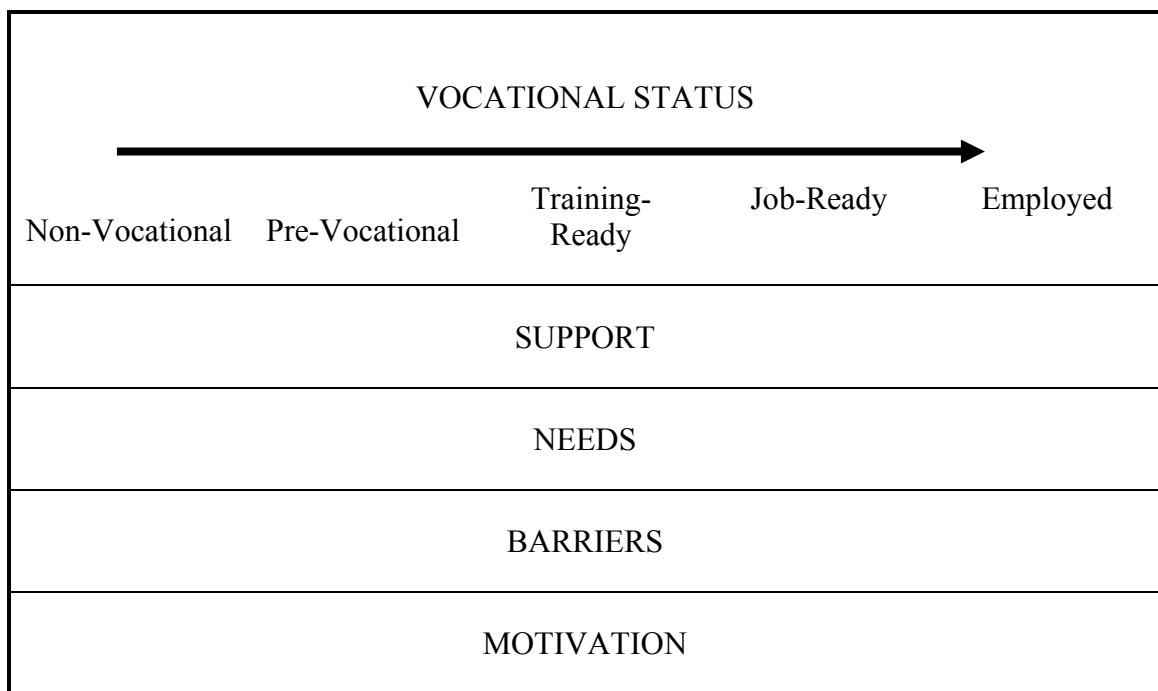
### **3.3 Data Collection Procedures**

Independent professional interviewers working for RTI approached clients selected for the study and solicited their interest and consent to participate. Those who consented underwent a self-report clinical assessment battery at the drug treatment facility, and individual face-to-face interviews administering the TEP intake and 3 month follow-up questionnaires. Respondents were paid approximately \$10 per hour for participating in the interviews which ranged from 90 to 120 minutes in duration depending on problem severity. All data were collected under a Federal Certificate of Confidentiality and under the supervision of RTI's Committee for the Protection of Human Subjects. For clients assigned to the TEP group, the vocational specialists recorded services they provided to each client on a daily basis. The logs were reviewed with the specialists on a weekly basis by the RTI vocational coordinator to assure consistency across sites in interpretation of the coding system.

The instrumentation used in the TEP study included: a baseline and retest assessment battery of standardized and unstandardized instruments (including the VRS), 3-month follow-up interviews using the Individual Assessment Profile (IAP), vocational service logs, and clinical record abstractions. To determine the employment history, baseline employment status, and interest in vocational services at intake, clients were interviewed prior to randomization. Follow-up with the 3-month questionnaire was attempted regardless of TEP assignment or methadone treatment status. Data collected using the VRS is used in this study.

### 3.4 Constructing the Vocational Readiness Screener

Prior to constructing the VRS, the TEP research team examined the vocational rehabilitation literature and identified the key variables related to employability. As noted in the literature review, these included vocational status, level of support, level of motivation, ancillary needs, and barriers to services (see Figure 3.1 taken from Karuntzos et al., 1995). The researchers also identified models and other instruments documented as contributing to the vocational diagnosis of hard to serve populations (Malamud and McCrory, 1988, Power, 1991).



**Figure 3.1 TEP Study Employability Framework**

A list of measures described by Power that have been developed over the past 25 years and used in the vocational assessment process include the (a) *Functional Evaluation*



*Form* (Power, 1991) which includes general background and general functioning information. This form would be particularly useful for assessing the functioning of physically challenged individuals; (b) the *Employability Evaluation Form* (Power, University of Maryland) which is a checklist that covers work skills, transportation, child care, education, health, family, appearance, dependability, attitude toward work, initiative, work habits, relocation, work interests, learning ability, and communication. With this tool, the counselor fills out the form based on client observation and assessment; (c) the *Employability Information Sheet* (Bureau of Vocational Rehabilitation, OH) which collects basic information for placing clients in jobs again through counselor documentation; (d) the *Service Outcome Measurement Form* (Department of Institutions, Social, and Rehabilitative Services, Oklahoma City, OK) which assesses a person's employability after rehabilitation services and consists of items rating five broad areas: economic/vocational status, physical functioning, adjustment to disability, social competency, and difficulty rehabilitating a particular individual. This form was also completed by the counselor or case manager through client observation and was particularly relevant to a clients requiring physical rehabilitation; (e) the *Job Readiness Scale* (Madison Opportunity Center, Madison, WI) which assesses a client's job-readiness on a continuum of placement, preplacement, work adjustment, work activities, and activities of daily living skills. The placement levels are attributed by the client's attendance, punctuality, relationship with supervisors, relationship with co-workers, and independent functional abilities. Staff at the rehabilitation center assess each client at the end of a three month period and make recommendations for adjusting the placement rating based on client performance. This assessment process begins by placing a client into an

employment setting and making adjustments based on performance; (f) the *Job Readiness Test* (Bureau of Vocational Rehabilitation, Lima OH) which is a self report test that asks the client to respond yes or no to job readiness statements concerned with such things as employment applications and job interview; (g) the *Readiness Planning Checklists I and II* (David Vandergoot, Human Resources Center, Albertson, NY) which provide rehabilitation professionals with a systematic case management tool for monitoring a client's job-readiness using a four step process each relating to a client's rehabilitation process. The counselor conducts a general assessment and identifies readiness factors which are rated as acceptable, unacceptable, and not applicable. These forms require that the vocational counselor identifies and documents the readiness factors based on the individual client's needs. These checklist are considered mutually written agreements between the counselor and client to engender ownership by the client.

It was noted by the TEP researchers, however, that most of these instruments were either not available in the public domain or no longer available through the referring organization. It is highly likely that the ownership of these instruments resides with the lead developers and are not readily available to the general public.

Two additional assessment instruments that were consulted prior to developing the VRS were the Functional Assessment Instrument (FAI; and it's companion, the self-report Personal Capacities Questionnaire (PCQ; Crewe and Athelstan, 1984), and the Individualized Assessment Profile (IAP) that was developed as part of NIDA's Drug Abuse Treatment Outcome study (DATOS; Hubbard and Jordan, 1989) and draws extensively from the Treatment Outcome Prospective Study (TOPS; Hubbard et al., 1989) and the Addiction Severity Index (McLellan et al., 1985). The FAI is a published

instrument and a test manual is available. The IAP is an unpublished instrument developed by RTI researchers to assess the needs of substance abuse treatment clients. The format and structure of the first version of the VRS was modeled from the Personal Capacities Questionnaire.

The PCQ (and FAI) is widely used in the rehabilitation field to assess the vocationally relevant strengths and limitations of physically or psychiatrically disabled populations. The PCQ consists of six factors that assess vocational strengths and limitations: (1) adaptive behavior, (2) motor functioning, (3) cognitive functioning, (4) physical condition, (5) spoken communication, (6) vocational qualifications. The items assessing motor functioning and physical conditions focused primarily on persons with physical disabilities (e.g., agility, hand coordination). The items assessing cognitive functioning focused primarily on mental capacity (e.g., ability to grasp concepts or follow directions). Though substance abusers range in their physical and mental capacities, the items that assess these factors do not typically apply to this population. However, the items comprising adaptive behavior (e.g., behavior congruence with work goals, judgment, effective interaction, work habits), spoken communication (e.g., ability to speak and communicate effectively), and vocational qualifications (e.g., acceptability to employers, work history, economic disincentives, personal attractiveness, access to job opportunities, skills) were considered relevant to a substance abuse treatment population based on vocational counselor input and researcher experience with this population.

Though a variety of vocational assessment tools have been available and often used by vocational clinicians and treatment providers, many of these instruments generally require training and expertise in observing specific behaviors considered to be indicative

of vocational functioning; are typically relevant for persons ready to seek a job or enroll in training (i.e., primarily measured work skills, interests, and abilities); and are often costly and difficult to interpret. A common dilemma for treatment counselors untrained in the vocational assessment process is to determine efficiently whether a treatment client is ready to begin the job search process, or even an appropriate candidate to undergo a full vocational battery, which is often costly, time consuming, and potentially counterproductive. The intent of the VRS is to serve as the “starting point” in the assessment process. Power (1991) refers to screening tools such as the VRS as ‘standardized measures to assess employability’ or to explore the client’s *potential* for employment.

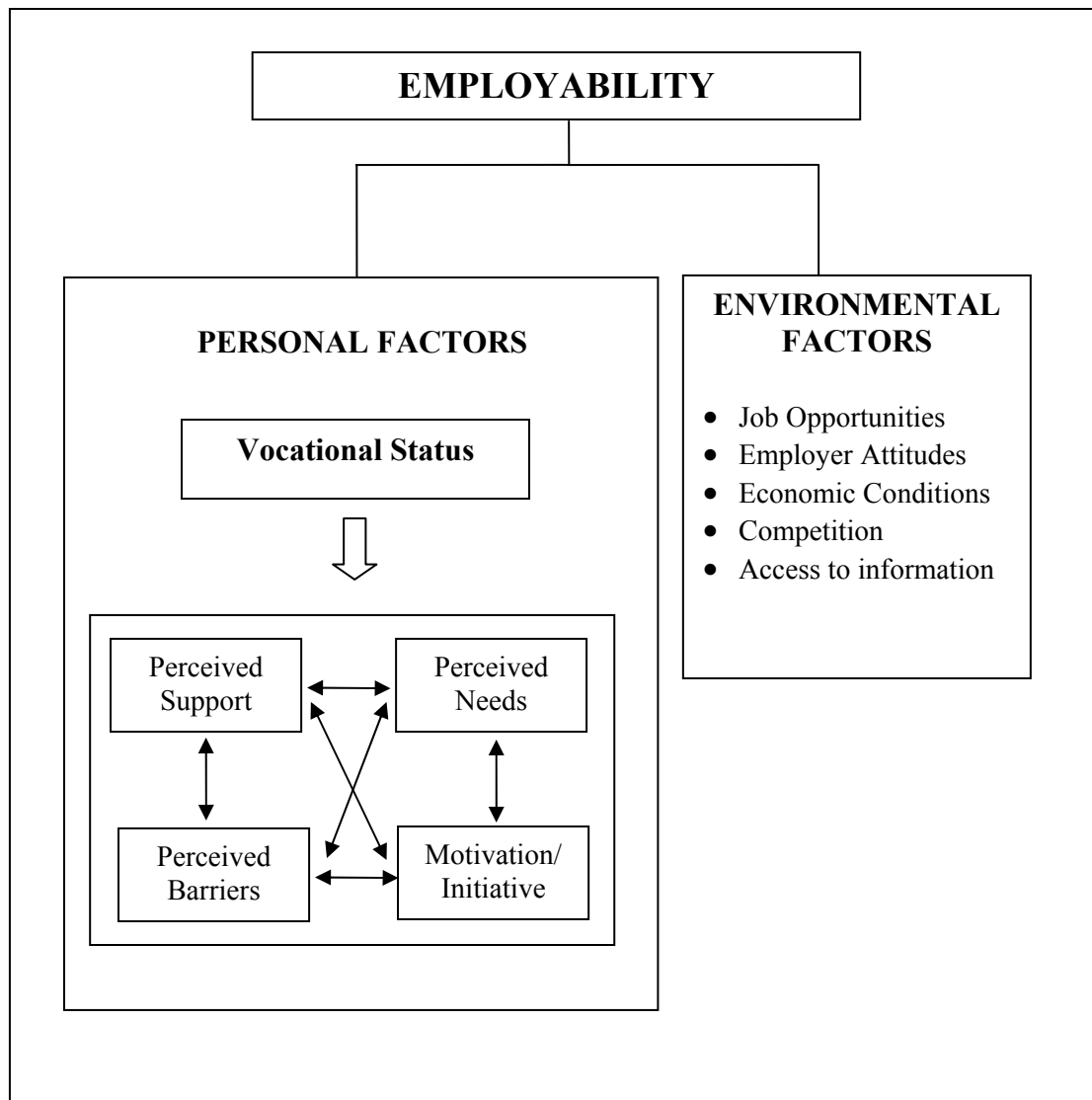
A pilot version of the VRS was developed and the reading level was assessed and revised to a 6th grade level by a professional editor. The instrument was then distributed to vocational clinicians and vocational rehabilitation assessment professionals for review and feedback as a preliminary measure of content and face validity.

Pilot data were collected on a sample of 248 TEP clients. Preliminary analyses of these data revealed a variety of distribution problems that seemed to be related to ambiguity and/or complexity in some of the questions. To address these problems, the VRS was revised to eliminate problems with specific items, and the response options were converted from Thurstone/Guttman-type scales to Likert-type scales for easier interpretation and reporting. The overall structure and content of the instrument, however, remained largely intact. The version used to gather data during the main trial was the final version of the VRS used in the TEP study, and is shown in *Appendix A*.

#### 4.0 Employability Framework

The proposed employability conceptual framework as shown in Figure 4.1 builds on the TEP study framework and incorporates external factors included in Power's and others' models for assessing vocational functioning, thereby illustrates the relationship between variables in the model. Employability as an overarching construct can be decomposed into two subordinate (lower level) constructs: (1) personal factors and (2) environmental factors. The combination of personal and environmental factors comprise employability. *Personal factors* can be further sub-divided into vocational status, support systems, perceived needs, perceived barriers, and motivation for work. *Environmental factors* include general economic conditions, employer biases/stereotypes access to employment opportunities, and the availability of jobs. Though environmental factors in combination with personal factors influence employability, environmental factors are often out of the 'control' of the individual and therefore are not measured in this study. However, they jointly define a context in which the study was conducted.

The relationships between the personal factors in the employability framework present two testable hypotheses that can contribute to the validity of the employability construct—(1) employability is a multidimensional construct with multiple underlying factors, and (2) vocational status moderates the relationship among other personal factors of employability. Understanding these will provide vocational clinicians with a framework for triaging vocational needs, and for prioritizing resources based on need. Each hypothesis will be discussed in turn.



**Figure 4.1 Conceptual Framework for Employability**

**Hypothesis 1: Employability is a multidimensional construct with multiple underlying factors.**

To test the hypothesis that employability is a multidimensional construct with multiple underlying variables, the relationships among the personal factors in the framework are examined. As stated above, personal factors include vocational status, support systems, perceived needs, perceived barriers, and motivation for work. Support systems include people in an individual's life who can affect that individual's perceptions of self worth, interests, desires, and willingness to seek training or employment. Support can be provided in a variety of ways, including encouragement, direct assistance with vocational activities, or monetary contributions to support vocational attainment. As documented in the literature, influential people can provide positive support or negative support (discouragement) for vocational rehabilitation. Needs are defined as tangible items an individual may require or want to get into (or stay in) a job, school, or training. Barriers are defined as items, circumstances, behaviors, or attitudes that serve as obstacles for getting into (or staying in) a job, school, or training. The interaction between perceived support, barriers, and needs required to get a job or enrolling in school or training often influences the individual's motivation or level of activity related to finding a job.

As illustrated in Figure 4.1, perceived support, needs, barriers and motivation have multi-directional relationships. That is, each sub-factor influences the other sub-factor in the model, and in combination, these factors comprise a central element of employability. As further depicted in Figure 4.1, vocational status directly impacts the relations between

sub-factors. This moderating influence between vocational status and the other personal factors is the subject of the second study hypothesis.

**Hypothesis 2: Vocational status moderates the other personal factors of employability**

The second study hypothesis builds on the first and tests the assumption that the composition of each sub-factor, and the relationship between the sub-factors is moderated by vocational status. That is, the measures that define each sub-factor and the strength of the association between the sub-factors differ based on vocational status. Measures of vocational status include work history, basic communication skills, educational attainment, interest in vocational rehabilitation, and disability status. For this study, vocational status is operationalized by using the following algorithm:

- i. If the client is currently employed full or part time, then s/he is consider “employed”; else,
- ii. If the client (a) can minimally speak and read in English, AND (b) have either a high school degree, GED, training certificate, union card or 5+ years of work experience, AND (c) wants to get a full-time job, or part-time job, then s/he is considered “job- ready”; else,
- iii. If the client is either (a) in school or a training program, OR (b) can speak and read in English AND (c) wants to receive help getting into a GED program, college/adult education, skills training, job development, or on-the-job training, then s/he is considered “training ready” ; else,
- iv. If the client is (a) currently disabled or unable to work OR (b) a full-time homemaker, OR (c) retired, then s/he is considered “non-vocational”; else
- v. If the client is not “employed,” “job ready,” “training-ready,” or “non vocational,” then s/he is *defaulted* to “pre-vocational” status.



In practice, vocational counselors often tailor recommendations for vocational activity based on an individual's vocational status. For example, clients who express an interest in getting a job, have a good work history and/or training, and are capable of working are considered good candidates for job search activities. Clients who are interested in getting a job, but have a skill deficit are usually referred to training or educational programs. Clients who are functionally disabled are typically referred to a treatment program or supported work program. Clients who are capable of working, but lack the motivation or interest to become employed (or seek training) are typically candidates for further vocational counseling or motivational workshops. As such, clients more advanced on the vocational status continuum are more likely to become (or remain) employed. However, understanding and accounting for the other factors in the employability model, in conjunction with vocational status, better prepares the client for vocational success.

A final assumption of the model is that employability is not a static state. As noted by Gueron (1996), individual circumstances (e.g., family crisis, sobriety), self-perceptions, and environmental conditions that influence employability change. Employability should be assessed at each stage in the vocational status process. As individuals become vocationally involved through their treatment or community programs, or as their individual circumstances change, the elements defining their employability may shift. It is conceivable that as individuals move along the continuum of vocational status from a training ready state to a job-ready state, their perceived ancillary needs may become more substantial (e.g., need for child care, or transportation), or their perceived barriers may be

lessened. All aspects of employability should be re-assessed at each stage of the vocational rehabilitation process.

The specific methodologies for testing the study hypotheses are detailed in the next chapter.

## 5.0 Methods

The primary objective of this research is to examine the framework on which the Vocational Readiness Screener (VRS) is based by testing the assumptions that employability is comprised of a rational network of rehabilitation constructs and that vocational status serves as a moderator of employability. The rehabilitation constructs investigated in this study are based on the employability framework described in Chapter 4. These are (1) *perceived support*, (2) *perceived needs*, (3) *perceived barriers*, (4) *job-finding activities*, and (5) *desire for vocational assistance*. As depicted in the conceptual framework (Figure 4.1), the latter two factors are related to the overarching construct of work motivation. The analysis strategy examines the relationship of these latent factors to test the study assumptions.

### 5.1 Analysis Strategy

The study is comprised of two distinct sub-studies: (1) a construct reliability study using structural analysis to determine factor stability and composite reliability across time, and (2) a construct validity study using structural model comparisons to test for group differences between job-ready and non job-ready groups. These sub-studies follow the recommended sequence that tests of measurement invariance should precede tests of structural invariance (Vandenberg & Lance, 2000). This recommended approach is based on Anderson and Gerbing's (1988) argument that "one needs to understand what one is measuring before testing associations among what is measured" (as cited in Vandenberg, 2000 p. 18). To test the moderator effect of vocational status on employability, the null hypothesis is no differences between group structural models. Therefore, for this study,

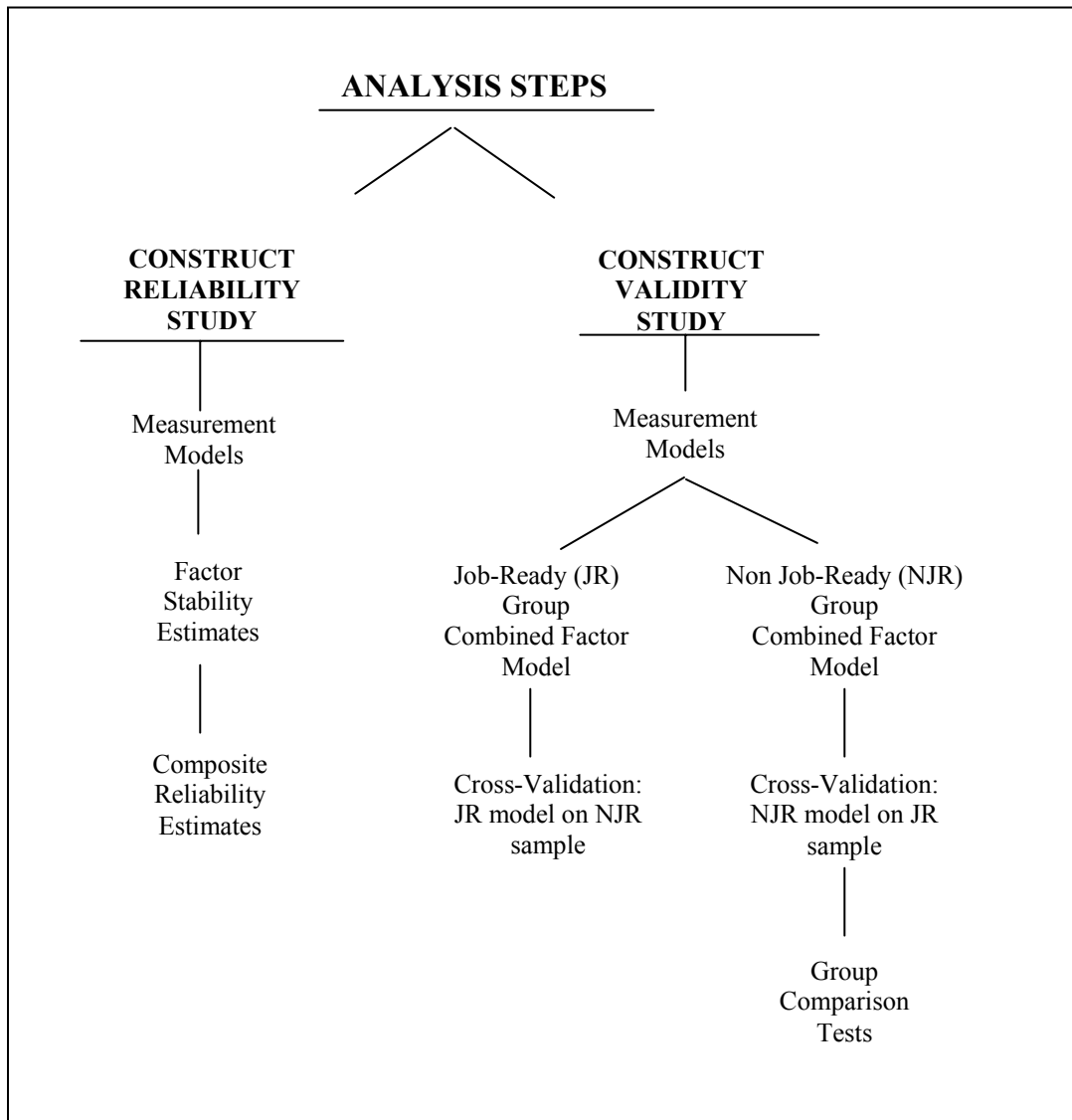
findings of group invariance constitutes the null hypothesis of no group differences, thus group invariance is equivalent to acceptance of the null hypothesis.

For the reliability study, measurement invariance is examined by first developing measurement models for each specified latent factor and testing for metric invariance (i.e., factor loadings are invariant across groups). This test is followed by structural tests of factor invariance (i.e., factor stability and composite reliability), which builds on the measurement models developed in step one.

For the construct validity study, measurement invariance is tested by developing group specific measurement models for each latent factor and examining configural invariance between groups (i.e., variable pattern is invariant across groups). This test is followed by tests of structural factor covariance matrix invariance and inter-factor correlation invariance. The structural models are comprised of the measurement models developed in the first step of this sub-study.

To develop the measurement models for each sub-study, a confirmatory factor analytic strategy is used that produces models that demonstrated an acceptable fit to the data. The measurement models describe the nature of the relationship between the latent factors and the manifest (or indicator) variables that measure each of the underlying factors. The first four factors are examined in the construct reliability study and the fifth factor is incorporated into the construct validity study. The procedures used for developing, evaluating and modifying the measurement models are similar for both the reliability and the validity studies. These procedures, followed by the steps used for each sub-study building on the measurement models, are described in the next section.

Figure 5.1 illustrates the steps included in each sub-study.



**Figure 5.1 Study Analysis Steps**

## 5.2 Developing the Measurement Models

A confirmatory factor analytic approach (CFA) using SAS Proc Calis (SAS Institute, 1990) is used to confirm the original rational assignments of VRS items to constructs. For those instances where the initial rational assignments is not confirmed, a tetrad analysis is performed using the Tetrad II program developed by Glymour, Scheines, Spirtes, & Kelly (1987). The tetrad analysis serves to purify the measurement model by identifying a subset of items that constitute a unidimensional measurement model where all requisite tetrads statistically vanish. This procedure is used to develop all measurement models for the reliability and the construct validity studies. The original VRS item factor assignments and descriptive psychometric properties are listed for each factor in Tables 5.1 through 5.5.

### 5.2.1 Evaluating Measurement Model Fit

The SAS Proc Calis CFA modeling procedures yield several fit indices that assess the extent to which each specified model fits the data. These include *absolute* model fit indices which gauge the “closeness” of the sample estimate to the population parameters; *incremental or comparative* fit indices which quantify the degree of improvement in fit between the implied model and the more restricted null model; and *component* fit measures which evaluate the fit of specific model elements (Bollen, 1989; Hatcher, 1994; Hoyle, 2000). Several of these types of indices are produced in the standard Proc Calis output. For this study, model fit is reported using the (a) Goodness of fit index, (b) Chi-square test, (c) Root mean square error of approximation (RMSEA), (d) Bentler’s (1990) Comparative Fit index, and (e) Bollen’s (1989) Nonnormed Index Delta<sup>2</sup>.

**Table 5.1 Indicator Variables for Work Support Factor**

Factor 1 Support for Work (6 items)		Item-total Correlation (time 1)	Item-total Correlation (time 2)
Item No.	Label	$\alpha = .70$	$\alpha = .71$
Q57	Spouse	.38	.38
Q58	Other Family	.27	.25
Q59	Friends	.27	.35
Q60	Treatment Counselor in Program	.56	.58
Q62	Vocational Counselor in Program	.44	.56
Q64	Other Non-Treatment Staff	.67	.53

**Table 5.2 Indicator Variables for Perceived Needs Factor**

Factor 2 Ancillary Needs (11 items)		Item-total Correlation (time 1)	Item-total Correlation (time 2)
Item No.	Label	$\alpha = .85$	$\alpha = .88$
Q70	Transportation	.57	.60
Q71	Child Care	.41	.38
Q72	Medical Needs	.39	.54
Q73	Food	.74	.70
Q74	Clothing	.78	.75
Q75	Housing	.59	.76
Q76	Work Equipment	.47	.54
Q77	Legal Assistance	.42	.42
Q78	Driver's License	.32	.45
Q79	Money	.50	.54
Q80	Family Needs	.72	.73

**Table 5.3 Indicator Variables for Perceived Barriers Factor**

Factor 3 Barriers (14 items)		Item-total Correlation (time 1)	Item-total Correlation (time 2)
Item No.	Label	$\alpha = .85$	$\alpha = .84$
Q82	Drug Use	.59	.31
Q83	Criminal Record	.54	.55
Q84	Methadone Treatment	.44	.37
Q85	Illegal Activities	.47	.49
Q86	Leisure Activities	.55	.40
Q87	General Assistance	.47	.50
Q88	Current Economy	.58	.44
Q89	Interpersonal Skills	.59	.62
Q90	Family Problems	.56	.62
Q91	Work Attitude	.55	.56
Q92	Discrimination	.36	.40
Q93	Appearance	.64	.64
Q94	Medications	.38	.41
Q95	Health Problems	.26	.21



**Table 5.4 Indicator Variables for Job-Finding Activity (motivation) Factor**

Factor 4 Job Finding Activity (9 items)		Item-total Correlation (time 1)	Item-total Correlation (time 2)
Item No.	Label	$\alpha = .84$	$\alpha = .87$
Q26	Read want ads	.48	.46
Q27	Talked with tx counselor about work	.31	.41
Q28	Talked with voc counselor about work	.35	.41
Q29	Filled out job application	.76	.78
Q30	Work on resume	.70	.66
Q31	Interviewed for a job	.78	.75
Q32	Sent out resume	.66	.79
Q33	Called someone about a job	.72	.74
Q34	Completed job interest/abilities assessment	.32	.42

**Table 5.5 Indicator Variables for Vocational Assistance (motivation) Factor**

Factor 5 Wants Vocational Assistance (5 items)		Item-total Correlation (time 1)	Item-total Correlation (time 2)
Item No.	Label	$\alpha = .81$	$\alpha = .82$
Q42	Getting a full-time job	.60	.69
Q43	Getting a part-time job	.63	.57
Q44	Getting a job with benefits	.77	.65
Q46	Managing money	.39	.40
Q47	Picking a new career	.59	.73

### ***5.2.1.1 Absolute Fit Indices***

The chi-square test is a widely used index in path analysis and provides a test of the null hypothesis that the specified model fits the data—or that the model covariance matrix matches the sample covariance matrix with zeroes in the residual matrix (Bollen, 1989). As the null hypothesis in path analysis is that the model is not significantly different from the observed data, a small chi-square value with a corresponding high p-value is desirable. Because the chi-square is influenced by large sample sizes, a rule of thumb used when evaluating the chi-square is to determine the ratio between the chi-square value and its degrees of freedom. A ratio of 2:1 is considered a good fit (Hatcher, 1994). Because the chi-square is sensitive to sample size, it is recommended that this test be supplemented with other stand-alone goodness of fit indices (Bollen, 1989; Hatcher, 1994; Hoyle, 2000). Two additional indices recommended by Hoyle (2000) are the Goodness of Fit Index (GFI; Joreskog and Sorbom, 1981), and the Root Mean Square Error of Approximation (RMSEA; Steiger, 1990). The GFI assesses the relative variance and covariances in the sample; however, is also sensitive to sample size. The RMSEA index measures the degree of discrepancy between the observed and implied covariance matrices per degree of freedom; thus, is sensitive to model complexity. Both of these estimates range from zero to one. Estimates near .05 (or less) are considered a close fit, .08 a marginal or mediocre fit, and .10 a poor fit (Hoyle, 2000).

### ***5.2.1.2 Incremental Fit Indices***

Of the available incremental fit indices, Bentler's (1990) comparative fit index (CFI) provides an accurate assessment of fit irrespective of sample size (Hatcher, 1994). Values of the CFI lie between 0 and 1 with .9 or greater indicating good fit. Bollen's

Delta<sup>2</sup> index takes into consideration sample size and is more sensitive to differences between the CFI index in small and moderate sample sizes (Bollen, 1989). Values of greater than .9 on the Delta<sup>2</sup> index are also indicative of a good fit; however this index is not confined to a zero one range.

### ***5.2.1.3 Component Fit Measures***

In addition to overall model fit, the estimates for the manifest variables or factor loadings and their corresponding standard error and t-test value estimates are examined. The R<sup>2</sup> of the observed variables is also examined. This estimate is similar to the squared multiple correlation and assesses the extent to which the factor captures the variance in the items (manifest variables). Low t-test values are indicative of poor item-factor loading. However, statistically significant factor loadings for all items is viewed as evidence supporting convergent validity of the construct (Hatcher, 1994).

### ***5.2.2 Modifying the Measurement Model Fit***

In situations of poor model fit, a specification search for alternative models is conducted. Two tests are used to identify potential model changes—the Wald test and the Lagrange multiplier test. The Wald test estimates the change in the model chi-square that would result from fixing a given parameter to zero (constraining the parameter). The Lagrange multiplier estimates the degree to which chi-square would improve if a new factor loading or covariance were added to the model. However, a potential problem when modifying a model based on indices is the risk of creating a model that fits with the sample studied but does not generalize to other samples of the population. For this reason, it is considered safer to drop existing parameters rather than adding new ones. Therefore, the Wald test is consulted first.

For both the reliability and validity studies the models are also examined for correlated errors and cross-loaders. In some cases, model fit is improved by removing the single factor constraint for some of the items, suggesting communality (or shared variance accounted for by the common factors) due to potential “carry over” effects or some other shared element between factors.

### **5.3 Construct Reliability Study**

Using the manifest variables that exhibited adequate estimates from the measurement modeling procedures, test-retest reliability analyses are performed to estimate, (a) the stability of the factor structure between administrations as an estimate of the extent of change on the latent factor over time, and (b) the composite reliability of the two factor sets (time 1 and time 2) indicative of the proportions of the variance of a weighted combination of observed scores that is accounted for by a weighted combination of the latent factors. The stability of the factors is measured by estimating the correlation of equivalent factors across time. To correlate the factors, the measurement model that produced the best fit to the data at time 1 is replicated at time 2. The two measurement models (time 1 and time 2) are combined into one model and tested for model fit. Modifications, as described in the section above, are made to the combined model until an acceptable model fit is obtained. Reliability coefficients for each manifest variable (at time 1 and time 2) are estimated using  $R^2$  estimates provided by Proc Calis. For test-retest reliability models with correlated errors, the correlated error correlation is added to the communality estimate to provide a total-effect reliability estimate.

To estimate factor stability, the two latent factors in the combined retest model are allowed to co-vary, thus yielding a phi-coefficient indicating the factor inter-correlation.

An estimate of the maximal composite reliability ( $R_{max}$ ) is computed for each test-retest reliability model using SAS Proc Cancorr (Drewes, 2000). To assure consistency, correlated error effects are excluded from  $R_{max}$  computation.

#### **5.4 Construct Validity Study**

To test the construct validity of the indicated models, structural comparisons of the two vocational groups (job-ready and non job-ready) are performed. These comparisons include cross-validation of the structural models between groups and comparison tests using covariance/correlation equivalency tests for cross-sample comparisons.

As with the reliability study, the construct validity study builds on the measurement models that produce adequate estimates for each of the five factors included in the structural model for each of two subgroups. Construct validity coefficients are computed for each of the five factors across the vocational subgroups. The construct validity coefficient is the multiple correlation between a latent factor and its manifest variables. A validity coefficient is estimated for each factor in the measurement model using SAS Proc Reg with  $f(\text{factor})$  as the dependent variable and  $v1-vp(\text{manifest variables})$  as the independent variables. The square root of the reported  $R^2$  is defined as the construct validity coefficient and is indicative of the degree to which the items are caused by the underlying latent construct (Hoyle, 2000).

Once the measurement models are developed for each subgroup, a structural model is defined incorporating all the factors into a single model for each of the subgroups. The relationship between factors within the structural model can be considered to define a “cognitive map” or groups mental model for each of the two vocational groups. To

determine the parameter estimates between constructs, each of the factors are allowed to co-vary. This produces a singular cognitive map for each of the two subgroups.

The next step in the validity procedure is to cross-validate the models. To accomplish this, the model that produces the best model fit for each of the two subgroups is tested on the opposite sample. That is, the job-ready group model is run on the non job-ready sample and vice versa. This tests whether the model generalizes across groups. Comparison tests are then performed for the model that best accounts for both groups by comparing the equality of the subgroup covariance matrices using a covariance equivalency test. The covariance equivalency test provides evidence of model invariance across groups. Covariance matrix equivalency is tested using a SAS IML program based on Anderson (1984). This program tests whether different samples could have been drawn from populations with equal covariance matrices. Finally, the equality of the factor correlations between groups is tested using a similar IML procedure based on Jennrich (1970). This test compares the factor correlation matrices of each sample for equality.

## **6.0 Results**

Study results were obtained following the methodology as described in Chapter 5. The study sample demographics are presented below, followed by the findings from the construct reliability and construct validity studies. For each sub-study, the data from the measurement modeling procedures for each factor are presented first followed by the group comparison test results. Comparison results for the reliability study include measures of stability across time and measures of composite reliability across time. Comparison results for the construct validity study include cross-validation comparisons and matrix equivalency comparisons.

### **6.1 Sample Demographics**

The study subjects were methadone clients enrolled in the participating treatment program at the time of the TEP study (1994). The treatment programs were located in Pittsburgh, PA, Buffalo, NY, Milwaukee, WI, and San Jose, CA. The study sample was comprised of 184 respondents who completed the vocational readiness screener during the study intake period. For the construct validity study, the sample was subset into two vocational groups representing earlier stages (non job-ready) and later stages (job-ready) in the rehabilitation process. The job-ready (JR) group comprises those clients that are classified as job-ready or employed, and the non job-ready (NJR) group comprises those clients classified as training-ready, pre-vocational, and non-vocational. The vocational groups were defined using the algorithm presented in Chapter 4. The job-ready group includes 124 clients and the non job-ready group includes 60 clients.

The demographic characteristics for the study sample are presented in Table 6.1. The sample was predominantly male (n=111; 60%), Caucasian (n=96; 52%), and over the age of 40 (n=89; 51%). A chi-square test of differences was performed to determine if significant group differences exist across these demographic characteristics. The test resulted in no significant differences in gender, age or race between vocational subgroups.

**Table 6.1 Sample Characteristics by Job Group**

Demographic Characteristics	Non Job-Ready Group		Job-Ready Group		Total	
	count	%	count	%	Count	%
Gender (n=184)						
Male	34	57	77	62	111	60
Female	26	43	47	38	73	40
Age (n=174)						
18-29	5	9	3	3	8	5
30-35	9	16	14	12	23	13
36-40	13	23	41	35	54	31
41+	30	52	59	50	89	51
Race (n=184)						
Black	24	40	50	40	74	40
White	27	45	69	56	96	52
Hispanic	9	15	5	4	14	8

## 6.2 Construct Reliability Study Results

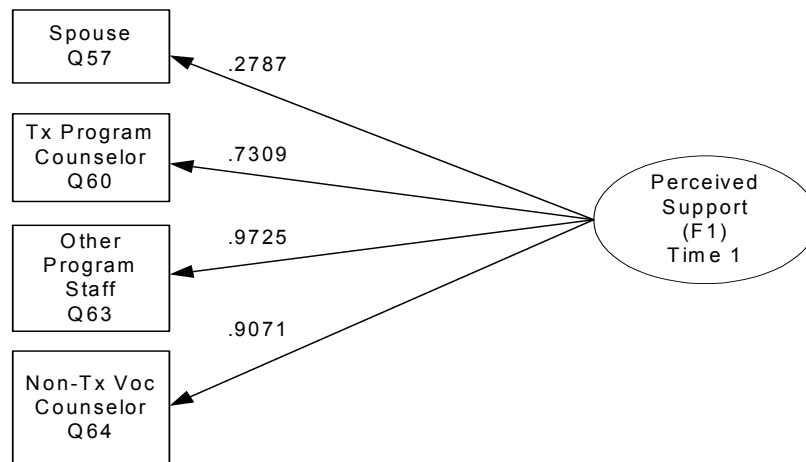
The construct reliability study examined the stability and composite reliability of the four latent constructs included in the employability framework: perceived support, perceived need, perceived barriers, and job-finding activities (motivation). The data for this study were collected using the VRS as part of the intake assessment for the TEP study. The VRS was re-administered to a subset of the respondents (n=77) within two weeks of the original administration. Following the two step-approach described in the previous chapter, the measurement models for the four factors at time 1 and time 2 are



presented first. The retest models, which combine the measurement models from time 1 and time 2, and their related construct reliability estimates are presented in the sections following the measurement models.

### 6.2.1 Construct Reliability Measurement Models

The perceived support factor (F1) at time 1 was measured by 6 items in the questionnaire. Of those original items, 4 items were retained on the basis of the tetrad analysis. The items and their corresponding factor loadings for time 1 are presented in Figure 6.1.



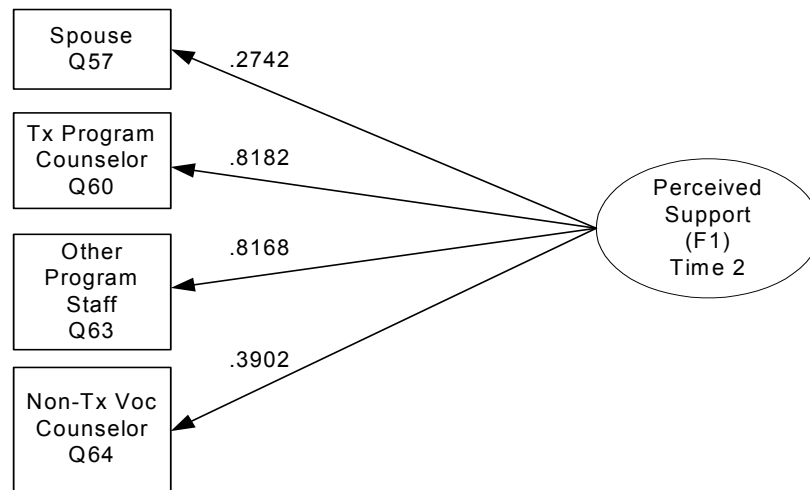
**Figure 6.1 Measurement Model for the Perceived Support Factor at Time 1**

This measurement model produced a very good fit to the data. The GFI was .997, the chi-square p-value was .7136 (not significant), the RMSEA was 0.000 (perfect fit), Bentler's Comparative Fit Index was 1.000 and Bollen's Delta<sup>2</sup> was 1.004. Though the parameter estimate for item Q57 (spouse) was relatively low (.2787), all factor loadings were significant. With the exception of the estimate for Q57, the R<sup>2</sup> estimates ranged

from .5342 to .8229. The estimate for Q57 was .0777, suggesting that this factor did not contribute as significantly to the item variance as for the other items in the model.

However, this item did have a significant t-value and improved the overall model fit.

To examine the factor structure and stability of the perceived support factor over time, the manifest variables that were selected using the time 1 data, were modeled on the time 2 sample. The estimates for the perceived support factor (F1) at time 2 are presented in Figure 6.2.

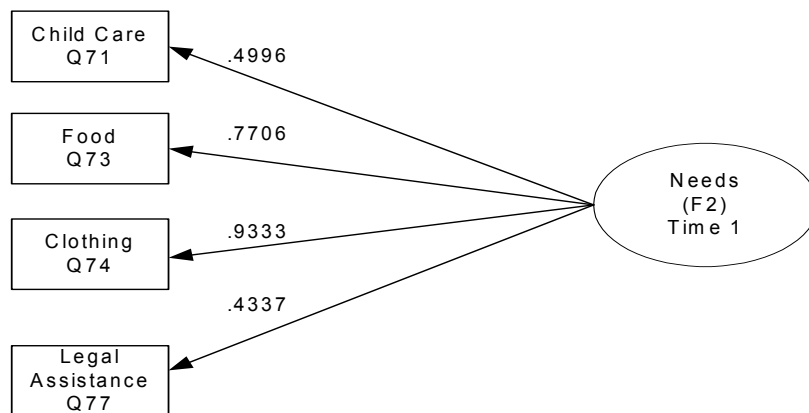


**Figure 6.2 Measurement Model for the Perceived Support Factor at Time 2**

This measurement model also produced a very good fit to the data. The GFI was .997, the chi-square p-value was .5661 (not significant), the RMSEA was 0.000 (perfect fit), Bentler's Comparative Fit Index was 1.000 and Bollen's  $\Delta^2$  was 1.007. As with the time 1 data, the parameter estimate for item Q57 (spouse) was relatively low (.2742). There was also a deterioration in fit for Q64 (non-treatment vocational counselor) at time 2 (.3902); however, all factor loadings were significant. The  $R^2$  estimates ranged from

.0752 to .6694. The  $R^2$  estimate for Q57 was .0752 and .1523 for Q64, suggesting that this factor did not capture the variance of these items as well at time 2. However, as with the estimates at time 1, these item did have significant t-values.

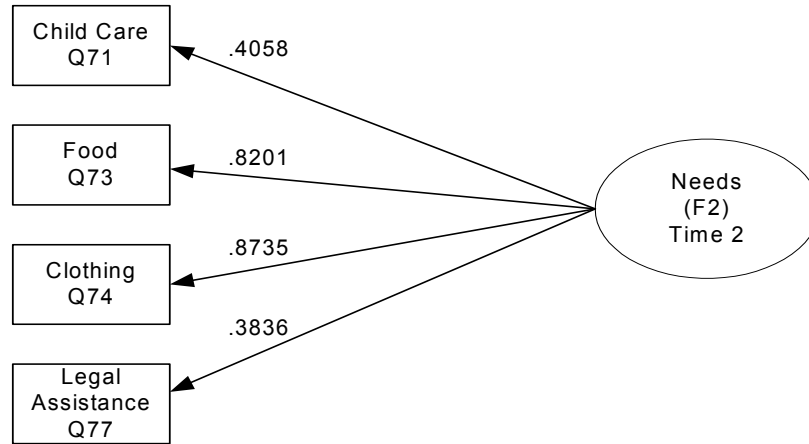
The perceived needs factor (F2) at time 1 was measured by 11 items in the questionnaire. Of those original items, 4 items were retained for the reliability analysis. The items and their corresponding factor loadings for time 1 are presented in Figure 6.3.



**Figure 6.3 Measurement Model for the Perceived Needs Factor at Time 1**

This measurement model also produced a very good fit to the data. The GFI was .999, the chi-square p-value was .8289 (not significant), the RMSEA was 0.000 (perfect fit), Bentler's Comparative Fit Index was 1.000 and Bollen's  $\Delta^2$  was 1.007. All factor loadings were significant. The  $R^2$  estimates ranged from .1881 to .8711. The estimate for Q74 (clothing) was the greatest at .8711, followed by .5939 for Q73 (food). Though the remaining two items had relatively low  $R^2$  estimates, all items had significant t-values.

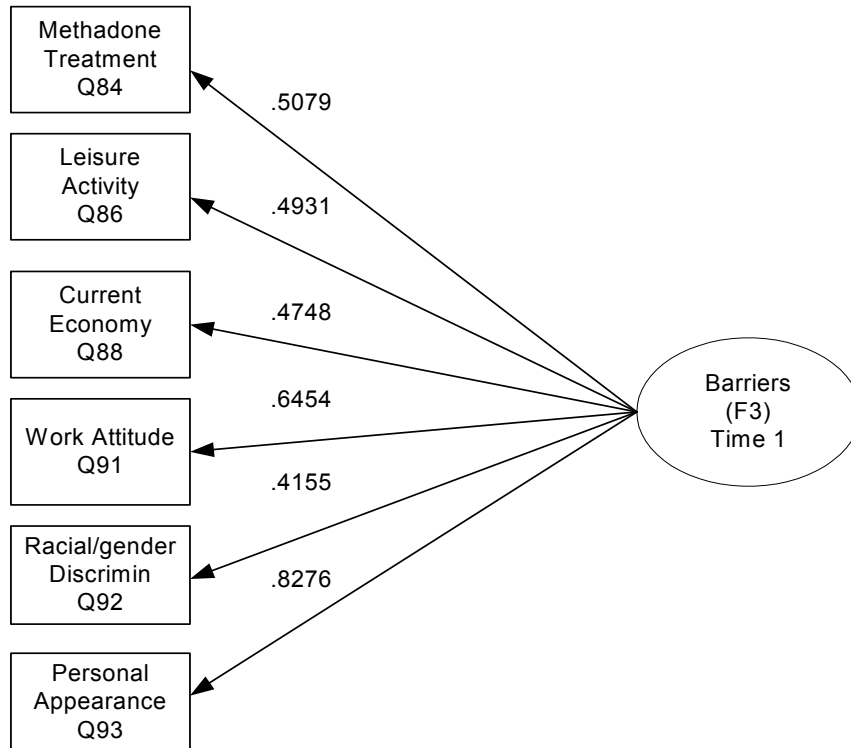
The estimates for the perceived needs factor (F2) at time 2 are presented in Figure 6.4.



**Figure 6.4 Measurement Model for the Perceived Need Factor at Time 2**

The fit indices for this measurement model at time 2 did not uniformly support a good fit to the data. Though the GFI was .981, the chi-square p-value was .0249 (significant), and the RMSEA was 0.1217. In contrast, Bentler's Comparative Fit Index was .9707, and Bollen's  $\Delta^2$  was .9713. The factor loading pattern was relatively similar across time, though there was an upward shift in all of the factor loadings with the exception for Q74 (clothing), which appeared to be slightly less central to the construct at time 2. The  $R^2$  estimates ranged from .1471 to .7630, with Q74 (clothing) having the greatest variance explained by the model. Though the parameter estimates for Q71 (child care) and Q77 (legal assistance) were below .5 with  $R^2$  estimates below .2, all factor loadings had significant t-values.

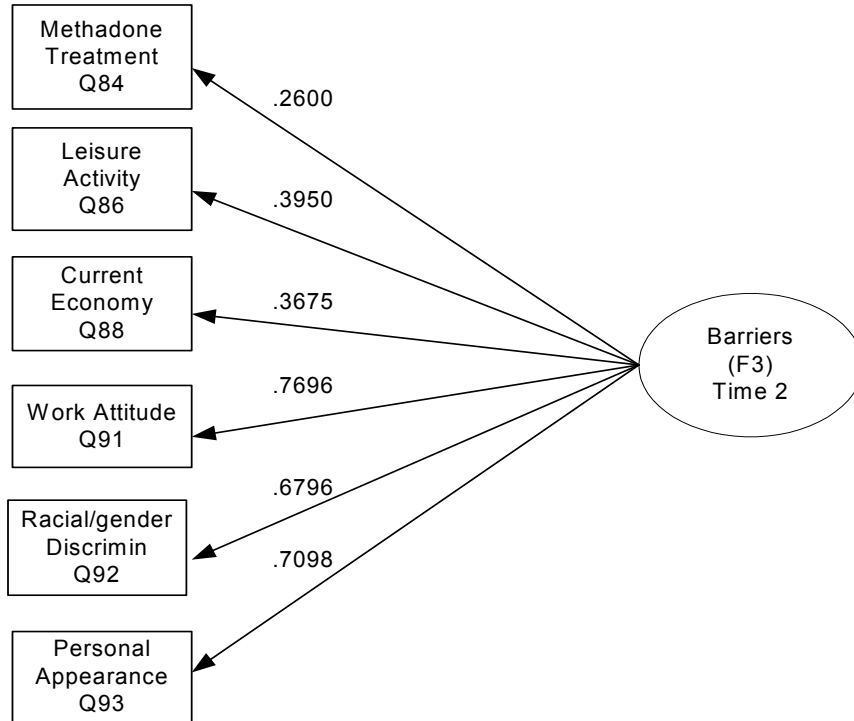
The perceived barriers factor (F3) at time 1 was measured by 14 items in the questionnaire. Of those original items, 6 items were retained for the reliability analysis. The items and their corresponding factor loadings for time 1 are presented in Figure 6.5.



**Figure 6.5 Measurement Model for the Perceived Barriers Factor at Time 1**

This measurement model produced a very good fit to the data. The GFI was .9845, the chi-square p-value was .4658 (not significant), the RMSEA was 0.000 (perfect fit), Bentler's Comparative Fit Index was 1.000 and Bollen's Delta<sup>2</sup> was 1.002. All factor loadings were significant. The R<sup>2</sup> estimates ranged from .1727 to .6849. The estimate for Q93 (personal appearance) was the greatest at .6849, followed by .4165 for Q91 (work attitude). Though the other items had relatively low R<sup>2</sup> estimates (below .3), all items had significant t-values.

The estimates for the perceived barriers factor (F3) at time 2 are presented in Figure 6.6.



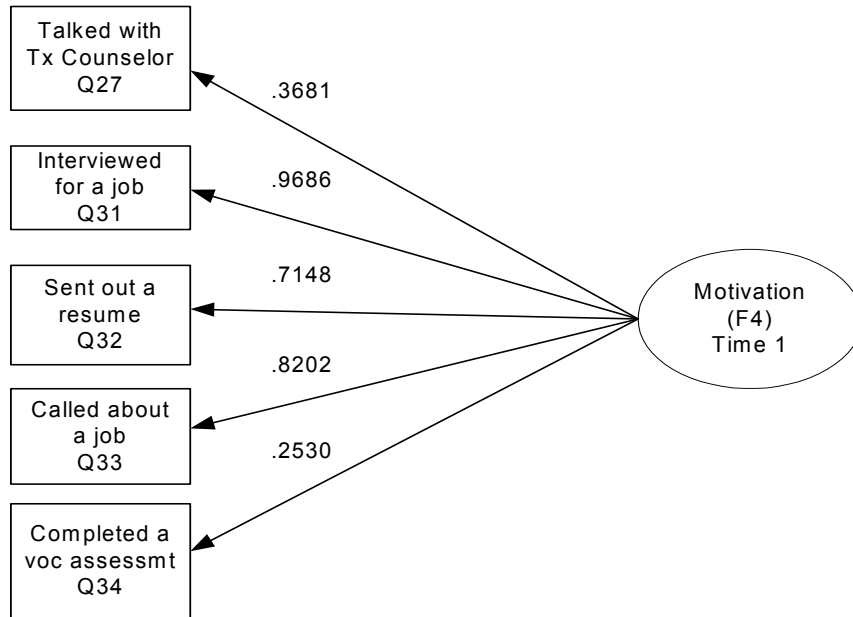
**Figure 6.6 Measurement Model for the Perceived Barriers Factor at Time 2**

The fit indices for this measurement model at time 2 did not support a good fit to the data. Though the GFI was .9400, the chi-square p-value was .0001 (significant), the RMSEA was 0.1311, Bentler's Comparative Fit Index was .8675, and Bollen's Delta<sup>2</sup> was .8711. The factor loading pattern differed across time. The greatest shift in the loadings was for Q84 (methadone treatment). At time 1, the loading for this item was the third highest estimate (.5079), with R<sup>2</sup> at .2580. At time 2, this item was the least significant with the parameter estimate at .2600 and R<sup>2</sup> at .0676, with the factor capturing the least variance for this item. Another significant shift was for item Q92 (racial/gender discrimination). At time 1, the factor loading was at .4155, with R<sup>2</sup> at .1727. At time 2, the estimate jumped to .6796 with R<sup>2</sup> at .4619. At time 1 discrimination was the least

significant item, but at time 2 it was the second most significant item. Overall at time 2, the  $R^2$  estimates ranged from .0676 to .5922 with Q91 (work attitude) having the greatest item variance. Though the parameter estimates for Q84 (methadone treatment), Q86 (leisure activity), and Q88 (current economy) were below .4 with  $R^2$  estimates below .2, all factor loadings had significant t-values at time 2.

The job-finding activity (motivation) factor (F4) at time 1 was measured by 9 items in the questionnaire. Of those original items, 5 items were retained for the reliability analysis. The items and their corresponding factor loadings for time 1 are presented in Figure 6.7.

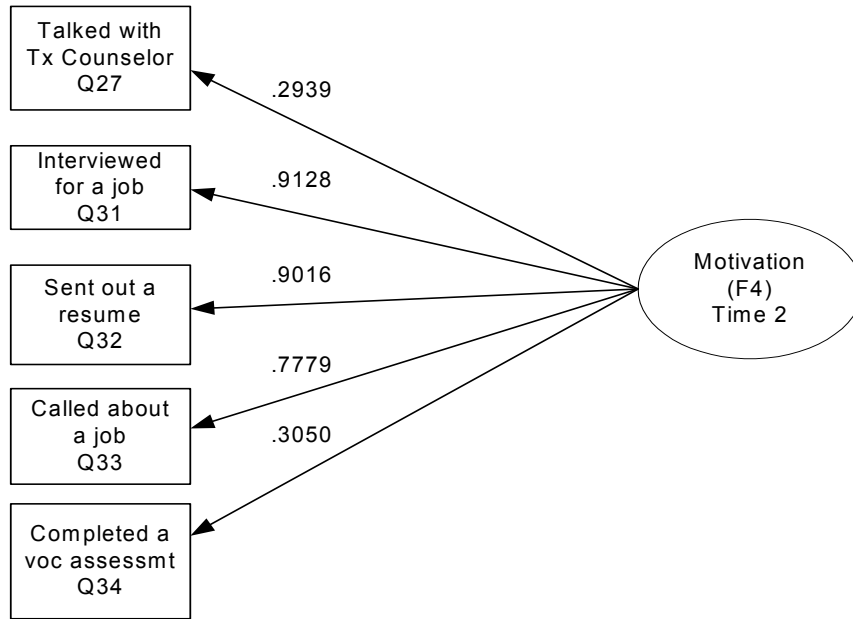
As with first three factors at time 1, the fit indices for this measurement model supported a very good fit to the data. The GFI was .9923, the chi-square p-value was .5992 (not significant), the RMSEA was 0.000 (perfect fit), Bentler's Comparative Fit Index was 1.000 and Bollen's  $\Delta^2$  was 1.004. All factor loadings were significant. The  $R^2$  estimates ranged from .0640 to .9382. The estimate for Q31 (interviewed for a job) was the greatest at .9686, followed by .8202 for Q33 (called about a job). Item Q32 has the third highest loading at .7148 with the remaining two estimates below .4. The  $R^2$  estimates ranged between .0640 to .9382, with item Q34 (completing a vocational assessment) with the least item variance and item Q31 (interviewed for a job) the most. All items had significant t-values.



**Figure 6.7 Measurement Model for Motivation Factor at Time 1**

The estimates for the job-finding activity (motivation) factor (F4) at time 2 are presented in Figure 6.8. The fit indices for this measurement model at time 2 did not uniformly support a good fit to the data. Though the GFI was .9547, the chi-square p-value was .0009 (significant), and the RMSEA was 0.1313. In contrast, Bentler's Comparative Fit Index was .9600, and Bollen's  $\Delta^2$  was .9605. The factor loading pattern was relatively similar across time, though the relative placement of Q32 (sent someone a resume) and of Q33 (called about a job) were reversed between time 1 and time 2. For both factors, interviewing for a job had the most variance explained by the model and completing a vocational assessment had the least. The most significant change in parameter estimates was for Q32 (sent someone a resume). The estimate at time one was .7148 with an  $R^2$  estimate of .5109, while at time 2 it jumped to .9016 with





**Figure 6.8 Measurement Model for the Motivation Factor at Time 2**

an  $R^2$  estimate of .8130. This suggests an increased emphasis on actively sending out a resume at time 2 as a measure of motivation for obtaining a job. As with the other factors, all the factor loadings had significant t-values.

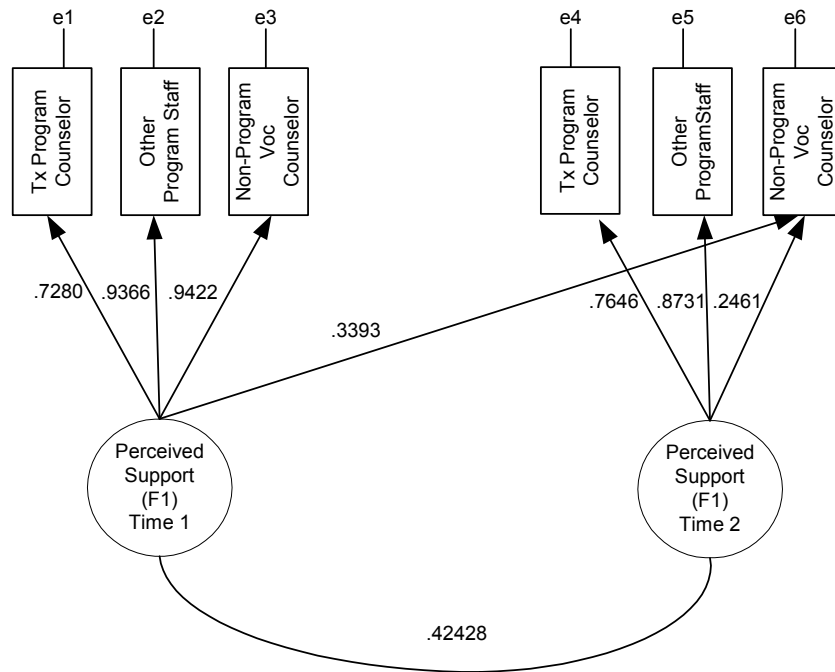
### **6.2.2 Factor Stability and Composite Reliability Results**

To develop the combined retest model, the measurement models for time 1 and time 2 were combined and tested for model fit. Model revisions were made following the model modification strategies outlined in Section 5.2.4. These strategies included (a) reducing items (b) correlating errors, and (c) loading items across factors from time 1 to time 2.

For each combined (two factor) model, the reliability coefficient for each manifest variable is reported. The reliability coefficient for each manifest variable is the square of the factor loadings between the manifest variables and the factors at time 1 and time 2.

The stability of the factors was measured by the phi-coefficient which indicates the factor inter-correlation. Finally, maximal reliability (Rmax) estimates are reported which assess the maximal reliability of the weighted composite of each of the reliabilities generated in the retest model.

The combined factor model for the perceived support factor (F1) is presented in Figure 6.9.



**Figure 6.9 Test-retest Reliability Model for Perceived Support**

As illustrated in Figure 6.9, three of the four items from each of the perceived support measurement models were retained in the retest model. Item Q57 (spouse) was dropped from the model at time 1 and at time 2.

The model has one cross-loader Q64 (non-treatment program vocational counselor) which indicates that Perceived Support at time 1 exerts an influence independent of that at time 2. There are no correlated errors for the test-retest perceived support reliability model.

The inter-factor correlation (phi-coefficient) was .42428, suggesting moderate to low factor stability. The most significant shift from time 1 to time 2 in this model was for item Q64 (non program voc counselor). The parameter estimate at time 1 was .9422 and dropped to .2461. All other estimates appeared to be fairly stable across time. The reliability coefficients and the composite reliability (Rmax) estimate are listed in Table 6.2.

**Table 6.2 Perceived Support Reliability Estimates**

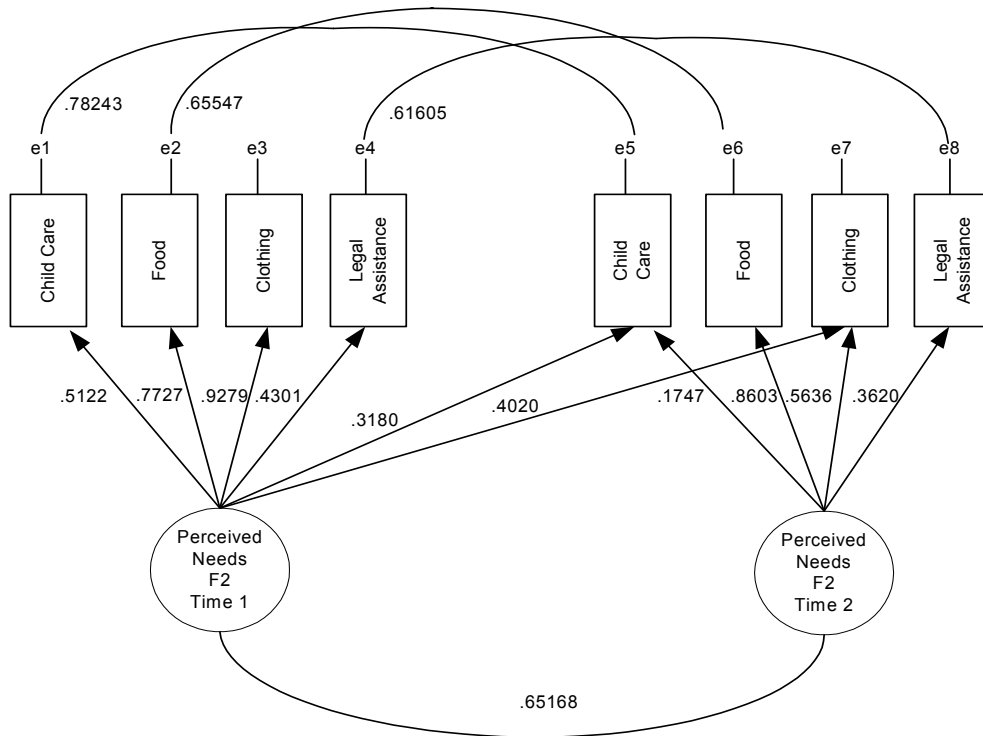
Item Number	Label	Parameter Estimates	Reliability Coefficients	Composite Reliability	Inter-factor Correlation
Time 1				.943	.424
Q60	Tx counselor in program	.7280	.5300		
Q63	Other program staff	.9366	.8772		
Q64	Vocational counselor elsewhere	.9422	.8878		
Time 2					
Q60	Tx counselor in program	.7646	.5846		
Q63	Other program staff	.8731	.7624		
Q64	Vocational counselor elsewhere	.2461 (.3393)	.2465		

The reliability coefficients ranged from .2465 to .8878. Though the inter-factor correlation which provides a measure of factor stability was moderate to low, the composite reliability estimate (Rmax) was .943, providing strong evidence that a weighted

component of items across administrations is highly correlated with a weighted component of the two correlated factors.

The fit indices for the retest model produced a moderate to good fit to the data. The GFI was .9467, the chi-square p-value was .0001 (significant), the RMSEA was 0.000 (perfect fit), Bentler’s Comparative Fit Index was .9589 and Bollen’s Delta<sup>2</sup> was .9595. Though the parameter estimate for item Q64 (voc counselor elsewhere) at time 2 was relatively low (.2461), all factor loadings were significant. All items have a significant t-values.

The combined factor model for the perceived need factor (F2) is presented in Figure 6.10.



**Figure 6.10 Test-retest Reliability Model for Perceived Need**

As illustrated in Figure 6.10, all four of the items from each of the perceived needs measurement models were retained in the retest model. The model had two cross-loaders Q71 (child care) and Q74 (clothing) indicating a causal contribution due to time 1 as well as time 2. For child care, the residual influence of time 1 perceived needs (.3180) was greater than the causal inference of the perceived needs factor at time 2 (.147).

There were three correlated errors for the combined perceived need suggesting presence of correlated uniqueness. The inter-factor correlation (phi-coefficient) was .65168, indicating a moderate factor correlation over time. All of the parameter estimates had substantial shifts from time 1 to time 2. The most significant shifts in this model were for items Q71 and Q74. For Q71 the reliability estimate at time 1 was .5122 and dropped to .1729. For Q74 the estimate at time 1 was .9279 and dropped to .5636. The reliability coefficients and the composite reliability (Rmax) estimate are listed in Table 6.3.

The reliability coefficients range from .7471 to 1.0000. Though the inter-factor correlation which provides a measure of factor stability was moderate, the composite reliability estimate (Rmax) was .966, providing strong evidence that the two factors can be reliably measured by a combination of manifest variables.

The fit indices for the test-retest model did not uniformly support a good fit to the data. The GFI was .9540, the chi-square p-value was .001 (significant), the RMSEA was 0.092, Bentler's Comparative Fit Index was .9744 and Bollen's  $\Delta^2$  was .9748. The RMSEA and chi-square suggests a marginal to poor fit, while the remaining indices

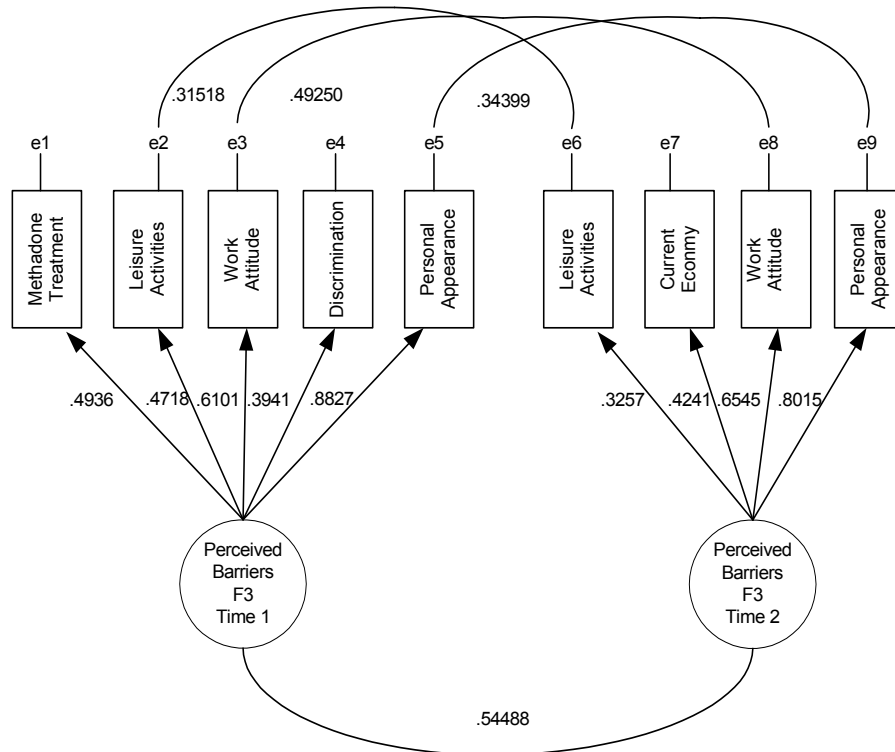
**Table 6.3 Perceived Needs Reliability Estimates**

Item Number	Label	Parameter Estimates	Reliability Coefficients	Composite Reliability	Inter-factor Correlation
Time 1				.966	.652
Q71	Child Care	.5122	1.0447*		
Q73	Food	.7727	1.3526*		
Q74	Clothing	.9279	.8610		
Q77	Legal Assistance	.4301	.8810		
Time 2					
Q71	Child Care	.1729 (.3180)	.9824		
Q73	Food	.8603	1.3956*		
Q74	Clothing	.5636 (.4020)	.7745		
Q77	Legal Assistance	.3620	.7471		

\* Improper estimates due to correlated error contribution

support a good fit. Though the parameter estimate for item Q71 (child care) at time 2 was relatively low (.1747), all factor loadings are significant. All items have a significant t-values.

The combined factor model for the perceived barriers factor (F3) is presented in Figure 6.11. As illustrated in Figure 6.11, five of the six items from the time 1 measurement model and four variables from the time 2 measurement model were retained in the test-retest model. The model had no cross-loaders, but did have three correlated errors that suggest correlated uniqueness over time. The inter-factor correlation (phi-coefficient) was .54488, indicating moderate factor stability. Two items at time 1 (Q84 methadone treatment and Q92 perceived discrimination) were not carried over to the time 2 model. Conversely, one item (Q88 current economy) that dropped out at time 1 reappeared as a significant item at time 2.



**Figure 6.11 Test-retest Reliability Model for Perceived Barriers**

Of the common items in the model, the greatest shift in the parameter estimates was for Q86 (leisure activities) with a difference of .1461. The estimate at time 1 was .4718 and dropped to .3257. The reliability coefficients and the composite reliability (Rmax) estimate are listed in Table 6.4.

The reliability coefficients ranged from .1553 to 1.0000. Though the inter-factor correlation was moderate, the composite reliability estimate (Rmax) was .920 providing strong evidence that a reliable component of the two items sets (for each administration) can be formulated.

**Table 6.4 Perceived Barriers Reliability Estimates**

Item Number	Label	Parameter Estimates	Reliability Coefficients	Composite Reliability	Inter-factor Correlation
Time 1				.920	.545
Q84	Methadone Tx	.4936	.2436		
Q86	Leisure Activities	.4718	.5378		
Q91	Work Attitude	.6101	.8647		
Q92	Discrimination	.3941	.1553		
Q93	Personal Appearance	.8827	1.1231*		
Time 2					
Q86	Leisure Activities	.3257	.4342		
Q91	Current Economy	.4241	.1798		
Q92	Work Attitude	.6545	.9208		
Q93	Personal Appearance	.8015	.9591		

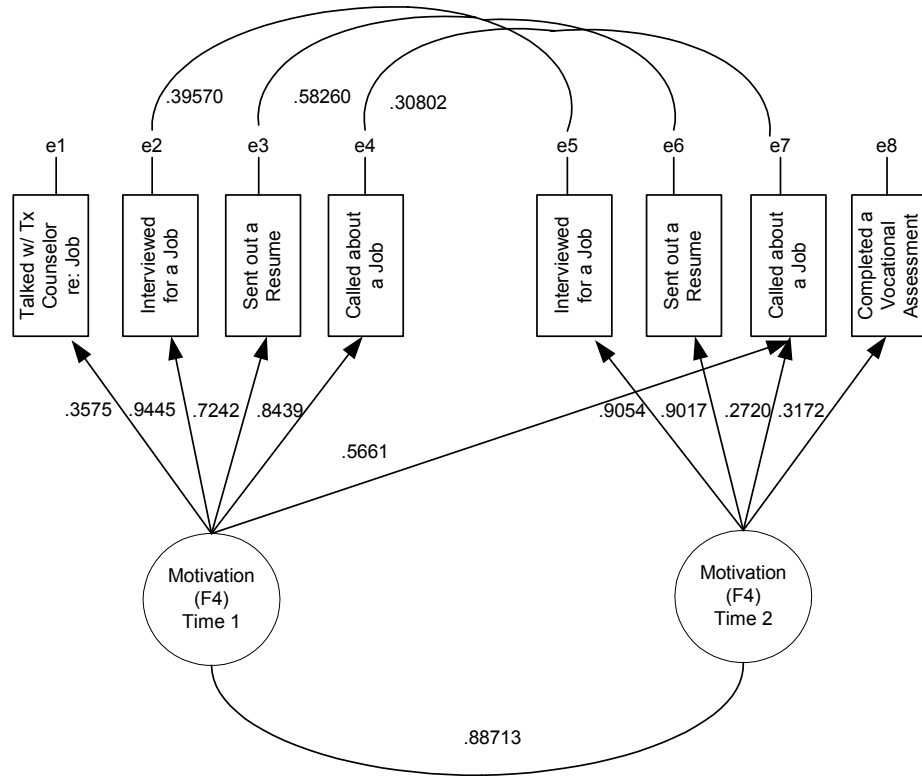
\* Improper estimate due to correlated error contribution

The fit indices for the retest model supported a moderate to good fit to the data. The GFI was .9582, the chi-square p-value was .025 (significant), the RMSEA was .0600, Bentler's Comparative Fit Index was .9609 and Bollen's Delta<sup>2</sup> was .9622. The RMSEA and chi-square suggested an acceptable fit, while the remaining indices supported a good fit. All items had significant t-values.

The combined factor model for the motivation factor (F4) is presented in Figure 6.12.

As illustrated in Figure 6.12, four of the five items from the time 1 measurement model and four items from the time 2 measurement model were retained in the retest model. The model had one time 2 cross-loader Q33 (called about a job) with time 1 factor exerting more causal influence than the time 2 factor. There were three correlated





**Figure 6.12 Test-retest Reliability Model for Motivation**

errors for the common items in the combined model and the inter-factor correlation (phi-coefficient) was .88713, indicating moderately strong factor stability.

One item at time 1 (Q27 talked with tx counselor re: job) was not carried over to the time 2 model. Conversely, one item at time 2 (Q34 completed vocational assessment) that had dropped out at time 1 (zero reliability) reappeared at time 2 with significant reliability. Of the common items in the model, the greatest shift in the parameter estimates was for Q33 (called about a job) with a difference of .5719. The estimate at time 1 was .8439 and dropped to .2720. The remaining common item (Q31 interviewed for a job) stayed relatively consistent over time (.9445 and .9054). The reliability coefficients and the composite reliability (Rmax) estimate are listed in Table 6.5.

**Table 6.5 Motivation Reliability Estimates**

Item Number	Label	Parameter Estimates	Reliability Coefficients	Composite Reliability	Inter-factor Correlation
Time 1				.988	.887
Q27	Talked w/ tx counselor re: a job	.3575	.1278		
Q31	Interviewed for a job	.9445	1.2877*		
Q32	Sent out a resume	.7242	1.1071*		
Q33	Called about a job	.8439	1.0202*		
Time 2					
Q31	Interviewed for a job	.9054	1.2154*		
Q32	Sent out a resume	.9017	1.3957*		
Q33	Called about a job	.2720 (.5661)	.9776		
Q34	Completed a voc assessment	.3172	.1006		

\* Improper estimate due to correlated error contribution

The reliability coefficients range from .1006 to 1.000. Unlike the previous models, which all had moderate to poor inter-factor correlations, the inter-factor correlation for this model was relatively good. The composite reliability estimate (Rmax) was .988 again providing strong evidence of component reliability.

As with two of the previous factors, the fit indices for the reliability model did not uniformly support a good fit to the data. The GFI was .9520, the chi-square p-value was .0007 (significant), the RMSEA was .0933, Bentler's Comparative Fit Index was .9773 and Bollen's Delta<sup>2</sup> was .9775. The RMSEA and chi-square suggested a poor fit, while the remaining indices supported a good fit. All items have a significant t-values.

### **6.3 Construct Validity Study Results**

As with the reliability study, the construct validity study builds on the measurement models that exhibited adequate fit for each of the five factors. As discussed in the previous chapter, an additional factor (desire for vocational assistance) was incorporated into this sub-study. To build the structural models, all five factors were combined into a single model for each subgroup. To determine the correlation estimates between constructs, each of the factors were allowed to co-vary. The relationship between factors within each structural model can be perceived of as a “cognitive map” of the set of constructs for each subgroup. Structural models were produced for each of the two subgroups. To cross-validate these structural models, each model was tested on the opposite group sample. Finally group comparison tests were conducted to test the hypothesis of group differences.

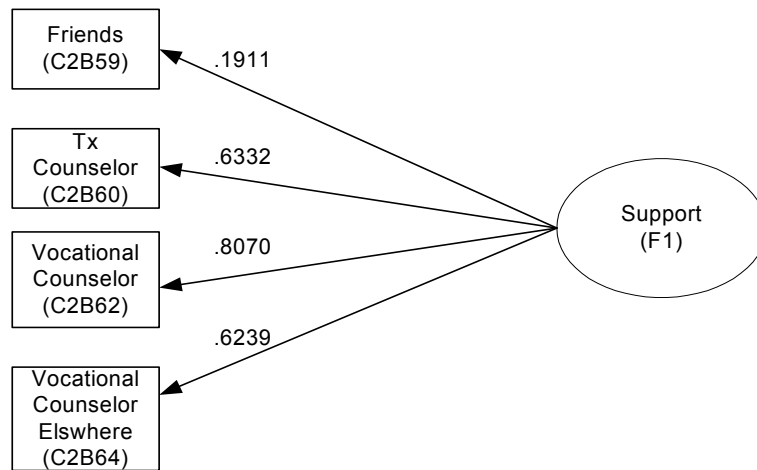
The findings from the measurement modeling process for each vocational group (job-ready and non job-ready) is presented first, followed by the findings from the structural modeling, and the results from the equivalency tests.

#### ***6.3.1 Construct Validity Measurement Models***

For the construct validity study, the sample was subset into the two vocational groups (job ready and non job-ready). Unlike for the reliability study, each of the vocational subgroup measurement models were developed independent of the other. That is, the items that reflected the best model fit for one subgroup were not tested on the other. Instead, separate (but similar) modeling procedures were used for each subgroup. For each of the five factors, the measurement models for each subgroup are presented below.

### 6.3.1.1 Perceived Support

The perceived support factor (F1) was measured by 6 items in the questionnaire. Of those original items, 4 items were retained for the job-ready group and four are retained for the non job-ready group. The items and their corresponding factor loadings for the job ready (JR) group are presented in Figure 6.13.



**Figure 6.13 Job Ready Measurement Model for the Perceived Support Factor**

The fit indices for this measurement model produced a very good fit to the data. The GFI was .998, the chi-square p-value was .7872 (not significant), the RMSEA was 0.000 (perfect fit), Bentler's Comparative Fit Index was 1.000 and Bollen's  $\Delta^2$  was 1.0192. The validity coefficient was .8733 and is reported in Table 6.6. As described in the previous chapter, the validity coefficient is the multiple correlation between the focal latent factor and a weighted combination of the manifest variables comprising the measurement model.

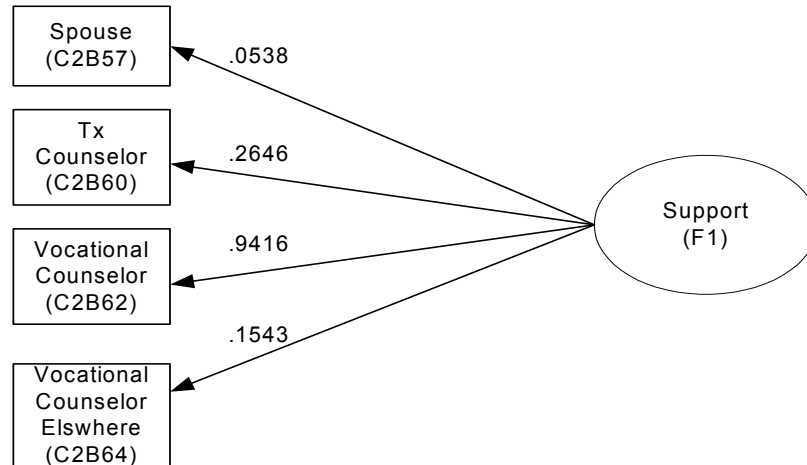
**Table 6.6 Perceived Support Reliability and Validity Estimates**

Item Number	Label	Parameter Estimates	R <sup>2</sup> Estimates	Validity Coefficient
JR				.8733
Q59	Friends	.1911	.0365	
Q60	Tx counselor in program	.6332	.4009	
Q62	Voc counselor in program	.8070	.6512	
Q64	Vocational counselor elsewhere	.6239	.3893	
NJR				.9423
Q57	Spouse	.0538	.003	
Q60	Tx counselor in program	.2646	.0700	
Q63	Voc counselor in program	.9416	.8866	
Q64	Vocational counselor elsewhere	.1543	.0238	

The parameter estimate for item Q59 (friends) was low (.1911) and insignificant. All of the other factor loadings were significant. With the exception of the estimate for Q59, the R<sup>2</sup> estimates range from .3893 to .4009. The estimate for Q57 was .0365, suggesting that the factor accounted for little of the item variance. However, this item did improve the overall model fit.

The items and their corresponding factor loadings for the non job ready (NJR) group are presented in Figure 6.14.

Though the majority of the fit indices for this measurement model produced a very good fit to the data. Bentler's Comparative Fit Index in excess of 1.000 (improper estimate) and not reported in the SAS output. The GFI was .9986, the chi-square p-value was .6867 (not significant), the RMSEA was 0.000 (perfect fit), and Bollen's Delta<sup>2</sup> was 1.1680.



**Figure 6.14 Non Job-Ready Measurement Model for the Perceived Needs Factor**

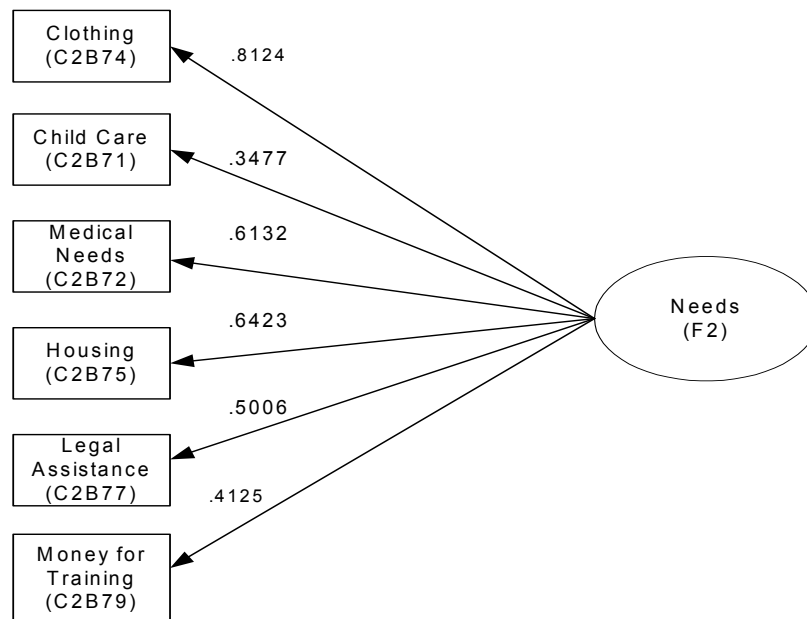
Overall, the parameter estimates for this model appeared problematic. With the exception of item Q62 (vocational counselor), the parameter estimates were low and insignificant. Interestingly, the estimate for Q62 was high (.9416), yet the t-value for this item was also insignificant. With the exception of the estimate for this item, the  $R^2$  estimates range from .003 to .0238. The  $R^2$  estimate for Q62 was .8866. However, to obtain an estimate for Q62 that did not exceed 1.0, the error terms for Q57 and Q64 had to be correlated in the model. Nevertheless, the validity coefficient was .9423 and reported in Table 6.6.

The parameter estimates between the two groups varied substantially. For the job-ready group, Q59 (friends) was included in the model. For the non job-ready group, friends did not appear in the model, but rather Q57 (spouse) was included. The greatest difference in parameter estimates between groups was for Q64 (voc counselor elsewhere), with a change of .4696 between groups. Q60 (tx counselor) also had a substantial shift

between groups for a difference of .3686. Overall, the estimates between these two groups suggested a substantial difference in factor structure between groups.

### 6.3.1.2 Perceived Needs

The perceived needs factor (F2) was measured by 11 items in the questionnaire. Of those original items, 6 items were retained for the job-ready group and 7 are retained for the non job-ready group. The items and their corresponding factor loadings for the job ready (JR) group are presented in Figure 6.15.



**Figure 6.15 Job-Ready Measurement Model for the Perceived Needs Factor**

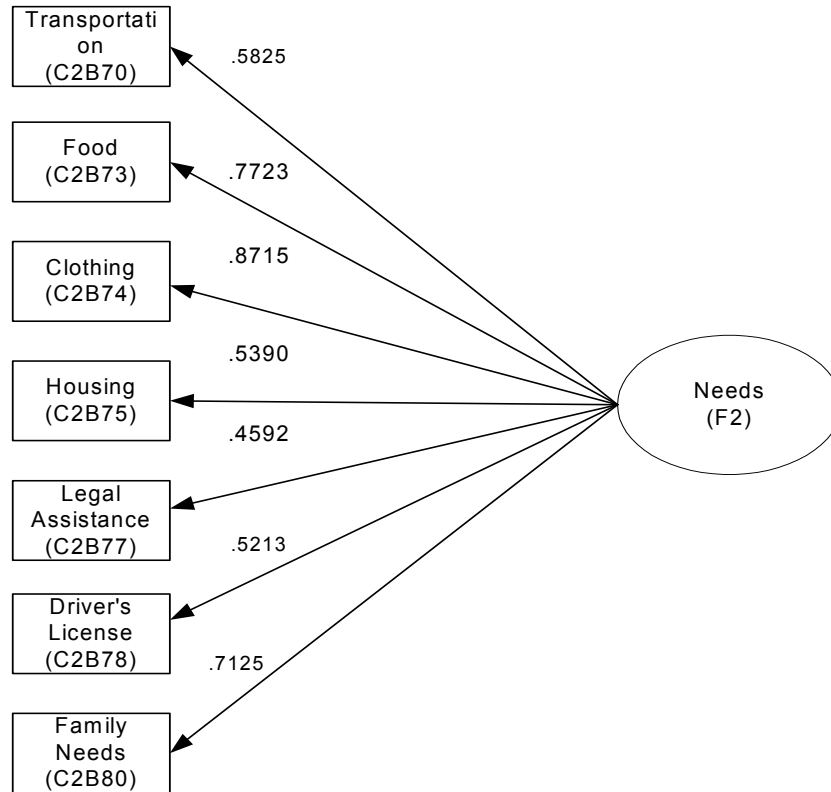
The fit indices for this measurement model produced a very good fit to the data. The GFI was .979, the chi-square p-value was .4467 (not significant), the RMSEA was 0.000 (perfect fit), Bentler's Comparative Fit Index was 1.000 and Bollen's  $\Delta^2$  was 1.0007. The parameter estimates all had values above .3 and were significant. The  $R^2$

estimates ranged from .1209 (child care) to .6599 (clothing). The validity coefficient was .8935 and reported in Table 6.7. The items and their corresponding factor loadings for the non job ready (NJR) group are presented in Figure 6.16.

**Table 6.7 Perceived Needs Reliability and Validity Estimates**

Item Number	Label	Parameter Estimates	R <sup>2</sup> Estimates	Validity Coefficient
JR				.8935
Q74	Clothing	.8124	.6599	
Q71	Child Care	.3477	.1209	
Q72	Medical Needs	.6132	.3760	
Q75	Housing	.6423	.4126	
Q77	Legal Assistance	.5198	.2702	
Q79	Money for Training	.4125	.1702	
NJR				.9373
Q70	Transportation	.5825	.3393	
Q73	Food	.7723	.5964	
Q74	Clothing	.8715	.7596	
Q75	Housing	.5390	.2906	
Q77	Legal Assistance	.4592	.2109	
Q78	Driver's License	.5213	.2717	
Q80	Family Needs	.7125	.5077	





**Figure 6.16 Non Job-Ready Measurement Model for the Perceived Needs Factor**

This measurement model produced a very good fit to the data. The GFI was .968, the chi-square p-value was .9414 (not significant), the RMSEA was 0.000 (perfect fit), Bentler's Comparative Fit Index was 1.000 and Bollen's  $\Delta^2$  was 1.057.

The parameter estimates all had values above .5 and were significant. The  $R^2$  estimates range from .2109 (legal assistance) to .7596 (clothing). The validity coefficient was .9373 and reported in Table 6.7.

The measurement models for this factor varied substantially between groups. For the job-ready group, Q571 (child care), Q72 (medical needs), and Q79 (money for training) were included in the model. For the non job-ready group, these indicators did

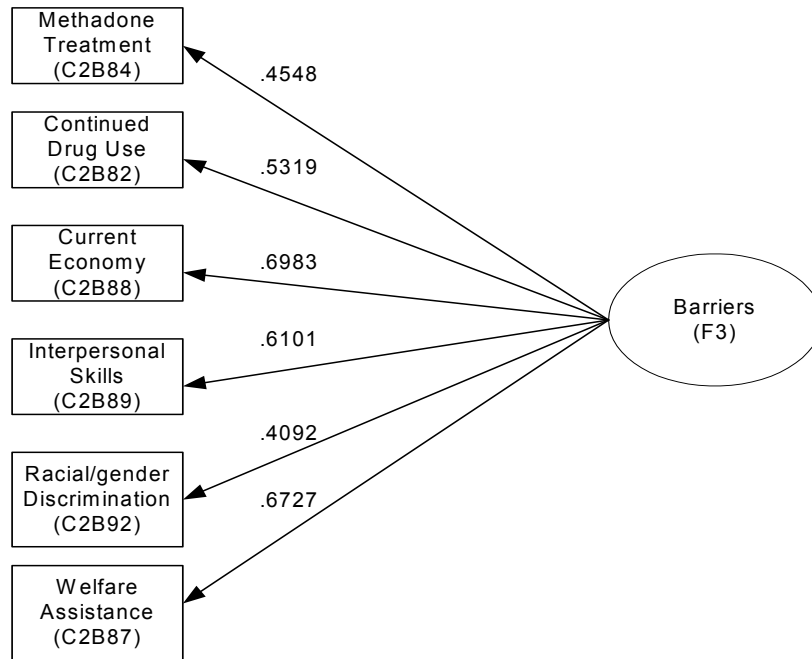
not appear in the model, but rather Q70 (transportation), Q73 (food), Q78 (driver's license), and Q80 (family needs) were included. Of the parameter estimates that were common between the two groups (clothing, housing, legal assistance), the estimates were relatively consistent. Q74 (clothing) was the most significant variable for both groups; however, Q75 (housing) was the second most significant variable for the job-ready group and Q73 (food) was the second most significant variable for the non job-ready group. The least significant variable for the job-ready group was Q71 (child care), while Q75 (housing) was the least significant for the non job-ready group. Overall, the estimates between these two groups suggest a substantial difference in factor structure between groups.

#### ***6.3.1.3 Perceived Barriers***

The perceived barriers factor (F3) was measured by 14 items in the questionnaire. Of those original items, 6 items were retained for the job-ready group and 8 were retained for the non job-ready group. The items and their corresponding factor loadings for the job ready (JR) group are presented in Figure 6.17.

This measurement model produced a very good fit to the data. The GFI was .986, the chi-square p-value was .7881 (not significant), the RMSEA was 0.000 (perfect fit), Bentler's Comparative Fit Index was 1.000 and Bollen's  $\Delta^2$  was 1.0295.

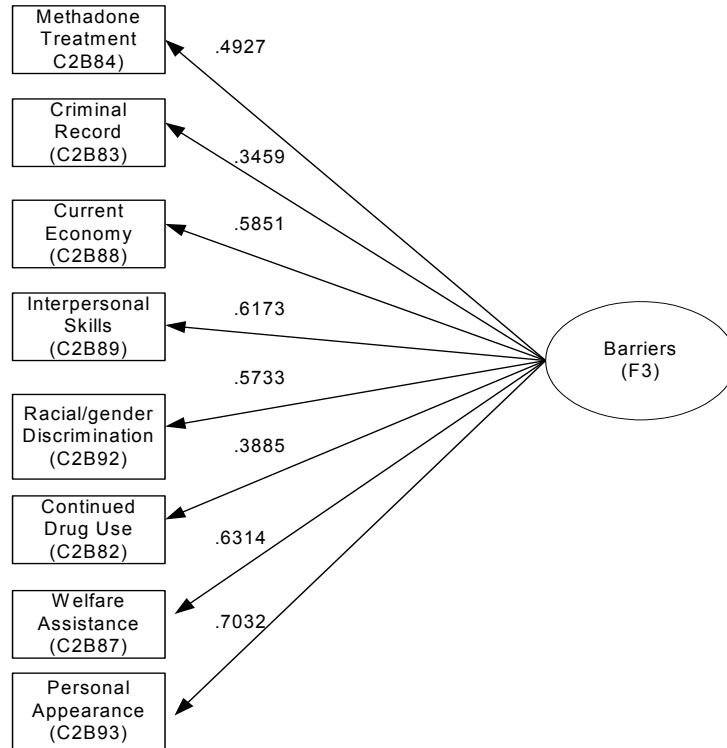
The parameter estimates all had estimates above .3 and were all significant. The  $R^2$  estimates ranged from .1075 (discrimination) to .4876 (current economy). The validity coefficient was .8711 and reported in Table 6.8. The items and their corresponding factor loadings for the non job ready (NJR) group are presented in Figure 6.18.



**Figure 6.17 Job-Ready Measurement Model for the Perceived Barriers Factor**

**Table 6.8 Perceived Barriers Reliability and Validity Estimates**

Item Number	Label	Parameter Estimates	R <sup>2</sup> Estimates	Validity Coefficient
JR				.8711
Q84	Methadone treatment	.4548	.2068	
Q82	Continued drug use	.5319	.2830	
Q88	Current economy	.6983	.4876	
Q89	Interpersonal Skills	.6101	.3722	
Q92	Racial/gender discrimination	.3278	.1075	
Q87	Welfare assistance	.6727	.4525	
NJR				.8919
Q84	Methadone treatment	.4927	.2427	
Q83	Criminal Record	.3459	.1197	
Q88	Current economy	.5851	.3424	
Q89	Interpersonal Skills	.6173	.3810	
Q92	Racial/gender discrimination	.5733	.3287	
Q82	Continued drug use	.3885	.1509	
Q87	Welfare assistance	.6314	.3986	
Q93	Personal appearance	.7032	.4945	



**Figure 6.18 Non Job-Ready Measurement Model for the Perceived Barriers Factor**

This measurement model also produced a very good fit to the data. The GFI was .922, the chi-square p-value was .9532 (not significant), the RMSEA was 0.000 (perfect fit), Bentler’s Comparative Fit Index was 1.000 and Bollen’s Delta<sup>2</sup> was 1.120. The parameter estimates all had values above .3 and were significant. The R<sup>2</sup> estimates ranged from .1197 (criminal record) to .4945 (personal appearance). The validity coefficient was .8919 and presented in Table 6.8.

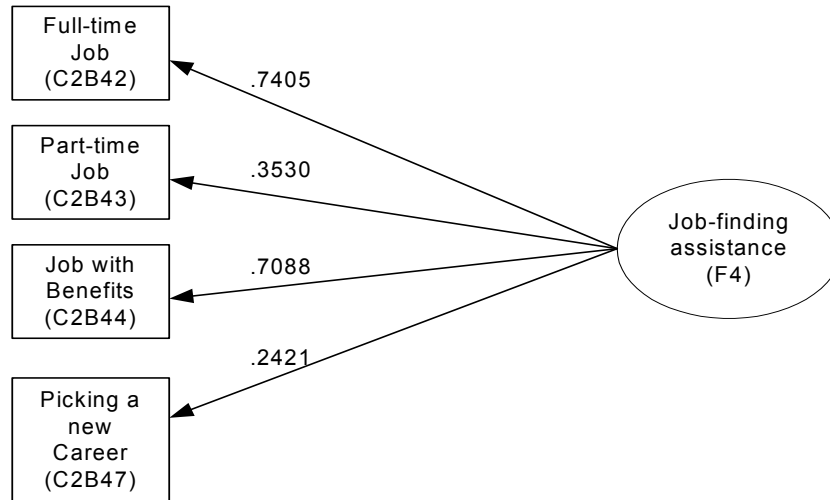
The measurement models for the perceived needs factor varied between the two groups. For the non job-ready group, two indicators were introduced that were not present in the job-ready measurement model (Q83 criminal record and Q93 interpersonal skills). Of the parameter estimates that were common between the two groups, the estimates were

relatively consistent with the greatest variation occurring with the Q92 (discrimination) variable. The estimate for the job-ready group was .3278 while the estimate for the non job-ready group was .5319. A substantial variation was also present for Q82 (continued drug use), with the job-ready estimate at .5319 and the non job-ready estimate and .3885. The estimates for the remaining common variables were relatively consistent. The most significant variable for the job-ready group was Q88 (current economy), followed by Q87 (welfare assistance), and Q89 (interpersonal skills). For the non job-ready group, Q93 (personal appearance) was the most significant, followed by Q87 (welfare assistance), and Q89 (interpersonal skills). The least significant variable for the job-ready group was Q92 (discrimination), while Q83 (criminal record) was the least significant for the non job-ready group. Overall, the estimates between these two groups suggested a differential factor structure between groups.

#### ***6.3.1.4 Job-Finding Assistance***

The job-finding assistance factor (F4) was measured by 5 items in the questionnaire. Of those original items, 4 items were retained for the job-ready group and 5 are retained for the non job-ready group. The items and their corresponding factor loadings for the job ready (JR) group are presented in Figure 6.19.

The fit indices for this measurement model did not uniformly support a very good fit to the data. The GFI was .981, the chi-square p-value was .0859 (not significant), the RMSEA was .1088 (poor fit), Bentler's Comparative Fit Index was .9469 and Bollen's Delta<sup>2</sup> was .9505.



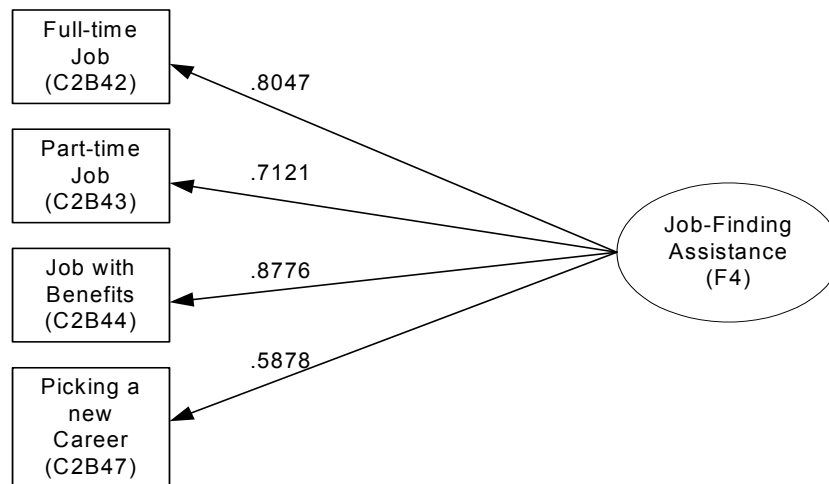
**Figure 6.19 Job-Ready Measurement Model for the Job-Finding Assistance Factor**

The parameter estimates ranged from .2421 for Q47 (picking a new career) to .7405 (full-time job); however all estimates were significant. Similarly, the  $R^2$  estimates ranged from .0586 for Q47 to .5484 for Q42. The validity coefficient supported a moderate to good fit (.8417) and is reported in Table 6.9.

The items and their corresponding factor loadings for the non job ready (NJR) group are presented in Figure 6.20. This measurement model produced a very good fit to the data. The GFI was .990, the chi-square p-value was .5237 (not significant), the RMSEA was .0000 (perfect fit), Bentler's Comparative Fit Index was 1.000 and Bollen's  $\Delta^2$  was 1.0076. The parameter estimates ranged from .5878 for Q47 (picking a new career) to .8776 (job w/ benefits). All estimates were significant. Similarly, the  $R^2$  estimates ranged from .3455 for Q47 to .7701 for Q44. The validity coefficient supported a good fit (.9332) and is reported in Table 6.9.

**Table 6.9 Job-Finding Assistance Reliability and Validity Estimates**

Item Number	Label	Parameter Estimates	R <sup>2</sup> Estimates	Validity Coefficient
JR				.8417
Q42	Full-time job	.7405	.5484	
Q43	Part-time job	.3530	.1246	
Q44	Job with benefits	.7088	.5024	
Q47	Picking a new career	.2421	.0586	
NJR				.9332
Q42	Full-time job	.8047	.6475	
Q43	Part-time job	.7121	.5071	
Q44	Job with benefits	.8776	.7701	
Q47	Picking a new career	.5878	.3455	



**Figure 6.20 Non Job-Ready Measurement Model for the Job-Finding Assistance Factor**

The measurement models for job finding assistance varied substantially between the two groups. Though the same variables were included in both measurement models, the parameter estimates and model fit indices were significantly different. For the non



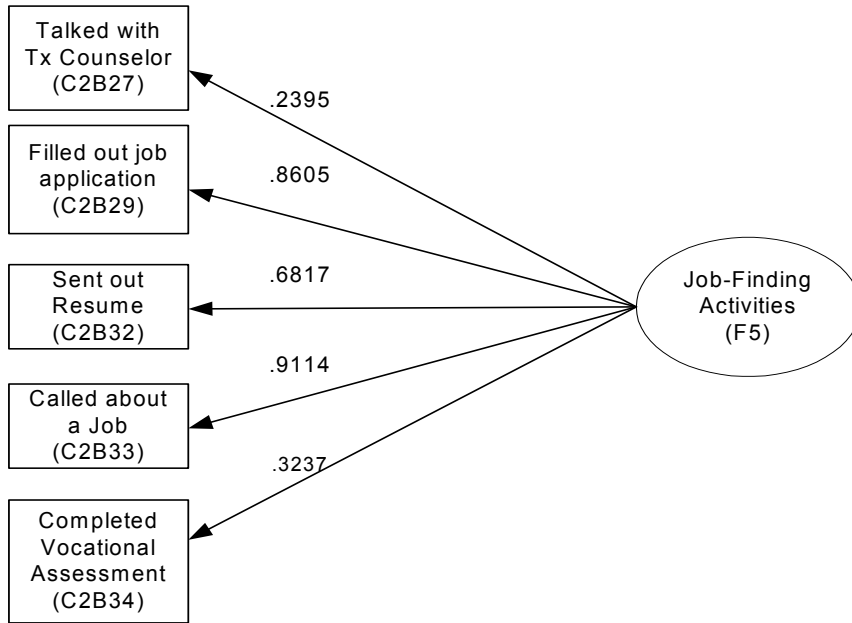
job-ready group, the most significant difference in parameter estimates was for Q43 (part-time job). For the job-ready group this item was the least significant. The estimates for item Q47 (picking a new career) also varied substantially, with the job ready group at .2421 and the non job-ready group at .5878. For the job-ready group, Q42 (full-time job) was the most significant. For the non job-ready group Q47 (finding a job with benefits) was the most significant.

For this factor, the overall model fit also varied. For the job-ready group, the RMSEA was not significant and the chi-square was marginal. For the non job-ready group, the model fit was ideal. The variation in parameter estimates and the shift in model fit for the same items across the two group suggests a change in factor structure between groups.

#### ***6.3.1.5 Job-Finding Activities***

The job-finding activities factor (F5) was measured by 9 items in the questionnaire. Of those original items, 5 items were retained for the job-ready group and 5 are retained for the non job-ready group. The items and their corresponding factor loadings for the job ready (JR) group are presented in Figure 6.21.

This measurement model produced a very good fit to the data. The GFI was .9967, the chi-square p-value was .9968 (not significant), the RMSEA was .0000 (perfect fit), Bentler's Comparative Fit Index was 1.000 and Bollen's Delta<sup>2</sup> was 1.0237. The parameter estimates ranged from .2395 for Q27 (talked w/tx counselor) to .9114 for Q33 (called about a job). All estimates were significant. Similarly, the R<sup>2</sup> estimates range from .0574 for Q27 to .8306 for Q33. The validity coefficient supported a good fit (.9477) and is reported in Table 6.10.

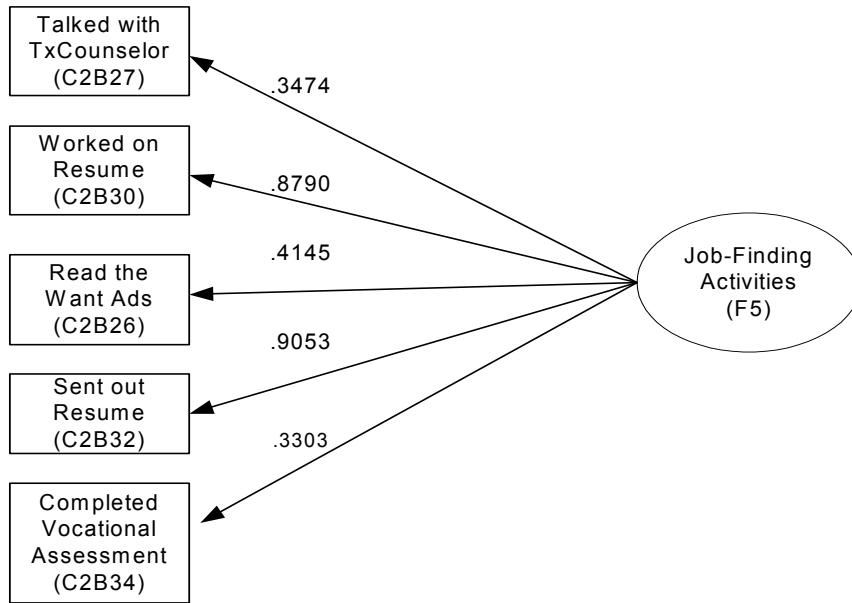


**Figure 6.21 Job-Ready Measurement Model for the Job-Finding Activities Factor**

**Table 6.10 Job-Finding Activities Factor Reliability and Validity Estimates**

Item Number	Label	Parameter Estimates	R <sup>2</sup> Estimates	Validity Coefficient
JR				.9477
Q27	Talked w/ tx counselor	.2395	.0574	
Q29	Filled out job application	.8605	.7405	
Q32	Sent out a resume	.6817	.4647	
Q33	Called about a job	.9114	.8306	
Q34	Completed a vocational assessment	.3237	.1048	
NJR				.9454
Q27	Talked w/ tx counselor	.3474	.1207	
Q30	Worked on a resume	.8790	.7726	
Q26	Read the want ads	.4145	.1718	
Q32	Sent out a resume	.9053	.8196	
Q34	Completed a vocational assessment	.3303	.1091	

The items and their corresponding factor loadings for the non job ready (NJR) group are presented in Figure 6.22.



**Figure 6.22 Non Job-Ready Measurement Model for the Job-Finding Activities Factor**

This measurement model also produced a very good fit to the data. The GFI was .995, the chi-square p-value was .9794 (not significant), the RMSEA was .0000 (perfect fit), Bentler's Comparative Fit Index was 1.000 and Bollen's Delta<sup>2</sup> was 1.0547. The parameter estimates ranged from .3303 for Q34 (completed a vocational assessment) to .9053 for Q32 (sent out a resume), and all estimates were significant. The R<sup>2</sup> estimates ranged from .1091 for Q34 to .8196 for Q32. The validity coefficient supported a good fit (.9454) and is reported in Table 6.10.

The measurement models for the job-finding activities factor varied between the two groups. Two indicators, Q29 (filled out a job application) and Q33 (called about a job) that were present in the job-ready group model dropped out for the non job-ready group. Conversely, two indicators, Q30 (worked on resume) and Q26 (read the want ads)

that were in the model for the non job-ready group were not in the model for job-ready group. Variation existed among the common variables as well. Q32 (sent out a resume) was the most significant indicator for the non job-ready model with an estimate of .9053, while the estimate for this variable for the job-ready group dropped .6817. The remaining two indicators Q27 (talked with tx counselor) and Q34 (completed voc assessment) were relatively consistent with Q27 being the least significant in the job-ready group and the non job-ready group. Overall, the estimates between these two groups suggested a change in factor structure between groups.

### **6.3.2 Construct Validity Structural Models**

To build the structural models, the five measurement models for each subgroup were combined into a single subgroup model. The two combined model were modified using the modification procedures discussed in Chapter 5. To determine the correlations between constructs, each of the factors was allowed to co-vary. This produced the cognitive map for each of the two subgroups. The parameter estimates for each of the indicators and the correlation between each factor are presented in the Figures 6.23 and 6.24.

#### **6.3.2.1 Job-Ready Structural Model**

The Job Ready structural model is presented in Figure 6.23. The fit indices for this model supported a very good fit to the data. The GFI was .900, the chi-square p-value was .2362 (not significant), the RMSEA was .0268 (good fit), Bentler's Comparative Fit Index was .9792 and Bollen's Delta<sup>2</sup> was .9802. The inter-factor correlations ranged from .03914 to .61709. With the exception of the correlations between F2 and F3 (.61709; t-value 6.77) and between F3 and F4 (.25447; t-value 2.21)

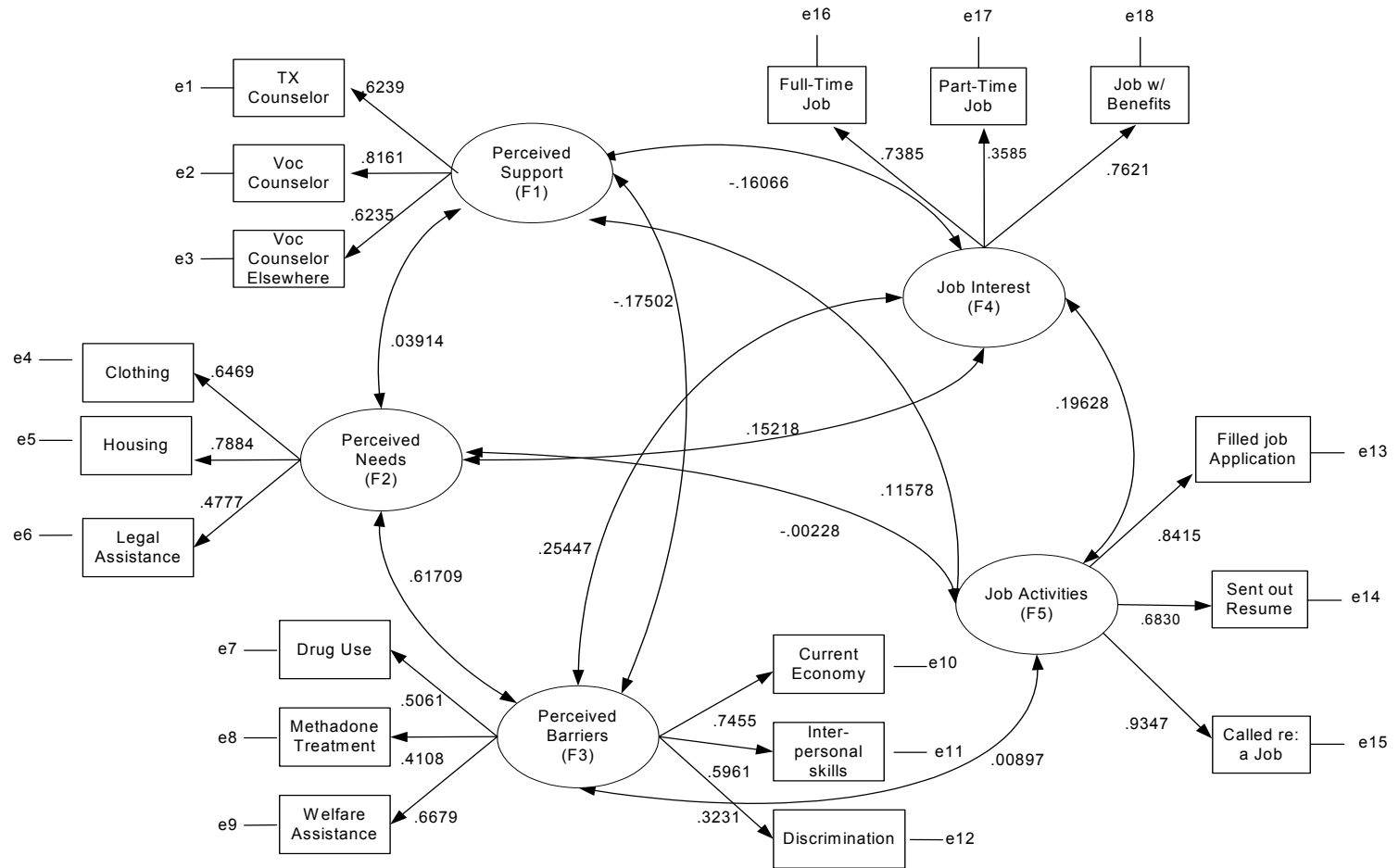


Figure 6.23 Job-Ready Model on Job Ready Sample (JRonJR)

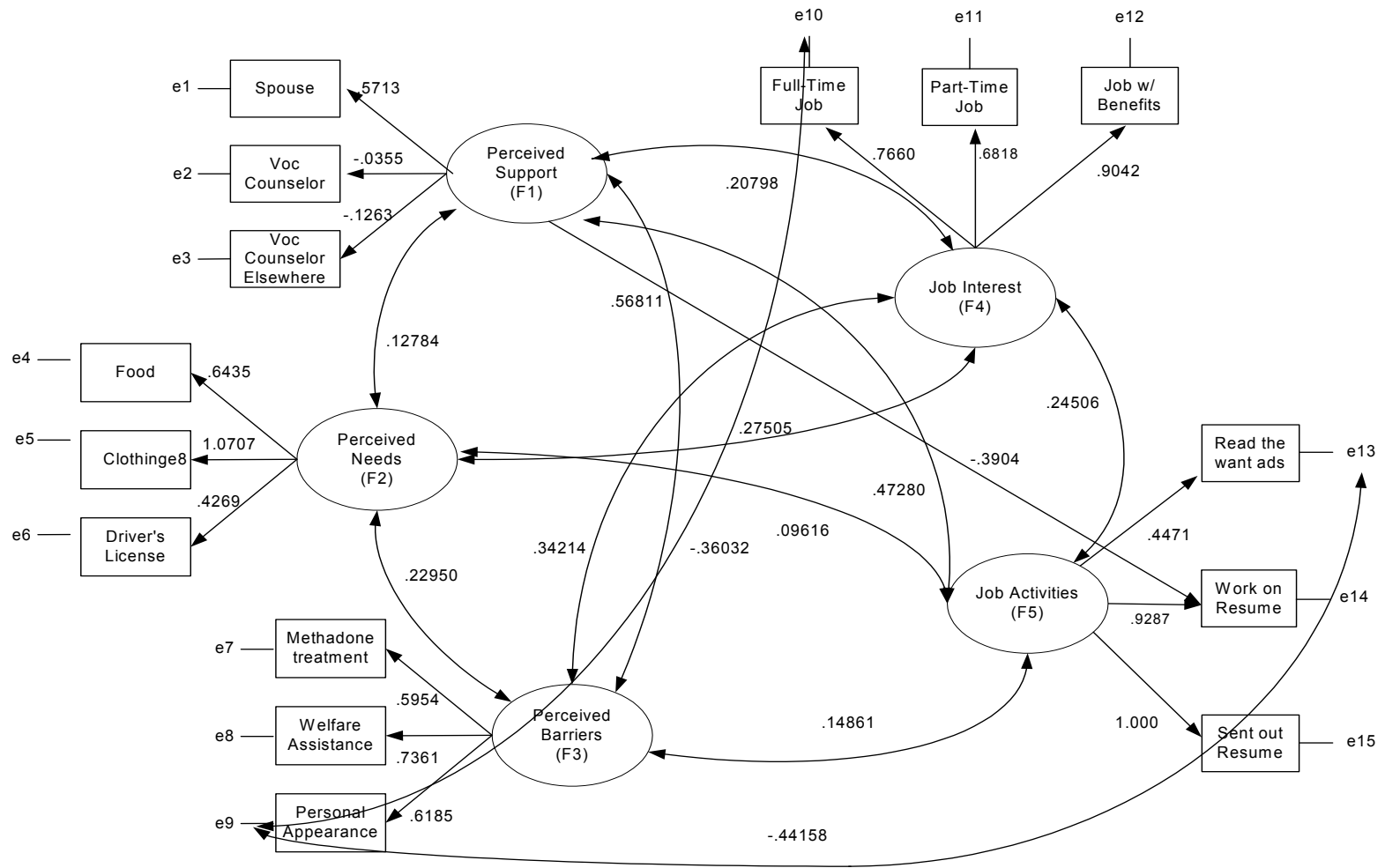


Figure 6.24 Non Job-Ready Model on Non Job-Ready Sample (NJRonNJR)

all inter-correlations were insignificant. The parameter estimates across all the factors ranged from .3231 to .9347 and were all significant.

### ***6.3.2.2 Non Job-Ready Structural Model***

The Non Job-Ready structural model is presented in Figure 6.24. The fit indices for this model also supported a very good fit to the data. The GFI was .8721, the chi-square p-value was .5460 (not significant), the RMSEA was .0000 (perfect fit), Bentler's Comparative Fit Index was 1.000 and Bollen's Delta<sup>2</sup> was 1.0082. However, to achieve these fit statistics, one of the indicators (worked on resume ) for F5 (Job-Finding Activities) cross-loaded with F1 (Perceived Support). The estimate for this cross-loader was -.3904. In addition, two error estimates, (e10 and e13), were correlated with e9. The inter-factor correlations ranged from .09616 to .56811. The correlations between factors F1 and F3 (.56811; t-value 2.93), F2 and F4 (.27505; t-value 2.17), and F3 and F4 (.34214; t-value 2.24), and F1 and F5 (.4728; t-value 2.14) were significant. The parameter estimates across all the factors ranged from -.0355 to 1.00. With the exception of two estimates for F1 (-.0355 vocational counselor and -.1263 vocational counselor elsewhere), all parameter estimates for the indicator variables were significant.

A comparison of the parameter estimates between the subgroup models is presented in Table 6.11. With the exception of F4, each of the factors differed in composition and in the estimates for each of the common indicators. The most substantial compositional change between groups was for F3, with only two out of seven common indicators between groups. Of the common estimates, the most substantial change was in F1 with the estimates for Q62 and Q64 differing by .7806 and .4972, respectively.

**Table 6.11 Comparative Group Parameter Estimates**

<b>Var Number</b>	<b>Label</b>	<b>Parameter Estimate (JR group)</b>	<b>Parameter Estimate (NJR) group</b>
<b>F1</b>	<b>Perceived Support</b>		
Q57	Spouse	----	.5713
Q60	Tx counselor	.6239	----
Q62	Vocational counselor in program	.8161	-.0355
Q64	Vocational counselor elsewhere	.6235	-.1263
<b>F2</b>	<b>Perceived Needs</b>		
Q73	Food	----	.6435
Q74	Clothing	.6469	1.071
Q75	Housing	.7884	----
Q77	Legal assistance	.4777	----
Q78	Driver's license	----	.4269
<b>F3</b>	<b>Perceived Barriers</b>		
Q82	Drug use	.5061	----
Q84	Methadone treatment	.4108	.5954
Q87	Welfare assistance	.6679	.7361
Q88	Current economy	.7455	----
Q89	Interpersonal skills	.5961	----
Q92	Racial/gender discrimination	.3231	----
Q93	Personal appearance	----	.6079
<b>F4</b>	<b>Job-Finding Assistance</b>		
Q42	Full-time job	.7385	.7633
Q43	Part-time job	.3585	.6818
Q44	Job with benefits	.7621	.9042
<b>F5</b>	<b>Job-Finding Activities</b>		
Q26	Read the want ads	----	.4561
Q29	Filled out a job application	.8415	----
Q30	Work on resume	----	.9287
Q32	Sent out resume	.6830	1.000
Q33	Called someone about a job	.9347	----



A comparison of the factor correlations between groups is presented in Table 6.12. The most substantial difference in correlated factors between groups was for the correlation between F1 and F3 with a difference of .74313. The correlation for the job-ready group was insignificant ( $t = -.95$ ), while the correlation for the non job-ready group was significant ( $t = 2.93$ ). The difference between F2 and F3 was also substantial, with a difference of .38759 between estimates. As with the correlation between F1 and F3, the correlation between F2 and F3 for the job-ready group was significant ( $t = 6.77$ ), while the correlation for the non job-ready group was insignificant ( $t = 1.64$ ).

**Table 6.12 Comparative Group Factor Correlations**

<b>Correlated Factors</b>	<b>Estimate JR Group</b>	<b>Estimate NJR Group</b>
F1 F2	.03914	.12784
F1 F3	-.17502	.56811
F1 F4	-.16066	.20798
F1 F5	.11578	.47280
F2 F3	.61709	.22950
F2 F4	.15218	.27505
F2 F5	-.00228	.09616
F3 F4	.25447	.34214
F3 F5	.00897	.14861
F4 F5	.19628	.24506

### **6.3.3 Structural Model Cross Validation**

The next step in the validity study was to cross-validate the models to determine the generalizability of each of the two subgroup models. To accomplish this, the model that produced the best model fit for each of the two subgroups was tested on the opposite

sample. That is, the job-ready group model was tested on the non job-ready sample and vice versa.

The model for the job-ready group with the non job-ready sample is presented in Figure 6.25. The fit indices for this structural model did not support a good fit to the data. The GFI was .8049 (marginal) the chi-square p-value was .0138 (significant), the RMSEA was .0712 (marginal fit), Bentler's Comparative Fit Index was .8620 and Bollen's Delta<sup>2</sup> was .8749. Because the job-ready group only marginally accounted for the non job-ready group, it was not deemed acceptable for the group equivalency comparison tests.

The model for the non job-ready group with the job-ready sample is presented in Figure 6.26. The fit indices for this structural model supported a better fit to the data. The GFI was .9038, the chi-square p-value was .0209 (significant), the RMSEA was .0530 (acceptable fit), Bentler's Comparative Fit Index was .9287 and Bollen's Delta<sup>2</sup> was .9335. Though the model fit was not ideal, it was deemed acceptable for the equivalency tests.

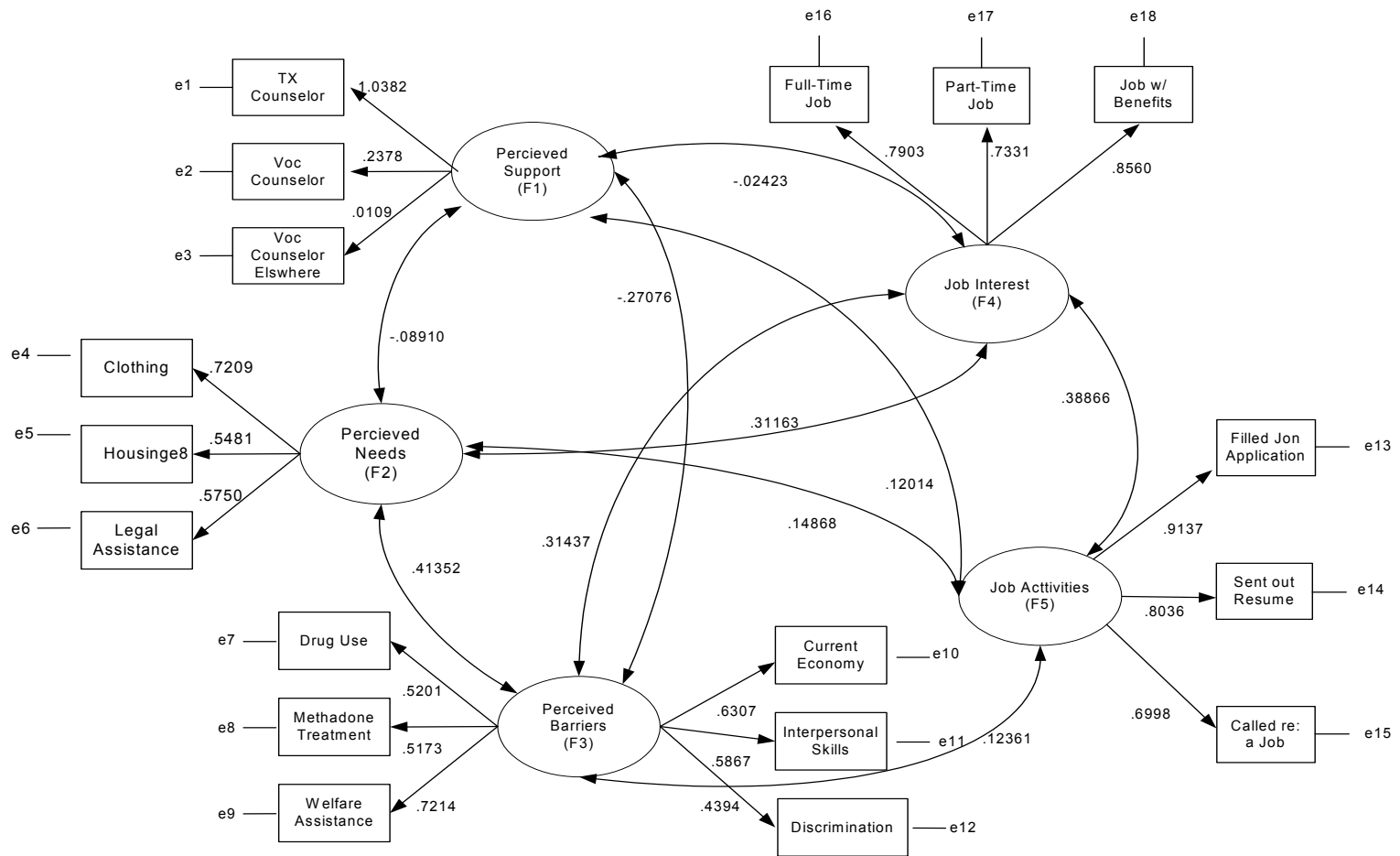


Figure 6.25 Job-Ready Model on Non Job-Ready Sample (JRonNJR)

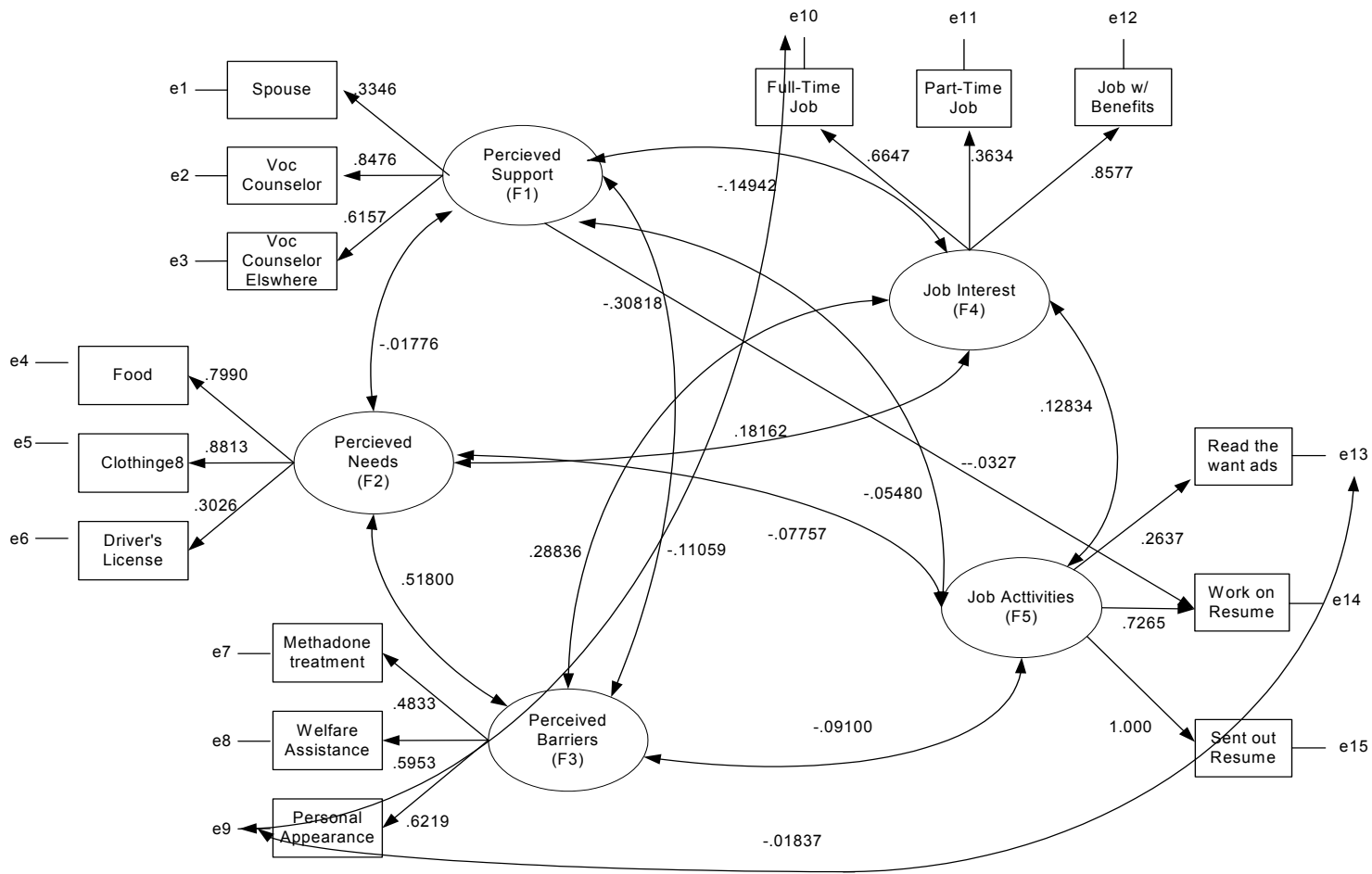


Figure 6.26 Non Job-Ready Model on Job-Ready Sample (NJRonJR)

A comparison of the parameter estimates between the non job-ready group and the job-ready group using the non job-ready model is presented in Table 6.13.

**Table 6.13 Non Job-Ready Model Comparative Group Parameter Estimates**

<b>Var Number</b>	<b>Label</b>	<b>Parameter Estimate NJR model on NJR Group</b>	<b>Parameter Estimate NJR model on JR Group</b>
<b>F1</b>	<b>Perceived Support</b>		
Q57	Spouse	.5713	.3346
Q62	Vocational counselor in program	-.0355	.8476
Q64	Vocational counselor elsewhere	-.1263	.6157
<b>F2</b>	<b>Perceived Needs</b>		
Q73	Food	.6435	.7990
Q74	Clothing	1.071	.8813
Q78	Driver's license	.4269	.3026
<b>F3</b>	<b>Perceived Barriers</b>		
Q84	Methadone treatment	.5954	.4833
Q87	Welfare assistance	.7361	.5953
Q93	Personal appearance	.6185	.6219
<b>F4</b>	<b>Job-Finding Assistance</b>		
Q42	Full-time job	.7660	.6647
Q43	Part-time job	.6818	.3634
Q44	Job with benefits	.9042	.8577
<b>F5</b>	<b>Job-Finding Activities</b>		
Q26	Read the want ads	.4471	.2637
Q30	Work on resume	.9287	.7265
Q32	Sent out resume	1.000	1.000

The parameter estimates differed between groups across all of the sub-factors. The most substantial differences were evident in the perceived support factor, with the spouse as the most significant variable for the non-job ready sample and the least significant for the job-ready sample. Both groups considered food and clothing as

significant needs, with the non job-ready group having a higher factor loading for clothing and a lower loading for food. The groups differed regarding barriers as well, with the non job-ready group having higher factor loadings for methadone treatment, welfare assistance, and personal appearance. The most substantial difference in the desire for job-finding assistance was for the part-time job, with the non job-ready group having a substantially higher factor loading for this variable. Finally, the factor loadings for the job-activities factor also differed between groups, with the non job-ready group having higher loadings for reading the want ads and working on a resume.

A comparison of the factor correlations between non job-ready and job-ready groups using the non job-ready model is presented in Table 6.14.

**Table 6.14 Non Job-Ready Model Comparative Group Factor Correlations**

<b>Correlated Factors</b>	<b>Estimate NJR on NJR Group</b>	<b>Estimate NJR on JR Group</b>
F1 F2	.12784	-.01776
F1 F3	.56811	-.30818
F1 F4	.20798	-.14942
F1 F5	.47280	-.05480
F2 F3	.22950	.5180
F2 F4	.27505	.18162
F2 F5	.09616	.07757
F3 F4	.34214	.28836
F3 F5	.14861	.09100
F4 F5	.24506	.12834

The most substantial difference in correlated factors between groups was for the correlation between F1 and F5 with a difference of .5276. The correlation for the non job-ready group was significant ( $t = 2.13$ ), while the correlation for the job-ready group was insignificant ( $t = -.53$ ). The difference in the correlations between F2 and F3 was also substantial, with a difference of .2885 between estimates. The correlation between F2 and F3 for the non job-ready group was insignificant ( $t = 1.64$ ), while the correlation for the job-ready group was significant ( $t = 4.83$ ). The significant levels for the correlation between F2 and F4 were also different. The correlation for the non job-ready group was significant ( $t = 2.24$ ), while the correlation for the job-ready group was insignificant ( $t = 1.68$ ).

The differences in the parameter estimates between groups presented in Table 6.13, and the differences in the inter-factor correlations presented in Table 6.14 provided evidence supporting the hypothesis that vocational status moderates employability.

#### **6.3.4 *Structural Equivalency Tests***

Equivalency tests were used as the final test of the moderator hypothesis by examining whether the overall covariance matrices and factor correlations between models differed significantly. The covariance matrices for each group using the manifest variables in Figure 6.26 were tested for matrix equality. A SAS IML program incorporating a procedure developed by Anderson (1984) was used for this test. A chi-square test of differences was generated within the IML procedure testing matrix equivalency. The results of this test yielded a chi-square value of 351.191 with 120 degrees of freedom and probability of type I error of less than .05. The null hypothesis of no difference in the structural models depicted in Figures 6.24 and 6.26 was rejected.

A similar chi-square test for equality of two correlation matrices based on Jennrich (1970) was used to compare the factor correlation between the two groups. The results of this test yield a chi-square value of 54.446 with 10 degrees of freedom and probability of type I error of less than .05. Thus, consistent with the previous test, the null hypothesis of no difference in factor correlations between the models shown in Figures 6.24 and 6.26 was rejected.



## **7.0 Discussion**

This chapter provides a discussion of the study results as they relate to the study hypotheses, as well as the implications of these findings for the substance abuse field. The discussion begins with a brief overview of the study hypotheses and general study approach, and is followed by a discussion of the extent to which the study findings confirm the hypotheses. Subsequent sections provide an interpretive summary of the significant results within each sub-study, and the implications of these findings for the substance abuse and vocational rehabilitation fields. In addition, a brief discussion of the methodological contributions to the field is provided. Finally, the study limitations and the implications for future research are discussed.

### **7.1 Implications for the Research Hypotheses**

The primary aim of this study was to evaluate the conceptual framework on which the VRS is based. The conceptual framework presents two testable hypotheses that served as the focus of this evaluation: (a) that employability is a multidimensional construct with multiple underlying factors, and (b) that vocational status moderates the sub-factors of employability and influences the composition and interrelationship of these sub-factors. Each of these hypotheses was tested empirically using a structural modeling approach. This approach followed a two-step process as described in Chapter 5. The first step produced measurement models for each sub-factor using items from the VRS that demonstrated acceptable model fit. These models were also tested for reliability.

The second step combined the measurement models to examine the relationship between sub-factors, and to confirm that the combination of factors in a single model

produced an acceptable model fit. This overall model fit provides the evidence that the individual factors are, in fact, sub-parts of the overarching construct of employability; thus producing evidence of construct validity. A split sample approach was used for testing overall model fit to accommodate the second sub-study. That is, the combined model fit was tested separately on the job-ready and non job-ready samples. The split sample approach allowed for group comparisons on the overall model fit for each of the two vocational subgroups. These comparisons provided the evidence of a moderator effect of vocational status.

The empirical evidence supportive of the first hypothesis includes (1) estimates of test-retest reliability and validity for each of the sub-factors and (2) estimates of overall construct validity for the combined sub-factor model. Test-retest reliability models were run using the combined study sample. The evidence for factor invariance over time is mixed. Though acceptable measurement models were developed for each of the sub-factors for both administrations of the VRS, estimates of factor stability produced varied results. With the exception of the motivation sub-factor, the inter-factor correlations between administrations were moderate to low indicative of sub-factor change. The composite reliability estimates, on the other hand, were all high. As discussed in Chapter 5, composite reliability is not constrained by the unnecessarily restrictive assumption that the true score factor remains consistent across administrations. By avoiding the consistency requirement, estimates of the amount of weighted total score variance accounted for by a weighted true score component can be formulated. Therefore, in combination, these estimates provide a more complete assessment of test-retest reliability.

Construct validity coefficients were also estimated for each employability sub-factor for each of the two subgroups. The validity coefficients for all factors across subgroups provided moderately strong to strong evidence of the validity of the item-factor assignment. One may assume that since each of the measurement models was developed to yield the best fit the data, high validity coefficients are to be expected. However, as is the case in most of the measurement models developed in the sub-studies, adequate model fit can be obtained even though several weak indicators are included in the model. Therefore, an overall estimate of factor validity provides summary evidence that the item set for each factor does, in fact, provide a valid measure of the factor.

The strongest evidence that employability comprises multiple underlying sub-factors is provided by the estimates of overall model fit for the combined factor model. Though reliability and validity are critical for estimating and evaluating the measurement models for each sub-factor, the combined factor model produces the ultimate evidence of structural integrity. Structural models were developed for each of the two subgroups, and model fit estimates for each of the two subgroups provided strong evidence of construct validity, supporting the first study hypothesis.

The empirical evidence supporting the second study hypothesis includes (1) a test of covariance matrix equality between the job-ready and non job-ready groups and (2) a test of the inter-factor correlation equality between the two groups. Both tests produced evidence ( $p < .05$ ) that the null hypothesis of no differences was rejected. That is, the evidence showing the lack of equality between groups supports the contention that the covariance matrices for each of the two groups could not be drawn from the same population. From this, we can conclude that the model structure is different between the

two vocational groups, supporting the hypothesis that vocational status moderates employability. In summary, the evidence produced in this study confirm both study hypotheses.

## **7.2 Interpretive Summary and Implications of the Study Results**

The findings from this study provide valuable insights into the factors that contribute to the vocational success of substance abuse treatment clients. First, the manifest variables that comprise each of the measurement models provide for an understanding of the cognitive priorities assigned to each factor. Second, the variation between groups on each of the factors (and their related manifest variables) emphasizes the need to consider group differences in the vocational rehabilitation process. The following discussion highlights significant findings from the measurement modeling process, as well as significant group differences identified in the reliability and validity study results. Implications for the substance abuse treatment field are also discussed

### **7.2.1 Construct Reliability Study Implications**

Though factor stability assures consistency in measurement over time, accounting for circumstances that may contribute to intra-individual change is critical. A central influencer of true score ranking is the rehabilitation process itself. That is, elements of the treatment regimen as delivered to the study participants may well impact individual mental models in process centric ways. The potential for process-induced change existed in the TEP study and will be given explicit consideration when interpreting difference between groups.

The first factor examined in the reliability study was *perceived support*, which was indicated by measures of support from the spouse, treatment, and vocational staff.

The variable representing the support of the spouse was the least significant item in the factor measurement models at both times 1 and time 2, and dropped out of the model altogether when the two measurement models were combined. These findings suggest that perceived spousal support may not be an invariant support mechanism for the vocational rehabilitation of substance abuse treatment clients. This finding is significant for rehabilitation counselors since the family has been receiving increased attention in the vocational rehabilitation literature over the past decade. The finding in this study adds to the mixed evidence regarding the positive role of family-involved treatment in the empirical literature versus the enthusiastic clinical literature as reported by McCrady (1986). Given this mixed evidence, the implication for vocational clinicians is to regard with greater uncertainty the assumption that support from all family members is equivalently perceived at all stages of the rehabilitation process. Instead, clinicians' should consider whether spousal involvement operates differently to influence vocational outcomes.

Another noteworthy difference in interpretation of the support factor is the comparative loadings for the vocational counselor outside of the treatment program. During the second administration, the factor loading for the vocational counselor dropped substantially, suggesting that the non-treatment vocational counselor was perceived as less central to support at time 2. Although the time period between administrations was limited to two weeks, an element of the TEP study design introduced an in-house vocational counselor as an available resource to the study participant prior to the second administration. Because the in-house vocational counselor was not present at the first administration, this support mechanism was not included in the measurement model at

time 1. However, it is possible that this additional support available at time 2 may have eclipsed the perceived importance of a non-treatment vocational counselor, thus impacting the factor loading. This supposition is consistent with Arella et al.'s (1990a) report that an in-house vocational counselor serves as the primary client advocate related to vocational rehabilitation. This finding is most compelling for treatment program administrators as they consider the potential impact and potential benefit of an in-house vocational clinician. Given the demands on primary treatment counselor case loads and the lack of specialized skills among these counselors in the vocational rehabilitation process, an in-house vocational counselor may be the best approach for meeting the employment needs of the clients.

The second measurement model in the reliability study measured *perceived ancillary needs* central to obtaining a job. For this treatment population, these needs were child care, food, clothing, and legal assistance, with the basic needs of food and clothing as the most significant items in the model. The factor loadings for the variables between the two administrations were consistent, suggesting that need structure remains fairly constant over time. However, the model fit indices for the second administration produced mixed results, suggesting a shift in the covariance matrix for the second administration. That is, a better model fit would have been produced with a different set of items at time 2. Nevertheless, the model fit at the second administration was acceptable. The pattern of factor loadings in this model implies that meeting basic needs is a priority for substance abusers. From a treatment perspective, this suggests a need for coordinated case management to leverage other community programs to get basic, as well as other vocational needs met.

The variables that were *perceived barriers* for obtaining a job included methadone treatment, leisure activities, the current economy, the respondents' work attitude, racial or gender discrimination, and the respondents' personal appearance. Interestingly, the intrinsic variables of work attitude and appearance had the highest factor loadings. These findings support Renwick and Krywonis's (1992) report that substance abusers typically have poor conception of self and a weak sense of self-esteem. The variable set produced in this measurement model also supports Brewington et al.'s (1987) report that obstacles relevant to drug treatment clients span client-level (i.e., work attitude and perception of personal appearance), program level (i.e., methadone treatment), and external (i.e., economy and discrimination) obstacles. The consistent measure of manifest items that measure perceived barriers across studies adds assurance that these variables are important to consider when determining vocational objectives. Given the vocational profiles of many substance abuse treatment clients, these findings also suggest that interventions targeting issues of self-worth and self-esteem may be beneficial as a precursor to job-seeking activities.

As with the support factor, the changes in factor structure between administrations for the perceived barriers factor may have been influenced by an unintended intervention effect. As mentioned earlier, part of the TEP research design required that the vocational counselor contact the study participants assigned to the vocational intervention prior to the second administration. During this contact, the vocational counselor described the types of services that might be available to the study participants, though no services were actually delivered prior to the second administration. The discussion alone,

however, may have influenced how the respondents perceived barriers to employment at time 2.

The item set for the job-finding activity (motivation) measurement model appeared to line up on the job search continuum, with activities most proximal to obtaining a job (i.e., interviewing) having the higher loadings and the pre-search activities (i.e., vocational assessment) having the lowest estimates. The test-retest model for this factor also exhibited a change in the motivational structure from time 1 to time 2. For example, talking to a treatment counselor about getting a job was dropped from the factor measurement model at the second administration. Conversely, completing a vocational assessment, which was not included in the first measurement model reappeared with a significant factor loading at the second administration. Since a standard set of vocational assessments (e.g., interest inventory) was used by the in-house counselor as part of the intake process into the vocational program, this may have influenced the perception of items central to the factor at time 2.

In summary, the measurement models for each of the four employability factors varied across administrations. Estimates of factor stability ranged from a low of .424 for perceived support to a high of .887 for motivation. Whereas, employability factors exhibited considerable intra-individual change over time, composite reliability remained consistently high, ranging from .920 for perceived barriers to .988 for motivation. Thus, although factor structure shifts across time, factor true scores continue to account for a large portion of measure invariance.



### 7.2.2 *Construct Validity Study Implications*

To test the construct validity of the indicated models and the hypothesis that vocational status moderates employability, structural comparisons of two vocational groups representing job-ready and non job-ready clients were performed. Unique measurement models were developed for each factor for each subgroup sample. The measurement models for each subgroup were combined into a structural model that encompassed all the factors of employability. As with the results from the reliability study, these findings can be better understood by a comparative examination of the sub-components of the structural models. As with the measurement models, group differences were evident across all subgroup factors. However, a key distinction in the interpretation of the differences in these subgroup factors is that group differences were expected, and in fact, configural invariance was considered an acceptance of the null hypothesis of no group differences.

For the *perceived support* factor, the structure differs between groups, with job-ready clients attributing support to professional counselors and friends. In contrast, the non job-ready clients look to their spouses. The job-ready clients consider both treatment staff and vocational counselors as significant support mechanisms. Non job-ready clients, in contrast, consider only the vocational counselor in the program as significant.

The measurement models for the *perceived needs* also varied substantially between groups. For both groups the most significant need was clothing, but the order of significance for the remaining items differed between groups. For the non job-ready group, the items unique to this group appeared to represent more basic needs and more significant impediments for securing a job (i.e., food, transportation, driver's license, and

family needs), whereas the unique items for the job-ready group (i.e., child care and money for training) appeared to be more typical concerns of individuals seeking a job. The change in the perceived need structure suggests stage-related difference between groups. As clients move along the vocational status continuum from non job-ready to job-ready, their mental models of perceived need appear to shift consistent with their stage of vocational readiness.

As with perceived needs, *perceived barriers* also appears to be stage-related. The non job-ready clients perceived intrinsic variables (i.e., interpersonal skills, personal appearance, and criminal record) as more significant, while job-ready clients perceived external variables (current economy and welfare assistance) as most significant. The structural differences between groups represent changes in perceived barriers consistent with level of vocational status. Through the rehabilitative process, job-ready clients are more likely to have addressed intrinsic problems and considered external barriers out of their locus of control as more problematic, whereas, non job-ready clients are less likely to have overcome personal barriers related to employment. Both groups considered continued drug use as a significant barrier, with the job-ready group having a higher factor loading for this item indicative of greater progress in the overall addiction recovery process.

The item set for measuring the *desire for job-finding assistance* for both groups included assistance in getting a full time job, a part time job, a job with benefits, and assistance with picking a new career. The most significant differences on this factor between groups was the desire for assistance finding a part-time job, with the data

supporting the fact that getting a part-time job had less significance for the job-ready group.

As with all the other employability sub-factors, the item set for measuring *job-finding activities* varied between groups. The item set for the job-ready group seemed to be more representative of the activities further on the job-finding continuum (e.g., filling out an application and calling about a job), whereas the items for the non job-ready group represented activities earlier in the job-search process (e.g., working on a resume and reading the want ads).

In summary, the structure of all employability sub-factors and the significance of the items indicating each factor differed between groups, with the pattern of differences seemingly related to stages of vocational readiness. Though these structural changes in the measurement models provide valuable insights related to the moderating relationship of vocational status to the other sub-factors of employability, an examination of the inter-correlations of the sub-factors themselves provides a more comprehensive understanding of how employability as a system differs between groups.

The correlations between sub-factors indicate several qualitative distinctions in the cognitive mapping of these sub-factors, and shed more light on group differences related to employability. First, the perceived support factor is more integrated (i.e., has a pattern of higher correlations) with the remaining employability factors for the non job-ready group than for the job-ready group. This suggests that perceived support serves as a central component of employability only for the non job-ready group.

Second, the correlation between perceived needs and perceived barrier is higher for the job-ready group than for the non job-ready group. It is conceivable that the job-

ready group is more likely to perceive needs and barriers as overall obstacles to successful employment. Non job-ready clients, however, may make a cognitive distinction between basic needs (such as food and clothing) as necessary for overall functioning, while barriers are perceived as more specific to employment.

With the exception of the correlation between perceived needs and barriers, the overall pattern of correlations is higher for the non job-ready group than for the job-ready group; thus producing a more dynamic inter-related cognitive map for the non job-ready group. From a treatment perspective, this suggests that as clients move along the vocational rehabilitation continuum, the sub-factors become more differentiated in the overall assessment of employability. However, for clients earlier in the process, careful consideration should be given to the system as a whole as the inter-relationship of the sub-factors have more significance for this group.

### **7.3 Methodological Contributions of the Study**

The structural modeling approach used to test the research hypotheses and evaluate the employability framework provides a conceptually different perspective than is typically found in the substance abuse treatment literature. A non-traditional approach was used for both the reliability, as well as the validity study. Test-retest reliability studies typically are based on classical test theory assumptions and are limited to estimates of factorial stability that assume true score invariance over time. Relying on a test-retest reliability technique based on classical test theory is subject to several limitations, however, and may underestimate true factor reliability. Classical reliability techniques do not account for potential intervention effects, correlated errors of measurement, nor the influence of more than one latent factor on an indicator (Bollen,

1990, Drewes 2000). The findings of this study provide empirical documentation of the need for a conceptualization of stability over time that better matches the realities. The potential of intervention effects was noted earlier in this discussion, and the results reported in Chapter 6 show that for some factors there were strong correlated errors between manifest variables measured across time, as well as cross-loads from the time 1 factor to manifest variables at time 2. For these reasons, the alternative approach for measuring factor reliability in this study provided a more precise estimate of true factor reliability.

Given the nature of substance abuse treatment research, outcomes of interest often include measures of psychological constructs or behavior changes captured in self-report or clinician administered questionnaires that may not remain constant over time. For this reason, the findings in this study provide the field with a better understanding of the limitations of using a traditional approach for measuring reliability and provide evidence that the alternative composite reliability approach provides more accurate study results.

The approach taken to investigate moderation of vocational status on the other underlying factors of employability also differs from approaches traditionally found in the substance abuse literature. Typical approaches for investigating moderating relationships and testing for group differences rely on regression analysis or analysis of variance (ANOVA) techniques, which do not account for relationships between latent variables in the model, nor do they allow for changes in the factor structure of the variables of interest. Structural equation modeling provides for latent variable analysis, which specifically examines changes in factor structures, as well as inter-dimensional changes induced by the moderator. The underlying assumption is that the moderator has

the potential to shift the factor structure, as well as the intercorrelation pattern of the factors in the model. The network of interrelated factors provides a cognitive map which depicts the relations significant between employability factors.

The results in this study, which support the hypothesis of a moderating effect of vocational status, show a considerable difference in the factor structure depicted in the differences in the factor loadings for each of the underlying factors of employability (see Table 6.13), and considerable variation in the interfactor correlations between groups (see Table 6.14). From a treatment perspective, this provides valuable information for determining an appropriate course of action for each of the vocational subgroups based on group specific cognitive mapping. The measurement models, which are empirically derived, indicate the variables most relevant to the subfactor and can provide insight related to areas of importance. For example, job-ready clients are more likely to perceive external factors as being most central to their vocational success, while non job-ready clients consider intrinsic factors as relevant.

Differences in the interfactor correlations, which depict differences in group mental models also provide valuable treatment insights. The overall inter-factor correlations for the job-ready group were low, while the correlations between factors for the non job-ready group ranged from low to relatively high. As mentioned earlier, these results suggest a more coherent employability network for non job-ready clients than for job-ready clients. The specific intercorrelations also have explicit treatment implications. For example, the high correlations between the support factor and all other factors for the non job-ready group provides evidence that support mechanisms are critical at that stage of rehabilitation, and may influence the perceptions of the other factors in the model.

From a methodological perspective, these findings represent an analytic shift from prediction to latent variable analysis, which examines differences within and between latent variables. The significance of this shift is the ability to use an analytic strategy that allows us to detect these cognitive differences, and get a better understanding of the inter-dimensional changes induced by the moderator. The ability to understand system-level effects at each stage of development opens up a new realm of understanding of the rehabilitation process.

From the treatment perspective, this provides insight on the complexities of employability for each stage of vocational readiness. Given the increased emphasis for job placement, and the constrained community resources available to support job-seeking activities, vocational clinicians are better served to triage their clients into stages of readiness, account for all the factors that impact employability, and prioritize activities and resources commensurate with actual need. The results of this study show that the TEP employability framework has the potential to facilitate this process.

#### **7.4 Study Limitations**

One important limitation to this study is the size of the total and the subgroup samples. MacCallum (1995) reported that data driven model verification based on samples of 100 observations almost invariably leads to poor (i.e., chance) outcomes. However, in a more recent simulation study, Hoyle and Kenny (1999) were able to demonstrate that using a latent variable approach, key parameters could be correctly estimated with a sample size as small as 50, though larger samples are desired. Given the sample size constraints, in this study, multiple fit indices were examined when determining model fit for each of the models developed in each sub-study, and whenever

possible, modification strategies that simplified (constrained) the model were prioritized. Nevertheless, the sample size available for this study may have biased some of the fit indices and sample estimates.

Another important limitation related to sample size was the need to use a cross-validation approach for testing the generalizability of the structural model. Ideally, each model should be tested with data that are independent of the modification procedures, but drawn from the same population. One conclusion of this research is that the job-ready and non job-ready groups were not drawn from the same population. Therefore, by using the cross-validation approach, differences in the sub-populations may have limited the generalizability of the models, and as a result limited the hypothesis test of a moderator effect to the non job-ready model.

Third, the lack of control of unintended intervention effects may have influenced the test-retest reliability study. Though the alternative composite reliability estimates accounted for the unintended intervention effects, an unbiased measure of factor stability would add to a better understanding of the study results.

Fourth, the categorization of vocational groups was based on rational assignment and not tested empirically against a “gold standard.” Ideally, the algorithm should be validated with actual employment outcomes. Within the context of this study, we can conclude that the two vocational groups differ related to employability; however, we can not conclude that the groups would differ on actual employment outcomes.

For these reasons caution should be used when interpreting the study findings and replication of the study results with larger sample sizes is warranted.



## **7.5 Future Research Implications and Conclusion**

The results of this study have both methodological implications for the research community and clinical implications for the treatment community. The findings highlight the need to consider alternative evaluation approaches for measuring the reliability and validity of psychological constructs. As evidenced in the results, relying solely on techniques based on classical test theory can limit our understanding of the dynamic nature of these constructs. Structural equation modeling is specifically designed to explore latent (unobservable ) constructs, as well as, the underlying relationship between these constructs. Though these types of modeling techniques have been available for more than 2 decades, community researchers have typically taken the more traditional approach. However, with the increased attention of this approach in the general evaluation literature, coupled with the broader availability of user-friendly software, an increase in structural equation modeling in the applied social sciences is expected.

Using this approach, researchers can tease apart the underlying constructs of interest and better understand the effects at progressive stages in the rehabilitation process. This is evidenced in the models produced in this study. Using the structural modeling approach, we can see that vocational status impacts employability through mental models that differ by group, and that the interrelationships of the underlying constructs produces a signature cognitive map for each group. These findings inform the treatment community in ways that traditional evaluation approaches are not designed to accomplish. For these reasons, applied social science researchers are encouraged to consider a latent variable analytic approach when evaluating psychological constructs.

From a treatment perspective, the key findings of this study yield important implications. In a nutshell, the single protocol approach for delivering vocational services is not well suited to the psychosocial realities of substance abuse treatment clients. Vocational services need to be tailored to individual needs and vocational outcomes need to be adjusted based on vocational readiness (or status as referred to in the study). It is unrealistic, and not a good use of resources, to expect immediate or short-term placement outcomes for clients who lack marketable skills, or have significant psychological or physical impediments. It is also unrealistic to expect placement outcomes for job-ready clients who have a host of needs or barriers that remain unaddressed. For these reasons, the treatment community is encouraged to include trained (preferably in-house) vocational counselors as part of the treatment battery, and for vocational clinicians to assess employability comprehensively when determining a vocational course of action. The VRS developed by the TEP researchers is a promising tool to facilitate in the assessment process. However, the results of this study should be considered for instrument modifications. Additionally, the employability framework should also include better measures of general functioning, including status of addiction recovery. Additionally, coordinated care between addiction counselors and vocational counselors is likely to be critical to successful vocational rehabilitation of substance abuse treatment clients.

From the results of this study, we can conclude that the job-ready and non job-ready groups differ in terms of employability. However, we cannot conclude that they differ in terms of employment outcomes, or that employability has a direct effect on employment outcomes. For these conclusions, more research is required. A logical next

step is to evaluate a predictive structural model that specifies causal relationships between the latent factors. Based on the literature, it can be hypothesized that employment outcomes are directly caused by perceived support mechanisms, ancillary needs, and barriers to finding and securing a job, and that motivation serves as a mediator in the model. A comprehensive empirical assessment of this hypothesized model, stratified by vocational status as a moderator of employability, would provide the basis for a richer understanding of how to help substance abuse treatment clients find (and hold) a job.

The results of this study need to be considered with caution due to the study limitations. However this research has the potential of making three practical contributions to the substance abuse field. First, it provides an algorithm for classifying clients into stages of vocational readiness. Second, it provides a framework for comprehensively assessing client employability that has been tested empirically. Third, it provides an instrument (the VRS) to facilitate the assessment process. All three of these contributions require additional research. However, if the findings of this study can be replicated and refinements to the framework and instrument are made, then the employability framework and the VRS should be considered as key tools in the vocational rehabilitation process. It is hoped that this study serves as the initial step toward this important end.

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## **9.0 Appendix A: Vocational Readiness Screener**

**Vocational Readiness Screener  
Training and Employment Program (TEP) Version 0697**

SITE:  
STAFF ID:  
CLIENT PROGRAM ID:

TODAY'S DATE:    |\_|\_|    |\_|\_|,    19|\_|\_|  
                  MONTH       DAY       YEAR

90 DAYS AGO:    |\_|\_|    |\_|\_|,    19|\_|\_|  
                  MONTH       DAY       YEAR

TIME BEGAN: |\_|\_| : |\_|\_|    TIME ENDED: |\_|\_| : |\_|\_|  
              HOUR   MINUTES       HOUR   MINUTES

**GENERAL DIRECTIONS**

For each question on these pages, please circle the answer that best describes you. For example,

A1. Do you have a dog?

NO    0  
YES   1

**DISCLAIMER NOTICE**

The following Vocational Readiness Screener was developed for the Training and Employment Program (Karuntzos, 1995) conducted by the Research Triangle Institute, Research Triangle Park, NC under NIDA Grant No. R01-DA-07964-0. The information included in this screener is currently being validated and should only be used for research purposes. The following information should not be used for clinical purposes such as assessing client profiles, services, or needs until the validation of this instrument is completed. The information in this screener should not be duplicated or disseminated in part or in whole without the written permission of the Research Triangle Institute.

**The purpose of the Vocational Readiness Screener (VRS) is to collect basic information about your experiences, abilities, interests, and needs. In each of the areas below, please circle the number next to the statement or provide the information that best describes you or your situation.**

The following questions relate to your background.

A1. What is your gender?

- 1 Male
- 2 Female

A2. What is the month, day, and year of your birth?

|\_|\_|\_| |\_|\_|\_|, 19|\_|\_|\_|  
MONTH DAY, YEAR

A3. Are you of Hispanic or Latino origin or descent?

- 0 NO
- 1 YES

A4. Which of these groups best describes you?

- 1 Alaska Native
- 2 American Indian
- 3 Asian/Pacific Islander
- 4 African American or Black
- 5 White or Caucasian
- 6 Other (PLEASE SPECIFY \_\_\_\_\_)

The following questions relate to your language skills, level of education, and training experience.

B1. How well can you speak English?

- I speak English without any difficulty 0
- I have some difficulty speaking English with other people,  
but I can get by day to day 1
- It is hard for me to speak English with most people 2
- I cannot speak English with other people 3

B2.	How well can you read and write in English?	
	I have no trouble reading and writing in English	0
	I have some trouble reading or writing in English for some reason	1
	It is very hard for me to read and write in English	2
	I cannot read or write in English	3
B3.	What is your highest level of education?	
	I have a 10th grade education or less	0
	I have above a 10th grade education	1
	I have received a high school degree or GED	2
	I have some college experience, but no college degree	3
	I have a college degree (AA, AS, BA, BS, MA, MS, etc.)	4
B4.	What is your highest level of skills or technical training?	
	I have never been in a training program to learn a skill	0
	I started a training program but did not complete the program	1
	I have completed a training program, but did not get a certificate, degree, or union card	2
	I have completed a training program that gave me a certificate, degree, or union card	3
B5.	What is the most on-the-job training you have had?	
	I have never had any on-the-job training	0
	I have had some on-the-job training, but didn't learn any skills that I could use in a job	1
	I have had some on-the-job training in which I learned skills that I could use only at that job	2
	I have had some on-the-job training in which I learned skills that I could use at that job and at other jobs	3
B6.	How much training have you had on how to get into school or a job?	
	I have never had school or job development training or Assistance	0
	I have been helped by a school or job developer, but not received specific training	1
	I have learned how to fill out applications and go to interviews by reading books or from another person	2
	I have completed a formal job development workshop on getting into school or a job	3



How often have you done any of the following training/education-related activities during the past 90 days?

	Never	1 Time	2-3 Times	4-6 Times	7 or More Times
B7. Talked to my treatment counselor about enrolling in school or training	0	1	2	3	4
B8. Talked to a vocational or guidance counselor about enrolling in school or training	0	1	2	3	4
B9. Filled out school/training program applications	0	1	2	3	4
B10. Asked someone for help paying for school/training	0	1	2	3	4
B11. Called a school/training program about enrolling	0	1	2	3	4
B12. Completed an assessment to help find out about my school/training interests and abilities	0	1	2	3	4

How interested are you in receiving any of the following training/education-related services if they were made available to you?

	Not at All	Slightly	Moderately	Considerably	Extremely
B13. Personal development/motivational workshop	0	1	2	3	4
B14. GED preparation	0	1	2	3	4
B15. College/adult education courses	0	1	2	3	4
B16. Skills/technical training (machine operator, clerical, truck driver, maintenance)	0	1	2	3	4
B17. Job development workshop	0	1	2	3	4
B18. On-the-job training	0	1	2	3	4

B19. Other training-related services  
(PLEASE SPECIFY)  
v. \_\_\_\_\_ 0 1 2 3 4

The following questions relate to work experience and needs.

What is the most work experience you have in any of the following job situations?

	None	Less than 1 Year	1 to 2 Years	2 to 5 Years	More Than 5 Years
B20. Longest I've worked for one employer (including myself)	0	1	2	3	4
B21. Longest I've held any kind of job (full- or part-time)	0	1	2	3	4
B22. Longest period of time I've been unemployed	0	1	2	3	4

B23. How would you best describe your work situation during the past 90 days?

I worked full-time (35 hours or more per week)	0
I worked part-time (less than 35 hours per week) or seasonally (less than 8 months per year)	1
I worked odd jobs when they were available	2
I was unemployed and looking for work	3
I was unemployed and not looking for work	4
I was disabled or unable to work	5
I was a full-time homemaker	6
I was a full-time student	7
I was retired	8

Other (PLEASE SPECIFY) v. \_\_\_\_\_ 9

B24. Do you have good skills and abilities to get and/or keep a job?

I think I have good skills and abilities to get and/or keep a job	0
I think I have some or fair skills and abilities to get and/or keep a job	1
I think that I have little or poor skills and abilities to get and/or keep a job	2
I don't think that I can get and/or keep a job.	3

B25. Would most employers hire you or give you a fair chance if you were to apply for a job?

Most employers would give me a fair chance if I were to apply for a job	0
Some employers would give me a fair chance if I were to apply for a job	1
Most employers would probably not hire me if I were to apply for a job	2
No employers would hire me if I were to apply for a job	3

How often have you done any of the following job-related activities during the past 90 days?

	Never	1 Time	2-3 Times	4-6 Times	7 + Times
B26. Read the want ads	0	1	2	3	4
B27. Talked to my treatment counselor about getting a better job	0	1	2	3	4
B28. Talked to a vocational counselor about getting a better job	0	1	2	3	4
B29. Filled out a job application	0	1	2	3	4
B30. Worked on my resume	0	1	2	3	4
B31. Interviewed for a job	0	1	2	3	4
B32. Sent someone my resume	0	1	2	3	4
B33. Called someone about a job	0	1	2	3	4
B34. Completed an assessment to help find out about my job interests and abilities	0	1	2	3	4

During the past 90 days, how much income or financial assistance did you receive from the following sources?

	None	\$1-\$500	\$501-\$1500	\$1501-\$5000	\$5001+
B35. Wages or a salary from a legitimate job or business	0	1	2	3	4

B36.	Spouse, family, or friends (including alimony or child support)	0	1	2	3	4
B37.	Benefits earned from work (such as SSDI, unemployment compensation, income from a private disability plan, retirement income, VA benefits)	0	1	2	3	4
B38.	Public assistance programs (such as SSI, welfare, AFDC, food stamps, housing assistance)	0	1	2	3	4
B39.	Criminal or illegal activities, including hustling or dealing	0	1	2	3	4
B40.	Any other income not listed above (PLEASE SPECIFY) v. _____	0	1	2	3	4
B41.	Total income from all of the above sources (including any other income)	0	1	2	3	4

How interested are you in receiving help in any of the following areas?

		Not at All	Slightly	Moderately	Considerably	Extremely
B42.	Getting a full-time job	0	1	2	3	4
B43.	Getting a part-time job	0	1	2	3	4
B44.	Getting a job with benefits	0	1	2	3	4
B45.	Getting or keeping public benefits, such as food stamps or SSI	0	1	2	3	4
B46.	Managing my money	0	1	2	3	4
B47.	Picking a new career	0	1	2	3	4
B48.	Other work-related services (PLEASE SPECIFY) v. _____	0	1	2	3	4

The following questions relate to the level of social or personal support you get from your treatment program(s), friends, and family members.

How much have the following people ever helped you to enroll or study in school or training?

	Not at All	Slightly	Moderately	Considerably	Extremely
B49. Spouse (if married)	0	1	2	3	4
B50. Other family members	0	1	2	3	4
B51. Other friends	0	1	2	3	4
B52. Treatment counselor in this program	0	1	2	3	4
B53. Vocational counselor in this program	0	1	2	3	4
B54. Other staff in this program	0	1	2	3	4
B55. A vocational counselor elsewhere	0	1	2	3	4
B56. Other person or program (PLEASE SPECIFY)	0	1	2	3	4
v. _____					

How much have any of the following people ever helped you to find or keep a job?

	Not at All	Slightly	Moderately	Considerably	Extremely
B57. Spouse (if married)	0	1	2	3	4
B58. Other family members	0	1	2	3	4
B59. Other friends	0	1	2	3	4
B60. Treatment counselor in this program	0	1	2	3	4
B62. Vocational counselor in this program	0	1	2	3	4

B63.	Other staff in this program	0	1	2	3	4
B64.	A vocational counselor elsewhere	0	1	2	3	4
B64h.	Other person or program (PLEASE SPECIFY)	0	1	2	3	4
v.	_____					

How interested are you in receiving any of the following kinds of assistance?

		Not at All	Slightly	Moderately	Considerably	Extremely
B65.	Getting support from my family or friends to go to school	0	1	2	3	4
B66.	Getting support from my family or friends to get or keep a job	0	1	2	3	4
B67.	Getting into a support group of other people in school or work	0	1	2	3	4
B68.	Coping with work- or school-related stress	0	1	2	3	4
B69.	Other support issue (PLEASE SPECIFY)	0	1	2	3	4
v.	_____					

The following items are services you may need to get into (or stay in) a job, school, or training program.

How important for you is getting the following services?

		Not at All	Slightly	Moderately	Considerably	Extremely
B70.	Transportation	0	1	2	3	4
B71.	Child care	0	1	2	3	4
B72.	Medical needs	0	1	2	3	4
B73.	Food	0	1	2	3	4
B74.	Clothing	0	1	2	3	4
B75.	Housing	0	1	2	3	4
B76.	Work equipment	0	1	2	3	4
B77.	Legal assistance	0	1	2	3	4
B78.	Driver's license	0	1	2	3	4
B79.	Money for training	0	1	2	3	4
B80.	Family needs	0	1	2	3	4
B81.	Other service needs (PLEASE SPECIFY) v. _____	0	1	2	3	4

The following items may be barriers or obstacles to getting into (or staying in) a job, school, or training program.

How important is removing or dealing with the following barriers for you?

		Not at All	Slightly	Moderately	Considerably	Extremely
B82.	Alcohol or other drug use	0	1	2	3	4
B83.	Criminal record	0	1	2	3	4
B84.	Substance abuse treatment	0	1	2	3	4
B85.	Illegal activities	0	1	2	3	4
B86.	Leisure activities	0	1	2	3	4
B87.	Welfare or social services benefits	0	1	2	3	4
B88.	Current economy	0	1	2	3	4
B89.	Interpersonal skills	0	1	2	3	4
B90.	Family problems	0	1	2	3	4
B91.	Work attitude	0	1	2	3	4
B92.	Racial or gender discrimination	0	1	2	3	4
B93.	Personal appearance	0	1	2	3	4
B94.	Medications (non-methadone)	0	1	2	3	4
B95.	Health-related problems	0	1	2	3	4
B96.	Other barriers (PLEASE SPECIFY) v. _____	0	1	2	3	4