

TECHNICAL REPORT

Summary Findings for Research Component R1:

Continuing Investigation of Substance Abuse, Disability, and Vocational Rehabilitation

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on
Drugs and Disability**

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RESEARCH COMPONENT R1: Continuing Investigation of Substance Abuse, Disability, and Vocational Rehabilitation

INTRODUCTION

Background

Since early in the 1990s there has been a growing body of research suggesting that many adult consumers of vocational rehabilitation (VR) who have a physical or emotional disability also have a substance abuse problem, which may jeopardize the course of their vocational rehabilitation (Moore and Li, 1994; Moore, 1992; Corthell and Brown, 1992; Greer, Roberts, and Jenkins, 1990). Over the same period of time, individuals with chemical dependency as a primary disability have been becoming increasingly involved with state rehabilitation agencies. Available data suggest that chemical dependency as a primary disability had increased from eight to eleven percent of all VR cases on a national basis (Schwab and DiNitto, 1993; Corthell and Brown, 1991). In addition, persons with substance abuse disabilities have often been excluded from other forms of social support aimed at promoting sobriety and gainful employment. While the available data clearly shows that individuals with active substance dependence are less likely to successfully complete vocational rehabilitation (Worrall and Vandergoot, 1982), relatively little is known about the incidence and prevalence of this condition among the overall population of consumers of VR services. This is particularly true with regard to illicit drug use and its many deleterious effects.

Recognizing substance abuse to be an emerging rehabilitation issue and that many fundamental questions regarding the incidence and prevalence of substance abuse within rehabilitation settings remained unanswered, in 1992 the National Institute on Disability and Rehabilitation Research (NIDRR) announced and funded a Rehabilitation Research and Training Center (RRTC) on the topic of illicit drug use among consumers of vocational rehabilitation services. The initial grant for the RRTC on Drugs and Disability was awarded to the Substance Abuse Resources and Disability Issues (SARDI) Program within the department of Community Health in the School of Medicine at Wright State University.

Between the Fall of 1993 and 1996, the RRTC on Drugs & Disability undertook an initial multi-state epidemiological study focused upon exploring the relationships among participation

in Vocational Rehabilitation (VR), substance abuse, and disability. That study involved individuals who were active consumers of state VR services in Illinois, Kentucky, Michigan, and Ohio. Questionnaires, informed consents, and postpaid return envelopes were mailed to 4,600 individuals randomly selected from the four states' rosters of active VR clients. Additional respondents were recruited from twelve state rehabilitation offices and five other VR agencies. Personal interviews were conducted with individuals whose disabilities prevented them from completing a paper/pencil survey. The total number of individuals participating in the study was 1,876, which accounted for approximately 35% of the individuals identified/recruited.

Approximately 18 months after the initial data collection was completed, a follow-up survey was undertaken. That follow-up involved subjects from Ohio and Michigan only. A total of 790 individuals who had been recruited by mail and returned their original surveys were eligible for this follow-up. The return rate for the follow-up survey was 58%, resulting in a total of 425 completed questionnaires.

The major findings of this initial, three-year epidemiological study (RRTC, 1996) can be summarized in terms of the following four areas:

1. **Prevalence and patterns of illicit drug use.** Compared to the general population as reported in the National Household Survey (SAMHSA, 1995), illicit drug use among consumers of VR services was higher in almost every drug use category. For example, reported stimulant use rates and sedative/tranquilizer use rates lifetime, as well as in the past year and past month, were more than double the rates for the general population. This overall finding is of particular concern because the individuals reporting this level of use did not have a primary disability of chemical dependency, i.e., subjects with chemical dependency as a primary disability were excluded from the analysis. Marijuana was by far the most prevalent illicit drug used by people with disabilities, with about 8% of the sample reporting some use in the past month and 16.0% reporting use in the past year.
2. **Illicit drug use and disability.** The incidence and prevalence of illicit drug use varied substantially among different disability groups. Not surprisingly, individuals with chemical dependency as their primary disability (44.2%) and HIV/AIDS (50%) reported the highest incidence of illicit drug use in the past 12 months, while respondents with blindness (10.8%), mental retardation (12.8%), deafness (14.3%), and visual impairment (14.8%) reported the lowest rates of illicit drug use in the sample. Drug use was also

contrasted between congenital (19.5%) and acquired disability groups (21.7%) and between those who reported multiple disabilities (21.9%) and those who did not (20.0%).

3. **Illicit drug use and demographic characteristics.** As in the general population, men in the study reported a higher overall drug use rate than did their female counterparts, with 23.8% of males and 18.5% of females reporting illicit drug use in the past 12 months. The highest drug use rate (25.3%) was reported by those who were 25 to 34 years old. In general, younger respondents were more likely to use illicit drugs than older ones, and the lowest use rate was for subjects 45 years of age or older. Among ethnic groups, African Americans reported the highest rate of illicit drug use in the past year (25%) followed by 21.3% of Native Americans, 20.6% of Caucasians, and 11.8% of Hispanic Americans.
4. **Consumers with substance abuse problems during rehabilitation services.** Approximately 21% of the survey respondents reported receiving treatment or other services for alcohol or other drug problems, with 22.5% of the sample classifying themselves as either an alcoholic or drug addict in recovery. Some 21.7% of respondents who self-identified themselves as being substance abusers reported being in drug treatment while enrolled in a state VR system.

Problem and Related Purpose

While the epidemiological study described above provided fundamental and important information regarding disability, substance abuse, and VR, it was seen as only a preliminary investigation and considerably more information was felt necessary, particularly if it was to be used to help guide policy formulation/evaluation and related training efforts. Thus, the purpose of the current effort was to undertake a second epidemiological study that would expand upon the findings of the previous study in an effort to further advance understanding, to see if the observed findings were replicable over time and location, and to build upon the relationships identified.

When undertaking the current follow-up study, several salient issues were obvious. First, the follow-up study could build upon previous findings and procedures. Second, the two studies would involve totally different (independent) samples separated by both time and location. As a result, the second study would serve as a potential replication of the first and we could, therefore, look for consistencies in observed relationships over time and place. At the same time, however,

from an operational perspective time and location are inexorably linked or “confounded”, so any differences in observed relationships cannot be unequivocally attributed to either time, location, or both.

Hypotheses

Based on the purpose indicated above, along with the results of both previous studies and NIDRR priorities, three major hypotheses and a number of sub-hypotheses were generated. These inputs were used to help guide the current research effort. The three hypotheses considered were as follows:

1. The prevalence, patterns, and risk factors for alcohol and other drug (AOD) abuse found in other regions of the country will be comparable to those found in the three Midwest states studied earlier, specifically:
 - 1.1. VR consumers have higher percentages of AOD abuse than the general population.
 - 1.2. AOD use patterns vary among people with disabilities by nature and severity of disability.
 - 1.3. AOD abuse related risk factors such as acceptance of disability, attitude of entitlement, self-esteem, risk-taking, and age will be significantly associated with illicit drug use.
 - 1.4. African Americans utilizing state VR services will demonstrate higher AOD usage patterns than consumers of other racial backgrounds.
 - 1.5. Women who utilize state VR services will be more likely to report substance abuse related violence and will be less likely to receive treatment for substance abuse problems than their male counterparts.
 - 1.6. For VR consumers heavy AOD use will be positively correlated with HIV risk behavior.
2. Utilization and outcomes of state VR services are different between clients with AOD related disabilities and those without such disabilities.
 - 2.1. Consumers with co-existing AOD disabilities are less likely, compared to those without AOD disabilities, to show positive employment outcomes.
 - 2.2. Consumers with AOD related disabilities will benefit more from VR services if their substance abuse problems are identified and addressed by their counselors.
 - 2.3. Employment outcomes for consumers with chemical dependency as a primary

disability will be positively correlated with number and specific nature of VR services received.

- 2.4. State VR consumers with AOD related disabilities are more likely to be beneficiaries of public welfare including SSI and SSDI.
3. Successful VR outcomes for consumers with AOD abuse as a co-existing disability will be positively correlated with substance abuse identification and treatment.
 - 3.1. VR consumers with active AOD use problems will be less likely to have successful case closures.
 - 3.2. Repeated and less favorable utilization of services will be more likely to occur for consumers who have substance abuse as a co-existing disability.
 - 3.3. Consumers with active or recent AOD problems and a co-existing disability will be more likely to have either no or unsuccessful work histories.
 - 3.4. Chemical Dependency assessment and related treatment contacts are more highly correlated with successful VR outcomes than other types of services provided.

The preceding hypotheses were those posed in the continuation proposal submitted by the RRTC on Drugs and Disability to NIDRR in the Fall of 1997. As indicated, they were used to help guide the conduct of the current epidemiological study and define the issues the Center is contractually obligated to address. They are not, however, the only (or for that matter the most interesting) hypotheses that could be posed in relation to that study. For example, they generally reflect simple descriptive and bivariate relationships to the exclusion of hypotheses that are multivariate in nature. In addition, they do not address the longitudinal nature of the available epidemiological data. As a result, additional hypotheses dealing with such issues will be posited and addressed during the reported R1 project analyses.

METHODS

The basic underlying research design for this epidemiological study was a comprehensive, longitudinal/natural history survey of VR consumers from six additional state vocational rehabilitation systems (Phase I), as well as a follow-up of selected consumers from two of the state systems (i.e., Michigan and Ohio) involved in the earlier (“original” epidemiological study)

study (Phase II). The Phase I effort involved initial and follow-up surveys, while the Phase II effort involved only a single survey.

Participants in the Study

As indicated above, the overall study involved two phases of data collection. Phase I was an extension of the previous epidemiological survey to six new states: Maryland, Massachusetts, Montana, North Carolina, South Dakota, and West Virginia. These state VR agencies were chosen based on their previous collaboration with the RRTC, their willingness to participate in the proposed project, and their geographic representation. Each state assisted with the study by providing a random sample of consumers from their existing client databases. (Thus, the sampling design for the Phase I effort involved two stages, with the first stage being based on a “convenience” sample of states and the second stage involving potentially representative samples of VR consumers from within the participating states or initial sampling units.) The specific procedures used for sampling, which followed those used by the RRTC in the initial epidemiological study, proved to be feasible for the current study as well, both for random selection purposes and for accommodating the cooperating agencies’ concerns regarding minimum involvement and confidentiality protections. Overall, the Phase I effort included both an initial survey and a follow-up mail survey 18 months after the initial data collection for all individuals who completed the initial survey. Based on the previous project, it was estimated that about 60% of the respondents to the initial survey would participate in the follow-up study.

All subjects in Phase I of the current study were at least 18 years of age and active consumers of state VR services at the time of the initial survey or interview (if this accommodation was requested). It was our goal that within 18 months of project startup, a total of 2,000 individuals would have completed the initial survey and that follow-up contacts with these respondents would be completed by the beginning of Year Four. Our timelines for data collection in Phase I were met, but our response rates were not as good as projected. The initial survey yielded a total of only 1,297 useable returns (a return rate of 21.7%), while the 18-month follow-up yielded 724 returns (a return rate of 55.8%). These were the samples for our Phase I analyses.

Phase II was a longitudinal (long term follow-up) study involving the 425 individuals from Ohio and Michigan who participated in the previous RRTC follow-up surveys as potential subjects. They were contacted and asked to be interviewed either by telephone or in person. The specific follow-up protocol was developed with the goal of obtaining consent from at least 70%

of the eligible individuals for interviews, i.e., it was estimated that 300 respondents from Ohio and Michigan would be interviewed by the beginning of Year Four. Since the RRTC had already established connections with these potential subjects, the required involvement of cooperating state agencies was minimal. The actual number of respondents to Phase II was 148 (a response rate of 34.8%), which is the sample size for our Phase II analyses.

Assurance of Human Subjects Protection. The RRTC on Drugs and Disability, SARDI Program, and its umbrella organization, the Substance Abuse Intervention Programs within the School of Medicine at Wright State University (WSU), are firmly committed to addressing human subjects concerns. The procedures employed as part of the R1 effort were routinely reviewed by the WSU Human Subjects Committee as well as all Institutional Review Boards at participating research sites. The data collection protocol for both phases of the study, including all instruments and informed consents, were approved by the WSU Human Subjects Committee and all I.R.B.'s from participating agencies before any data collection activities began. We currently have Federal Confidentiality Certificates to protect our current research subjects from risks associated with judicial requests for questionnaire data. We have amended and/or renewed these certificates as appropriate for this study.

Participants in the study were protected in several ways. Every potential participant was informed that the study was being conducted independently and that refusal to participate would not affect the services provided to them by their state agency. All subjects signed a written informed consent and were provided with a copy to keep. Questionnaires contained no personal identifiers, with the exception of a numeric code, which refers back to the informed consent. The informed consents are maintained in a separate, locked file away from completed survey questionnaires. All results are being analyzed and reported only in aggregate form, and participating agencies are not able to access individual data. Consumer requests for results of the study will be provided via an abstract describing group results, which will be developed and mailed out once the project-related analyses have been completed. All respondents have been provided with the names, addresses, and telephone numbers of the Principal Investigators. Finally, all personal interviews were conducted in a private location.

Instrumentation

The “*Medication and Other Drug Use Survey*”, which was developed specifically for use as part of the initial epidemiological study completed under the previous RRTC agreement, was modified slightly and used for Phase I of the current study. That questionnaire contains 102 items regarding alcohol and other drug use, disability, attitudes toward disability and substance use, family background, employment and work-related background, rehabilitation services, psychosocial functioning, and demographic characteristics. (See Appendix A for a copy of the “*Medication and Other Drug Use Survey*.”) The “*Follow-up Survey: Medication and Other Drug Use*” used in Phase I contains 44 questions. Some items relating to substance use and employment status were taken directly from the original survey, while additional questions about VR services and experiences were added. A number of questions were also included that were targeted toward respondents with a self-reported substance abuse problem. (See Appendix B for a copy of the “*Follow-up Survey: Medication and Other Drug Use*.”) Both instruments have proven to be extensive, yet user-friendly. Furthermore, their relatively close correspondence with the instruments used in the earlier epidemiological study has provided the opportunity for data comparison between the six new states and the three original states.

The interview form used for Phase II data collection included a total of 38 items. Those items were arrayed in terms of the following “clusters” - employment issues (11 items), benefit-related issues (4 items), items dealing with vocational rehabilitation services received (7 items), substance usage issues (15 items), and general comments (1 item). (Appendix C contains a copy of the Phase II interview form, “*Epidemiology of Substance Use Among Consumers of State VR Services - Follow-up (Time 3) Interview*.”)

As noted earlier, the three key variables considered during both Phases I and II of the current study, which were derived from the preceding survey instruments, focus on alcohol and other drug use, employment and work-related experiences, and involvement in rehabilitation services. Several key independent variables also considered include social/demographic characteristics, disability background, rehabilitation history, peer or family influences, and psychosocial factors such as self-esteem, personal anger, and risk-taking. Brief descriptions of how those key sets of variables were operationally defined via the cited instruments are provided below ---

- **Substance use variables.** For both Phases of the study, illicit drug use, in keeping with the definitions used by the National Household Drug Use Survey (SAMHSA, 1995), was

defined as use of any of the following drugs for *nonmedical* purposes: marijuana/hashish, cocaine, crack cocaine, inhalants, hallucinogens, heroin or other opiates, stimulants, and sedatives/tranquilizers. To parallel the National Household Survey, the patterns of drug use are divided into three categories: “ever used,” “used past year,” and “used past month” (SAMHSA, 1995). Alcohol use was also measured by the frequency and quantity of use lifetime, as well as in the past 12 months and in the past 30 days. In addition, alcohol use was further assessed through inclusion of the Short Michigan Alcoholism Screening Test (SMAST) (Selzer, et al., 1975) in the Phase I survey forms.

- **Vocational rehabilitation variables.** Another major set of variables for both Phase I and Phase II dealt with consumers’ VR-related involvement and outcomes. Information about each consumer’s employment and service satisfaction, as well as consumers’ self-evaluation of their progress and outcomes in VR, were obtained via self-report information. Several items dealing with each individual’s work experience and history were also included in the survey instruments. These included the respondent’s occupation, number of hours worked, length of employment, income, and job satisfaction. Service utilization items include sources of medical care, rehabilitation history, current services received including length and intensity, interactions with rehabilitation counselors, and satisfaction with services.
- **Disability variables.** Information was also collected from respondents regarding the nature, onset, and number of disabilities they’ve experienced. Level of disability acceptance was measured via a subset of the items from the Acceptance of Disability Scale (Linkowski, 1971). That self-report measure assesses values theorized by Wright (1960) to be associated with disability acceptance. It functions as a measure of self-esteem in people with disabilities. Ten items from the original scale were included in the previous RRTC survey and Cronbach’s alpha for the composite scores computed using those ten items was .8, indicating a satisfactory internal consistency reliability (Li and Moore, in press).
- **Demographic, psychosocial, and other background variables.** Basic demographic information such as age, gender, race, income sources, job seeking skills, marital status, living arrangements, legal history, and education was also secured from each respondent. Information about family background, including family history of substance abuse,

substance abuse related violence, and family members' attitudes toward substance abuse were also gathered. Psychosocial functioning was measured on three dimensions: self-esteem, hostility, and risk-taking. These multi-item scales were developed at Texas Christian University (TCU) for use during intake assessment in drug abuse treatment programs (Knight, Holcom, and Simpson, 1993; Simpson, Knight and Ray, 1993). In the current as well as the previous epidemiological survey, five items from each scale were utilized. Computation of Cronbach's coefficient alpha indicated that the reliability of these scales was acceptable (Moore and Li, 1998). An inventive measurement included in the study was "attitude of entitlement." This measure, is based on the speculation (Moore, 1992) that the general societal belief that people with disabilities are more entitled to use alcohol or other drugs contributes to the enabling of substance abuse. This scale has been shown to exhibit an acceptable reliability level and is determined by the self-rating of agreement with four relevant statements (Li and Moore, in press).

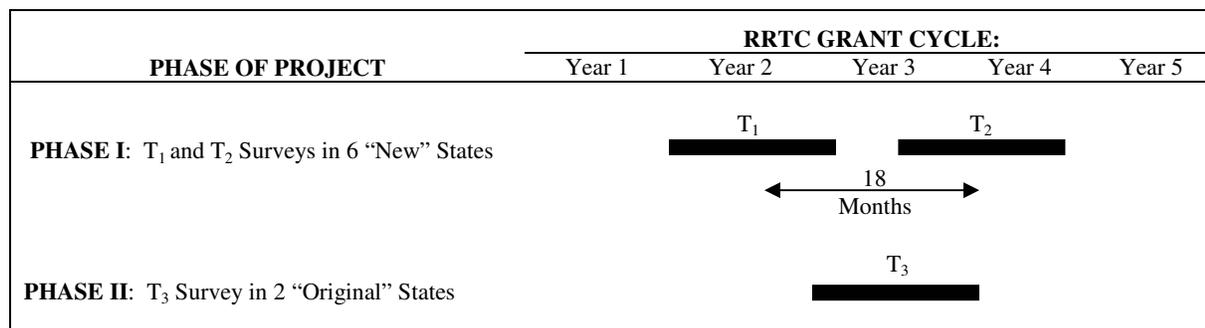
- **HIV risk behavior variables.** HIV risk behavior is a new area being examined in the current epidemiological study. A brief HIV risk behavior assessment was included in the initial Phase I instrument. It utilizes selected items from the Risk Behavior Assessment Questionnaire (RBA) developed by the Community Research Branch of NIDA (Siegal, et al., 1995). The items selected from the original 44-page instrument measure sexual practices and drug use, with a focus on needle-use behaviors. Subjects' health beliefs relative to HIV/AIDS are also assessed.

Procedures

As alluded to above, data collection for the current study occurred during the first 4 years of the RRTC grant period. A graphic overview of that overall effort is provided in Exhibit 1.

Data Collection Strategy. Our experiences with the previous epidemiological study clearly indicated that the way data are collected would be a critical issue for this study, particularly due to the fact that various communication requirements made data collection difficult. As a result, in the current study we attempted to circumvent potential problems by combining several survey formats. Requisite data were collected using one or a combination of the following approaches - paper/pencil mail questionnaire, telephone interview, or personal interview - as described below.

Exhibit 1 Timing of Data Collection Activities



- *Self-report mail questionnaire.* The self-report, mailed questionnaire has been the most widely used method to date for conducting substance use epidemiological studies. Therefore, the Phase I data collection effort relied primarily upon this approach.
- *Personal interview.* Phase II data collection involved primarily face-to-face interviews. A number of studies in the treatment outcome literature have found that substance use self-reports are reliable and valid when obtained via structured interviews (Sobell and Sobell, 1981; Maisto et al, 1982a; Maisto et al, 1982b). Additionally, the personal interview is particularly relevant for surveying people with disabilities for a number of reasons: it allows for use of visual aids; survey questions can be answered by people with lower literacy rates; and interviewers will more accurately categorize variables such as disability and functional limitations.
- *Telephone interview.* Telephone interviews were an option for participants in both Phase I and Phase II of the study. This type of interview was offered to individuals whose disabilities prevented them from completing surveys in a paper-pencil format. Respondents who needed to be interviewed by telephone were asked to provide a phone number on their signed informed consent. Telephone interviews were conducted from the RRTC central office. Similar protocols were followed for both Phase I and Phase II data collection when this approach was employed.

During Phase I, each subject who completed the mailed questionnaire or a telephone interview was sent a \$5 check once her/his completed questionnaire and informed consent was received by the RRTC. For participants in Phase II, a \$10 check was provided immediately after the personal interview or mailed to participants after the telephone interview, whichever applied.

Analysis Plan. A number of techniques have been used to analyze the R1 data and test the hypotheses posed for the study. Generally speaking the same techniques were applied to both the Phase I and Phase II data. For example, percentage distributions and zero-order associational indices (e.g., correlation and contingency coefficients) were used to provide basic descriptive statistics and population estimates relative to the prevalence of substance abuse. Chi-Square and Pearson correlation techniques were used to examine zero-order relationships between substance abuse, VR outcomes, and other key independent variables identified as part of the study. Additionally, binomial tests and Chi-Square analyses were used to compare percentage distribution across different groups of VR consumers, and analyses of variance (ANOVA) were conducted to compare group means on different substance use and VR outcome measures by demographic attributes. Specific disability groups, by nature and severity of disability, in accordance with the specified hypotheses have been contrasted in terms of substance abuse, service utilization, acceptance of disability, and the designated psychosocial characteristics.

Basic Limitations. The procedures followed in implementing the current study have led to a number of fundamental limitations in the resulting data. For example, the potential problems associated with any form of self-report data, particularly when such data are seen as being “sensitive” in nature; or the relatively low response rates observed and their potential effects with regard to the representativeness of the resulting respondent samples. A somewhat related concern involves the relatively high loss to follow-up rates (e.g., Time 1 to Time 2) obtained for the study. These issues lead to reduced credibility in trying to generalize any findings to the population of VR consumers across the country.

Furthermore, the four original and six new states were not selected in a random manner (i.e., as pointed out earlier they constituted a “convenience” sample) and, therefore, their representativeness is a serious concern. This issue, like the issue of low response rates, also leads to reduced credibility in trying to generalize any findings to the population of VR consumers across the country, particularly with regard to changes that occurred over the time period covered by the study. The fundamental nature of these concerns suggests where more resources and attention need to be devoted during the conduct of future such research efforts. These problems do not negate the needs of planners and decision makers from both the rehabilitation and substance prevention/treatment fields for firm, defensible estimates of the numbers of person with “categorically defined” (as contrasted with “functionally defined”)

disabilities who have a coexisting substance abuse problem. The RRTC appears to be one of only a very few entities actively attempting to address this void with research.

RESULTS

Findings reported in this section are based on analyses of the data generated during (a) the initial epidemiological study completed by the RRTC under its first contract with NIDRR (hereafter referred to as the “1995 Study”) and (b) the current epidemiological study (hereafter referred to as the “2000 Study”) meant to extend that earlier effort. The numbers of respondents who provided the requisite data are summarized in Table 1. Actual findings are grouped into the following four areas:

- **Sample Description**
- **Hypothesis 1:** The prevalence, patterns, and risk factors for alcohol and other drug (AOD) abuse found in other regions of the country will be comparable to those from the Midwest states studied earlier (i.e., in the “1995 Study”)
- **Hypothesis 2:** Utilization and outcomes of state VR services are different between clients with AOD related disabilities and those without such disabilities
- **Hypothesis 3:** Successful VR outcomes for consumers with AOD abuse as a co-existing disability will be positively correlated with substance abuse identification and treatment

TABLE 1
Numbers of Respondents Used in Project Analyses

RESEARCH EFFORTS	NUMBERS OF RESPONDENTS:		
	Time 1 (Initial Survey)	Time 2 (Follow-Up Survey)	Time 3 (Long-Term Follow-Up)
1995 Epidemiological Study	1,876	425	148
2000 Epidemiological Study	1,297*	724	---

* Two of these respondents’ records did not have state designators and they had to be dropped from the analyses.

Sample Description

As noted earlier, the data to be used to address the different hypotheses posited for R1 were collected via two independent samples - the first consisted of 1,876 respondents from 4

states who were initially surveyed in 1994 and the second consisted of 1,297 respondents from 6 other states who were initially surveyed almost 5 years later, in 1998-1999. Summaries of (a) several basic demographic characteristics and (b) several disability attributes of the respondents included in those two samples are provided in Tables 2 and 3, respectively.

The first question considered in relation to the descriptive statistics summarized in Tables 2 and 3 was, “Generally speaking, who were the survey participants?” While the related information in the tables appeared to vary somewhat across the “1995” and “2000” Studies, it never-the-less still suggests that a modal respondent would be ---

- about equally likely to be male or female (especially in the 1995 Study)
- be between 25 and 45 years of age
- be Caucasian
- have never been married
- have slightly more than a high school education (or GED)
- had an income of less than \$10,000 during the last year
- was unemployed/not working at the time of the survey
- lived with relatives (e.g., parents, children), spouse, or significant other
- was likely to be living with mental illness, mental retardation, or some “other” form of orthopedic disability
- probably acquired their disability during their lifetime
- had a 50-50 chance of having multiple disabilities
- quite likely to perceive her/his health problems as “moderate” or “severe”.

Given the observed variability in statistics across the two studies reported in Tables 2 and 3, which was noted above, the second question considered using those data was, “Do the two samples of survey respondents differ on either any of the specified demographic (background) variables or the specified disability attributes?” This issue is basic to the study in that it deals directly with whether or not it would be appropriate to combine the data for the two samples of survey respondents and use the composite sample to evaluate the posited hypotheses (at least those for which applicable data were available in both samples, e.g., the HIV/AIDS questions were not part of the 1995 Study, but the MAST items were on the initial survey instruments used in both studies). Procedurally the second question was addressed via a series of X^2 analyses in which the variable-by-variable percentage distributions across the designated samples were

TABLE 2
Background/Demographic Characteristics of Survey Participants (n₁ = 1,876, n₂ = 1,295)

DEMOGRAPHIC CHARACTERISTICS		Initial Epidemiological Study		Current Epidemiological Study		X ² RESULTS**
		% ages	n ₁ *	% ages	n ₂ *	
Sex	Male	52.0%	976	40.5%	524	X² = 41.09 p<.01,w=.11
	Female	48.0%	900	59.5%	771	
Age	24 or Younger	29.8%	552	25.6%	330	X² = 32.66 p<.01,w=.10
	25 - 34 Years Old	24.3%	450	20.0%	258	
	35 - 44 Years Old	28.4%	527	29.1%	375	
	45 or Older	17.5%	325	25.2%	325	
Race	Caucasian	70.0%	1274	75.2%	941	X² = 31.05 p<.01,w=.10
	African American	20.7%	377	14.1%	176	
	Native American	4.6%	83	5.4%	67	
	Hispanic American	3.0%	54	2.7%	34	
	Asian American	0.7%	13	0.4%	5	
	Other	1.0%	19	2.3%	29	
Marital Status	Never Married	55.6%	1040	45.2%	583	X² = 57.89 p<.01,w=.14
	Married	19.2%	360	27.6%	356	
	Widowed/Divorced/Separated	23.4%	437	26.9%	347	
	Other	1.8%	34	0.3%	4	
Education	< 12 Years	15.9%	294	11.9%	152	X² = 10.69 p<.01,w=.06
	12 Years	36.6%	678	36.8%	471	
	> 12 Years	47.5%	881	51.3%	657	
Income	Less than \$5,000	26.7%	462	18.5%	228	X² = 31.95 p<.01,w=.10
	\$5,000 - \$9,999	23.7%	409	26.8%	330	
	\$10,000 - \$19,999	19.7%	340	23.1%	284	
	\$20,000 - \$39,999	18.6%	321	21.5%	265	
	\$40,000 or More	11.3%	196	10.0%	123	
Employment	Unemployed	43.2%	802	38.6%	498	X² = 118.28 p<.01,w=.19
	Full/Part Time Student	15.2%	282	20.6%	265	
	Work Part Time	15.1%	281	16.8%	217	
	Work Full Time	9.8%	182	17.2%	222	
	Supported/Sheltered/Temporary	9.2%	170	5.1%	66	
	Other	7.5%	139	1.6%	21	
Kind of Work Done	Higher Exec/Major Professional	0.2%	3	0.5%	6	X² = 130.28 p<.01,w=.21
	Business Manager/Professional	3.1%	56	6.1%	77	
	Admin Person/Small Bus Owner	1.1%	20	2.1%	27	
	Clerical/Sales/Technician	7.2%	131	8.4%	107	
	Skilled Manual	3.6%	65	3.2%	40	
	Semiskilled	8.5%	154	11.0%	139	
	Unskilled	16.0%	290	12.5%	159	
	Homemaker	0.0%	0	4.7%	59	
	Do Not Work	60.4%	1095	51.6%	654	
With Whom Live	Alone	20.7%	386	22.7%	292	X² = 9.67 p<.01,w=.06
	Relatives/Spouse/Sign Other	63.5%	1186	41.5%	840	
	Friends/Roommates/Others	15.8%	295	12.0%	154	

* The numbers reported below for each variable may not add up to the total n's listed above due to missing respondent data.

** The "w's" shown are the "effect size" estimates for the designated tests and according to Cohen (1988) a w = .10 reflects a "small" effect size, while w = .30 reflects a "moderate" effect size.

TABLE 3
Selected “Disability Attributes” of Survey Participants (n₁ = 1,876, n₂ = 1,295)

DISABILITY ATTRIBUTES		Initial Epidemiological Study		Current Epidemiological Study		X ² RESULTS**
		% ages	n ₁ *	% ages	n ₂ *	
Primary Disability (as denoted by state VR agency)***	Amputation	1.2%	15	0.3%	3	X² = 261.22 p<.01,w=.32
	Arthritis	2.1%	27	2.8%	36	
	Back Injury	4.7%	61	0.0%	0	
	Blindness	4.5%	58	1.0%	13	
	Cerebral Palsy	3.0%	39	1.9%	24	
	Chemical Dependency	4.5%	58	5.9%	76	
	Deafness	2.1%	27	2.5%	33	
	Diabetes	1.3%	17	1.8%	23	
	Hearing Impairment	3.4%	44	2.6%	34	
	Heart Disease	1.0%	13	2.9%	37	
	Learning Disability	9.1%	117	7.1%	92	
	Mental Illness	22.0%	284	24.9%	322	
	Mental Retardation	9.6%	124	6.5%	84	
	Multiple Sclerosis	1.5%	19	1.1%	14	
	Muscular Dystrophy	0.8%	10	0.5%	6	
	Other Orthopedic	5.7%	74	20.6%	267	
	Seizure Disorder	2.3%	30	2.5%	33	
	Spinal Cord Injury	3.3%	42	2.5%	33	
	Stroke	1.3%	17	0.4%	5	
	Traumatic Brain Injury	2.9%	37	2.6%	34	
Visual Impairment	2.8%	36	1.5%	19		
Other	11.0%	142	8.3%	107		
Disability Onset	Congenital	22.5%	396	19.6%	222	X ² = 3.36
	Acquired	77.5%	1366	80.4%	910	p=.07,w=.03
Multiple Disability?	Yes	42.5%	560	47.3%	612	X ² = 3.79
	No	57.5%	729	52.7%	683	P=.05,w=.04
Chemical Dependency Denoted as Primary or Secondary Disability by VR	Yes	9.0%	116	10.1%	131	X ² = 0.93
	No	91.0%	1758	89.9%	1164	P=.33,w=.01
Self-Reported Head Injury	Yes	29.1%	529	33.4%	430	X ² = 6.69
	No	70.9%	1290	66.6%	856	p<.01,w=.05
Self-Described Health Problems	None	22.6%	410	16.5%	211	X² = 27.10 p<.01,w=.09
	Slight	20.5%	370	19.4%	249	
	Moderate	34.1%	617	36.0%	461	
	Severe	18.3%	332	24.0%	307	
	Very Severe	4.5%	81	4.1%	51	

* The numbers reported below for each variable may not add up to the total n's listed above due to missing respondent data.

This is particularly true for the “Primary Disability” data available for the “Initial Epidemiological Study.”

** The “w’s” shown are the “effect size” estimates for the designated tests and according to Cohen (1988) a w = .10 reflects a “small” effect size, while a w = .30 reflects a “moderate” effect size.

*** Due to the small overall sample size and associated infrequent occurrences of certain disabilities, the following more generalized set of seven categories based directly upon the categorization scheme employed by NIDRR (with the only difference being the separation of “Disabling Conditions for Which Etiology is Unknown or Inappropriate” into two categories) is used in subsequent analyses: (1) **Visual Impairments** (7.3%, 2.5%); (2) **Hearing Impairments** (5.5%, 5.2%); (3) **Orthopedic Impairments, Except Amputation** (22.4%, 29.7%); (4) **Amputation or Absence of Major or Minor Members** (1.2%, 0.3%); (5) **Disabling Conditions for Which Etiology is Unknown or Not Appropriate - Mental and Emotional Conditions** (36.1%, 37.2%); (6) **Disabling Conditions for Which Etiology is Unknown or Not Appropriate – Other** (24.7%, 22.5%); (7) **Traumatic Brain Injury** (2.9%, 2.6%) (NOTE: Under this scheme the comparative analysis between the two data cohorts yielded the following - X² = 53.88, with p<.01 and w = .14.)

compared/contrasted. In order to control the “experiment wise” error rate (i.e., the overall α level) and ensure that it was not greater than .15 across the 15 tests conducted, the comparison-by-comparison α level was set at $\alpha = .01$.

Based on the preceding, rather conservative evaluative specifications, it appears that the two samples differed significantly on 12 of the 15 demographic and disability characteristics noted, which suggests that they came from different populations (or the population changed over time, given the years that lapsed between the times when the two data sets were collected). The results of those statistical tests, coupled with the findings from associated “effect size” estimates (Cohen, 1988), suggest that the differences were both consistent and significant, but relatively “small” in nature (Cohen, 1988, p. 224). In turn, this conclusion suggests that it would be best to not combine the two dissimilar samples when evaluating the specified hypotheses, since in such a situation it will not be possible to discern whether any observed relationships/associations are due in part or in total to the differences between the two samples. Such a strategy will result in somewhat lower power across the array of hypotheses/statistical tests undertaken, however, if the relationships/associations observed are found to be consistent across samples, then those relationships could be surmised to be fairly robust to changes over time and location (e.g., states). In such instances, the results from the “current” sample would serve to “replicate” the results observed via the “original” sample.

Hypothesis 1: The prevalence, patterns, and risk factors for alcohol and other drug (AOD) abuse found in other regions of the country will be comparable to those from the three Midwest states studied earlier (i.e., in the “1995 Study”).

Generally, this hypothesis calls for comparison of the data obtained during the 1995 Epidemiological Study with that obtained during the 2000 Epidemiological Study. Such an approach is certainly warranted given the differences between the two data sets noted in Tables 2 and 3 (differences that could have been “caused” by variations among states (related to geographic region to an extent), variations in time, or a combination of the two). At the same time, however, the hypothesis and thus, the associated sub-hypotheses, do not appropriately fit the available data sets (for example, one of the participating states in the 2000 Study was also located in the Midwest as were the three states in the 1995 Study alluded to in the hypothesis). Given this lack of fit between the hypothesis and data, it would not be possible to unequivocally

and any such differences that might be observed could just as easily be due to differences in time or a combination of time and region.

Given the preceding, no regional comparisons were undertaken. Instead, the two data sets were treated as though the 2000 Study was a replication of the 1995 Study, and separate analyses were undertaken for each sub-hypothesis for each data set. Essentially, the intent was to look for comparable findings and relationships across the two independent samples in order to document the robustness of those outcomes (findings, relationships) over time and sampling variations. The results of those analyses are presented sub-hypothesis by sub-hypothesis in the materials that follow.

1.1 VR consumers have a higher percentage of AOD use/abuse (i.e., prevalence rates) than the general population. Summarized in Table 4 are the percentages of lifetime, past year, and past month usage rates for various illicit drugs and alcohol reported for each of the following groups:

<u>DESCRIPTION OF THE COMPARISON GROUPS NOTED IN TABLE 4</u>	<u>GROUP SIZE</u>
A. Total Sample of (Time 1) Survey Respondents from the 1995 Study	1,876
B. Subsample of (Time 1) Survey Respondents from the 1995 Study Who Were Not Diagnosed as Having Chemical Dependency as Either a Primary or Secondary Disability by Their respective State VR Agencies	1,740
C. The Estimated Population of 18+ Year Olds from the General U.S. Population Who Participated in the 1994 National Household Survey on Drug Abuse (SAMHSA, 1995)	13,111
D. Total Sample of (Time 1) Survey Respondents from the 2000 Study	1,297
E. Subsample of (Time 1) Survey Respondents from the 2000 Study Who Were Not Diagnosed as Having Chemical Dependency as Either a Primary or Secondary Disability by Their Respective State VR Agencies	1,164
F. The Estimated Population of 18+ Year Olds from the General U.S. Population Who Participated in the 1998 National Household Survey on Drug Abuse (SAMHSA, 1999)	18,722

The National Household Survey (NHS) estimates, where available, were used as potential benchmarks for assessing the rates reported by the samples of respondents from the 1995 and 2000 Epidemiological Studies completed by the RRTC on Drugs and Disability.

In keeping with sub-hypothesis 1.1, the initial question evaluated using the data summarized in Table 4 was, “Do the alcohol and illicit drug use of either or both samples of VR

Table 4
Percentages of Survey Respondents Who Reported Using Illicit Drugs and/or Alcohol as
Compared to the 1994-1998 National Household Survey Estimates (as Appropriate)

USAGE TIMEFRAME	SUBSTANCE	TYPE	1995 STUDY:			2000 STUDY:		
			Total Sample	Non-CD Sample	NHS 94 Study	Total Sample	Non-CD Sample	NHS 98 Study
Lifetime	Illicit Drugs	Marijuana	48.9	46.5	33.2	51.6	47.2	34.9
		Hashish	23.3	20.6	**	25.5	20.9	**
		Inhalants	12.2	10.1	5.7	10.7	7.8	5.7
		Cocaine	22.6	19.8	11.4	23.3	17.2	11.5
		Crack	12.3	9.6	2.0	12.5	7.2	2.2
		Hallucinogens	18.7	16.1	9.2	20.4	16.4	10.4
		Heroin	9.6	7.4	1.1	10.8	6.3	1.2
		Methadone	5.4	4.0	**	6.0	3.6	**
		Stimulants	23.2	20.7	4.9	25.1	21.6	4.7
		Sedatives/Tranquilizers	20.9	17.9	7.1**	20.8	16.6	6.0**
		Other Illegal Drugs	3.9	3.2	**	3.1	2.2	**
		Any Illegal Drug	50.5	48.0	36.0	53.1	48.6	37.4
			Alcohol	-----	82.5	81.5	89.1	88.8	87.7	86.4
Past Year	Illicit Drugs	Marijuana	17.0	16.0	8.2	13.3	12.3	7.9
		Hashish	2.3	2.1	**	0.8	0.6	**
		Inhalants	1.6	1.4	0.7	0.7	0.6	0.7
		Cocaine	4.2	3.3	1.8	2.5	1.3	1.8
		Crack	4.0	2.7	0.6	1.9	0.7	0.4
		Hallucinogens	1.7	1.7	1.1	0.9	0.6	1.4
		Heroin	2.0	1.3	0.1	1.3	0.5	0.1
		Methadone	1.2	0.9	**	1.0	0.5	**
		Stimulants	2.8	2.4	0.6	1.9	1.5	0.6
		Sedatives/Tranquilizers	3.8	3.1	1.5**	3.6	3.2	1.1**
		Other Illegal Drugs	0.7	0.6	**	0.5	0.4	**
		Any Illegal Drugs	19.5	17.9	10.2	16.1	14.4	9.9
			Alcohol	-----	54.1	54.3	70.5	56.2	57.5	67.7
Past Month	Illicit Drugs	Marijuana	8.9	8.4	4.7	6.3	5.7	4.7
		Hashish	0.6	0.5	**	0.2	0.2	**
		Inhalants	0.6	0.5	0.3	0.3	0.3	0.2
		Cocaine	1.2	0.9	0.7	1.0	0.4	0.8
		Crack	1.7	0.8	0.3	0.9	0.3	0.2
		Hallucinogens	0.6	0.6	0.4	0.2	0.0	0.6
		Heroin	0.9	0.6	**	0.8	0.3	**
		Methadone	0.4	0.3	**	0.6	0.3	**
		Stimulants	1.0	0.9	0.3	0.7	0.5	0.3
		Sedatives/Tranquilizers	1.6	1.4	0.6**	1.9	1.8	0.4**
		Other Illegal Drugs	0.4	0.4	**	0.2	0.1	**
		Any Illegal Drug	10.8	9.7	5.7	8.5	7.4	5.8
			Alcohol	-----	37.3	37.1	57.6	36.8	37.9	55.5

* In keeping with what occurs in the National Household Survey, the categories of usage noted are inclusive e.g., those individuals who reported using drugs (or alcohol) in the past 30 days were included in the categories lifetime and past year.

** Not examined/Low precision. Also, in the case of sedatives and tranquilizers the NHS Study examined sedatives and tranquilizers as separate drugs, while in the current study they were examined together. For comparison purposes the NHS figures were summed to derive the composite estimates reported in the table (the composites are likely to be larger than the actual values.)

consumers surveyed during the 1995 and 2000 Epidemiological Studies differ from the rates reported for the associated general population(s) of 18+ year olds across the country?” This question was addressed using a series of Chi-Square (X^2) analyses in which the Lifetime, Past Year, and Past Month percentage distributions for the designated “total” samples (i.e., GROUPS A and D from the list above) were compared/contrasted with the comparable percentage distributions reported for the associated NHS respondents. As shown in Exhibit 1, six X^2 analyses were conducted for each of the “Total” samples. Those six analyses involved the following dependent variables - Lifetime Drug Use (“Any Illegal Drug”), Past Year Drug Use (“Any Illegal Drug”), Past Month Drug Use (“Any Illegal Drug”), Lifetime Alcohol Use, Past Year Alcohol Use, and Past Month Alcohol Use. In order to control the “experiment wise” error rate (i.e., the overall α and ensure that it was not greater than .10 across each of the sets of six tests, the test-by-test α level was set at $\alpha = .017$. The results of the two sets of analyses undertaken in relation to sub-hypothesis 1.1 are summarized in the top portion of Exhibit 1.

The lower portion of Exhibit 1 presents the results of a summary analyses in which the AOD prevalence rates observed for the “1995” and “2000” samples were compared. (Although not directly evolving from Hypothesis 1.1, this analysis was seen as of interest with regard to assessing the stability of the AOD usage patterns of VR consumers over the time period covered.) The question posed was. “Are the AOD prevalence rates observed for the “1995” sample comparable to those observed for the “2000” sample?” The “experiment wise” error rate across the indicated set of six tests was also set at $\alpha = .10$ overall or .017 per test.

With regard to the initial question raised above, “Do the alcohol and illicit drug use of either or both of the samples of VR consumers differ from the rates reported for the general population of 18+ year olds?”, the results summarized in Table 4 and the top portion of Exhibit 1 indicate the following:

- The “1995” sample of VR consumers’ self-reported Lifetime, Past Year, and Past Month usage rates for “Any Illegal Drugs” were all significantly greater than the comparable usage rates reported for the general population. (While the associated “effect size” estimates suggest the size of the differences is generally “small” to “medium”, those differences are consistent across the three reported usage rates - Lifetime, Past Year, Past Month.)

- The “2000” sample of VR consumers’ self-reported Lifetime, Past Year, and Past Month usage rates for “Any Illegal Drugs” were also all significantly greater than the comparable usage rate reported for the general population (with an associated “effect size” between “small” and “medium”).

Exhibit 1
Summary of Statistical Tests for Sub-Hypothesis 1.1*

COMPARISONS	ILLEGAL DRUG USE:			ALCOHOL USE:		
	Lifetime	Past Year	Past Month	Lifetime	Past Year	Past Month
“1995” vs. NHS 94	50.5 vs. 36.0 $X^2 = 265.6^{**}$ (w = .38)	19.5 vs. 10.2 $X^2 = 174.0^{**}$ (w = .31)	10.8 vs. 5.7 $X^2 = 91.2^{**}$ (w = .22)	82.5 vs. 89.1 $X^2 = 83.1^{**}$ (w = .21)	54.1 vs. 70.5 $X^2 = 235.0^{**}$ (w = .36)	37.3 vs. 57.6 $X^2 = 306.9^{**}$ (w = .41)
“2000” vs. NHS 98	53.1 vs. 37.4 $X^2 = 133.7^{**}$ (w = .32)	16.1 vs. 9.9 $X^2 = 55.4^{**}$ (w = .21)	8.5 vs. 5.8 $X^2 = 16.4^{**}$ (w = .11)	88.8 vs. 86.4 $X^2 = 6.6^{**}$ (w = .07)	56.2 vs. 67.7 $X^2 = 75.9^{**}$ (w = .25)	36.8 vs. 55.5 $X^2 = 177.9^{**}$ (w = .38)
----- “1995” vs. “2000”	$X^2 = 2.0^{NS}$ (w = .02)	$X^2 = 5.7^{NS}$ (w = .04)	$X^2 = 4.9^{NS}$ (w = .04)	$X^2 = 24.1^{**}$ (w = .09)	$X^2 = 1.2^{NS}$ (w = .02)	$X^2 = 0.1^{NS}$ (w = .00)

* The indicated sets of tests were conducted only for the “Total” samples from the 1995 and 2000 Epidemiological Studies.

** Significant at the specified α -level of .017; NS = Not Significant at the specified α -level; and w = the “effect size” estimate (Cohen, 1988) with w = .10 denoted as “small”, w = .30 denoted as “medium”, and w = .50 denoted as “large”.

- The “1995” sample of VR consumers reported Lifetime, Past Year, and Past Month usage rates for alcohol that were all significantly lower than the comparable rates reported for the general population. (A review of the associated “effect size” estimates indicates that those difference are all well within the “medium” range.)
- The “2000” sample of VR consumers reported a Lifetime usage rate for alcohol that was significantly higher than that for the general population (but with a w-value that was “small”), while they reported Past Year and Past Month usage rates for alcohol that were significantly lower (with w-values in the “medium” to “large” range) than the comparable rates of alcohol use observed for the general population of 18+ year olds.

Overall, the preceding indicate that sub-hypothesis 1.1 is only partially confirmed. That is, the Lifetime, Past Year, and Past Month drug usage rates for both groups of VR consumers were all significantly higher than those for the general population - in keeping with what was predicted by the hypothesis. However, the only alcohol use rate higher than that reported for the NHS

respondents was the Lifetime rate observed for the “2000” sample, while all the other rates were significantly lower (with “medium” “effect size” estimates) than the national figures. This latter set of findings does not support the predictions evolving from sub-hypothesis 1.1.

The results presented in the second part of Exhibit 1 suggest that for the most part the alcohol and drug usage rates observed for the “1995” and “2000” samples did not generally differ significantly, except for Past Year drug use and Lifetime alcohol use (both of which had “small” associated w-values). In those instances (a) Past Year drug use was slightly higher for the 1995 sample than the 2000 sample and (b) the Lifetime alcohol use reported by the “2000” respondents was significantly greater than the Lifetime alcohol use reported by the “1995” group of respondents. Past Year and Past Month usage rates for alcohol, however, did not differ between the two samples, nor did the other two usage rates (i.e., Lifetime and Past Month) for illicit drugs.

The information summarized in Exhibit 1, when reflected against that presented earlier in Tables 2 and 3, suggest that the AOD usage rates among VR consumers have remained relatively stable over almost a half decade. At the same time, they tend to confirm that illicit drug use among VR consumers is higher than that of the general population of 18+ year olds, while VR consumers’ alcohol use, especially for the Past Year and Past Month, appears to be substantially lower than that reported for the general population.

While the preceding analyses related to Sub-hypothesis 1.1 relate to prevalence of AOD use among VR consumers, they do not address other aspects of such use - issues like frequency and intensity of use. The available data did, however, permit a limited assessment of several such issues. Related questions that helped guide the attendant analyses were:

- Is the number of days of alcohol use over the past year by VR consumers comparable to the number of days of alcohol use by the general population?
- Is the level of alcohol use by VR consumers over the past month, comparable to the level of use reported by the general population of 18+ year olds?
- Is the age of first use of alcohol reported by VR consumers comparable to the average age of first use reported for the general population of 18+ year olds?
- Is the prevalence/intensity of tobacco use (considered to be a precursory drug by many) among VR consumers in the past month comparable to the rate reported for the general population?

The results evolving from the analyses undertaken in relation to these different questions are summarized in Table 5. When conducting the various statistical tests reported in that table, a test-by-test α -level = .0125 was used in order to ensure an overall α -level no greater than .05 across the 4 tests completed per sample.

Table 5
Limited Analysis of Other Questions Concerning VR Consumers AOD Use

VARIABLES	STATISTICS	1995 Study Sample	1994 NHS	2000 Study Sample	1998 NHS
Frequency of Alcohol Use in Past Year	% No Drinks Past Year	46.9	29.5	44.4	32.3
	% At Least Once	24.4	26.6	31.6	24.9
	% 12 or More Day (But < 51)	14.1	20.0	14.8	18.4
	% 51 or More Days of Use	14.6	23.9	9.2	24.4
	X ² Test Statistic	X₃² = 285.8** (w = .40)		X₃² = 204.8** (w = .41)	
Level of Alcohol Use in Past Month*	% No Use	63.3	42.4	64.0	44.5
	% Some Use	26.5	40.2	29.4	38.9
	% "Binge" use	6.2	10.7	4.9	10.3
	% "Heavy" Use	4.0	6.7	1.7	6.3
	X ² Test Statistic	X₃² = 323.7** (w = .42)		X₃² = 216.0** (w = .41)	
Age of First Alcohol Use	Mean	16.7	17.3	16.7	17.4
	Standard Deviation	4.43		4.50	
	t – Test (Single Sample)	t₁₃₀₀ = -4.8** (d = .14)***		t₉₇₆ = -5.0** (d = .16)***	
Level of Cigarette Use in Past Month	% None (No Smoking)	58.4	72.3	60.8	73.3
	% Less Than 1 Pack a Day	15.7	14.6	14.8	15.3
	% Pack or More a Day	25.9	13.1	24.4	11.4
	X ² Test Statistic	X₂² = 281.4** (w = .39)		X₂² = 215.2** (w = .41)	

* In keeping with conventions used in the NHS "Some Drinking" was less than "Binge Drinking" (5 or more drinks per day for up to 4 out of 30 days) which in turn was less than "Heavy Drinking" (5 or more drinks per day for 5 or more days in past 30).

** Significant at the specified α -level of .0125.

*** For the X² Statistics a w value of .30 is seen as reflecting a "Medium Effect Size", while for the t-Tests a d-value of .20 is seen as reflecting a "Small Effect Size" (Cohen, 1988).

Generally speaking, the results of the first two analyses summarized in Table 5 reinforce the findings reported in Table 4. Namely, Past Year and Past Month alcohol use by VR consumers was significantly lower than that for the general population. As a result, VR consumers appear to drink on fewer occasions/days than their peers and are also less likely to engage in either "Binge" or "Heavy" drinking. However, as a group they do appear to start drinking at a slightly earlier age than the general population. Also, they report that they smoke significantly more than do members of the general population.

1.2 AOD use patterns vary among people with disabilities by nature and severity of disability. The nature and severity of the disabilities reported by the respondents during the two epidemiological studies were operationally defined using five items from the “Medication and Other Drug Use Survey”. Those items, along with the related data and analyses concerned with sub-hypothesis 1.2 are summarized in Table 6. When conducting the analyses across items for each group or sample (i.e., for the “1995” and “2000” samples) an overall alpha level of .05 was selected and, therefore, each item-by-item analysis was undertaken using a α -level of .01.

Given the preceding decision rules, the results dealing with Past Year’s AOD use appear for the most part to be rather sporadic - inconsistent across items (i.e., indicators of the nature and/or severity of disability), drug type (i.e., illegal drugs and alcohol), and samples (i.e., the “1995” and “2000” groups of respondents). The primary exception to this general lack of consistency occurred in relation to “Had a Head Injury” where-in those who responded affirmatively were more likely to have used drugs during the past year (both for the 1995 and 2000 samples), with associated “effect sizes” of .17 and .09, respectively. However, in many of the other instances where significant relationships were observed, the associated “effect size” estimates were generally quite small, with only two of those estimates actually reaching the “small” level (Cohen, 1988). The specific analyses where significant relationships with Past Year’s AOD were observed are as follows:

<u>SAMPLE</u>	<u>VARIABLES CONSIDERED</u>	<u>RELATED FINDINGS</u>	<u>EFFECT SIZE</u>
1995 Study	Past Year’s Illegal Drug Use and Disability Category	Illegal drug use varied significantly across persons with different disabilities	w = .12 (“Small”)
1995 Study	Past Year’s Alcohol Use and Disability Category	Alcohol use across persons with different types of disabilities varied significantly	w = .10 (“Small”)
1995 Study	Past Year’s Alcohol Use and Multiple Disability	Respondents with multiple disabilities reported drinking less than did those with a single disability	w = .07
1995 Study	Past Year’s Illegal Drug Use and Chronic/Steady Pain	VR consumers who reported being in steady, chronic pain were more likely to use illegal drugs than their peers	w = .08
2000 Study	Past Year’s Illegal Drug Use and Onset of Disability	Respondents with an acquired disability reported using illegal drugs more during the past year than those who had a congenital disability	w = .08
1995 & 2000 Studies	Past Year’s Illegal Drug Use and Had a Head Injury	Consumers who experienced a head injury also reported being more likely to have used drugs in the past year	w = .17 & w = .09, respectively

Table 6
Relationships Between Nature/Severity of Disability and AOD Use

NATURE/SEVERITY OF DISABILITY		1995 EPIDEMIOLOGICAL STUDY				2000 EPIDEMIOLOGICAL STUDY			
		% Used Illicit Drugs	X ² - Test	% Used Alcohol	X ² - Test	% Used Illicit Drugs	X ² - Test	% Used Alcohol	X ² - Test
AOD USE OVER THE PAST YEAR									
Disability Category* (Based on primary, self-report Disability)	Visual Impairments	9.3		46.3		15.2		65.6	
	Hearing Impairments	12.5		62.1		8.8		62.7	
	Orthopedic	19.3	X ² =	56.5	X ² =	14.2	X ² =	62.6	X ² =
	Amputation	8.0	26.0**	60.0	16.5**	0.0	9.1 ^{NS}	71.4	8.5 ^{NS}
	Etiology Unknown - a	24.8	(w=.12)	48.8	(w=.10)	18.2	(w=.09)	52.0	(w=.09)
Disability Onset	Etiology Unknown - b	17.2		54.9		16.1		55.0	
	TBI	28.0		66.2		26.0		58.8	
Multiple Disability?	Congenital	15.9	X ² =	51.4	X ² =	10.5	X ² =	52.2	X ² =
	Acquired	20.7	4.5 ^{NS}	55.0	1.6 ^{NS}	17.7	6.7**	57.6	2.0 ^{NS}
Severity of Health Problems			(w=.05)		(w=.03)		(w=.08)		(w=.04)
	No	16.1	X ² =	53.1	X ² =	15.2	X ² =	59.2	X ² =
Chronic/ Steady Pain?	Yes	18.9	1.7 ^{NS}	48.4	2.8 ^{NS}	17.2	0.9 ^{NS}	52.7	5.4 ^{NS}
			(w=.04)		(w=.05)		(w=.03)		(w=.07)
Had Head Injury	None	17.4		56.6		14.1		59.6	
	Slight	22.1	X ² =	54.9	X ² =	18.3	X ² =	63.0	X ² =
	Moderate	18.5	4.1 ^{NS}	52.5	1.9 ^{NS}	16.5	2.4 ^{NS}	51.9	9.9 ^{NS}
	Severe	21.1	(w=.05)	55.1	(w=.03)	16.4	(w=.04)	55.5	(w=.09)
	Very Severe	22.8		56.4		11.3		49.0	
Had Head Injury	Yes	23.3	X ² =	55.7	X ² =	17.7	X ² =	57.8	X ² =
	No	17.2	10.4**	53.7	0.7 ^{NS}	14.8	1.9 ^{NS}	54.7	1.2 ^{NS}
			(w=.08)		(w=.02)		(w=.04)		(w=.03)
Had Head Injury	Yes	30.0	X ² =	58.1	X ² =	20.7	X ² =	58.4	X ² =
	No	15.6	49.1**	53.4	3.4 ^{NS}	13.8	9.8**	55.0	1.3 ^{NS}
			(w=.17)		(w=.04)		(w=.09)		(w=.03)
AOD USE DURING LIFETIME									
Disability Category* (Based on primary, self-report disability)	Visual Impairments	32.0		75.0		48.5		97.0	
	Hearing Impairments	43.8		76.5		36.8		80.7	
	Orthopedic	49.1	X ² =	86.8	X ² =	55.4	X ² =	95.3	X ² =
	Amputation	56.0	83.1**	92.0	34.0**	11.1	16.9**	77.8	23.0**
	Etiology Unknown - a	65.1	(w=.21)	84.1	(w=.14)	53.4	(w=.12)	84.8	(w=.14)
Disability Onset	Etiology Unknown - b	40.9		75.3		49.0		86.3	
	TBI	61.3		89.3		64.0		92.5	
Multiple Disability?	Congenital	35.3	X ² =	67.9	X ² =	28.3	X ² =	71.9	X ² =
	Acquired	55.5	49.4**	85.8	65.8**	59.5	69.0**	92.7	76.3**
			(w=.17)		(w=.19)		(w=.25)		(w=.26)
Severity of Health Problems	No	45.0	X ² =	78.1	X ² =	50.9	X ² =	87.1	X ² =
	Yes	51.0	4.5 ^{NS}	79.9	0.7 ^{NS}	55.5	2.7 ^{NS}	89.9	0.8 ^{NS}
			(w=.06)		(w=.02)		(w=.05)		(w=.02)
Chronic/ Steady Pain?	None	41.8		74.9		47.1		81.0	
	Slight	53.4	X ² =	83.2	X ² =	54.5	X ² =	89.1	X ² =
	Moderate	52.5	17.2**	82.4	18.3**	51.9	6.7 ^{NS}	88.6	16.3**
	Severe	54.7	(w=.10)	86.4	(w=.10)	58.2	(w=.07)	92.2	(w=.11)
	Very Severe	48.1		80.2		52.8		84.9	
Had Head Injury	Yes	59.4	X ² =	87.3	X ² =	60.0	X ² =	94.2	X ² =
	No	45.3	34.8**	78.2	24.3**	47.8	18.6**	83.6	34.3**
			(w=.14)		(w=.12)		(w=.12)		(w=.16)
Had Head Injury	Yes	66.3	X ² =	88.8	X ² =	66.1	X ² =	93.2	X ² =
	No	44.8	69.0**	78.8	25.2**	46.6	43.1**	85.9	14.8**
			(w=.20)		(w=.12)		(w=.18)		(w=.11)

* Self-report data were used in this analysis due to a high incidence of missing data for the VR reported disability categories for the 1995 Study.

** Significant at $\alpha = .01$ level; NS = Not Significant at $\alpha = .01$ level

NOTE: Etiology Unknown - a = Etiology Unknown - Mental and Emotional Conditions; Etiology Unknown - b = Etiology Unknown - Other; w = "effect size" estimate with w = .10 as *small*, w = .30 as *medium*, and w = .50 as *large* (Cohen, 1988).

Generally these results indicate that the nature and/or severity of respondents' disabilities are for the most part not consistently and strongly related to their Past Year's illegal drug or alcohol use.

With regard to the relationships between Lifetime AOD Use and the self-report indicators of the nature/severity of disability, the results presented in Table 6 suggest that a somewhat more consistent pattern exists and that these relationships are generally "stronger" (i.e., reflective of larger "effect sizes") than those found for Past Year's AOD Use. The most consistent results concern the relationships between Lifetime AOD Use - Disability Onset, Lifetime AOD Use - Chronic Pain, and Lifetime AOD Use and Having a Head Injury. More specifically, it appears that (a) respondents with an acquired disability are more likely to have used AOD during their lives than respondents with a congenital disability, (b) respondents who experience steady, chronic pain are more likely to engage in the use of AOD than respondents who do not report living with such pain, and (c) respondents who report having a head injury are more likely to have engaged in AOD use than other respondents. Although there is significant variability shown between Disability Category and Lifetime AOD Use, the distributions of usage rates across illegal drugs and samples (i.e., "1995" vs. "2000" samples) as well as the usage rates across alcohol and samples are not consistent. The "effect size" estimates for these four sets of relationships are all somewhat greater than "small", with several approaching the "medium" designation.

Although several of the other relationships involving Lifetime Illegal Drug or Alcohol Use reported in Table 6 are also significant, they are not consistent across either samples ("1995" vs. "2000") or drug type (i.e., illegal drugs vs. alcohol). Of these relationships the one that appears to be the most interesting is the one dealing with "Severity of Health Problems". Though not statistically significant across samples and drug types, there appears to be a consistent non-linear relationship between the response categories used with this item and both illegal drug and alcohol use - that is, AOD use generally appears to increase as the ratings change from "None" or no health problems to "Severe" problems, but then decreases if "Very Severe" health problems are reported. This relationship would be interesting to explore further in future research.

Overall, the results summarized in Table 6 suggest that sub-hypothesis 1.2 would be at least partially confirmed if one were referring to AOD Use over the respondents' lifetimes, but would not be confirmed if one were concerned with just more recent (e.g., past year) AOD usage. In

the case of Lifetime Use, Disability Category (“Nature”), Disability Onset (“Nature”), Chronic/Steady Pain (“Severity”), and Had a Head Injury (“Nature”) are all significantly related to reported Lifetime alcohol and other drug use.

Given the consistency of the relationships observed between Nature/Severity of Disability and Lifetime AOD Use, a series of multiple regression analyses was completed in order (a) to document the strength of those relationships when taken together and (b) to assess which of the Nature/Severity variables are most consistently and highly correlated with Lifetime AOD Use. The results of those analyses are as follows:

<u>DEPENDENT VARIABLE</u>	<u>EQUATION</u>	<u>SAMPLE</u>	<u>PREDICTOR VARIABLES (Nature/Severity of Disability)</u>	<u>MULTIPLE CORRELATION</u>
Used Drugs During Life	Full	1995 2000	Disability Category, Onset, Multiple Disability, Severity of Health Problems, Chronic Pain, Head Injury	.32 .31
	Reduced	1995 2000	Onset, Head Injury, Disability Category Onset, Head Injury	.29 .28
Used Alcohol During Life	Full	1995 2000	Disability Category, Onset, Multiple Disability, Severity of Health Problems, Chronic Pain, Head Injury	.28 .31
	Reduced	1995 2000	Onset, Disability Category Onset, Chronic Pain	.25 .29

The “full” models shown above suggest that all six of the Nature/Severity variables (as a group) account for roughly 10% of the variance in consumers’ illicit drug use and roughly 9% of the variance in their alcohol use. Both of these composite relationships reflect a “small” to “medium” effect size as defined by Cohen (198). At the same time, the “reduced” equations suggest that the composite relationships are primarily associated with two or three of the six predictor variables - Onset of Disability, Had a Head Injury, and Disability Category in regard to drug use and Onset of Disability, Chronic Pain, and Disability Category in regard to alcohol use. These reduced sets of variables resulted in multiple correlations that were not significantly smaller than those resulting from inclusion of all six Nature/Severity of Disability variables.

1.3 AOD abuse related risk factors such as acceptance of disability, attitude of entitlement, self esteem, risk taking, and age will be significantly associated with illicit drug use. Previous work by staff at the RRTC on Drugs and Disability, as well as others, suggests that a variety of different “risk factors” can be related to AOD use by persons with disabilities. For the purposes of this report, these potential “risk factors” have been separated into two types or categories - “Psychological Factors” and “Background (Demographic) Factors”. The

associated sets of analyses are summarized in tables 7 and 8. In order to partially control for the overall α -levels across the sets of analyses reported in those tables, a per-variable α -level of .01 was used for each of the two independent samples of respondents. That strategy resulted in an overall α -level of roughly .09 for each of the 2 sets of 6 analyses reported in Table 7 and a slightly larger overall α -level of .11 for each of the 2 sets of 6 analyses reported in Table 8.

The results shown in the top half of Table 7 - with regard to illegal drug use - indicate that a number of consistent, significant (though of relatively small “effect size”) relationships exist between many of the “Psychological Variables” listed and consumers’ use of illegal drugs. More specifically, those results show ---

- A positive relationship exists between illegal drug use and consumers’ perceptions of the restrictiveness of their disabilities (i.e., those who see their disabilities as more restrictive are more likely to use drugs)
- In all but one instance (i.e., in all but the 1995 Study, Past Year Use) consumers’ acceptance of their disability was shown to be negatively related to their illegal drug use (i.e., lack of acceptance was associated with higher drug use)
- Consumers’ perceptions of others’ attitudes toward and acceptance of people with disabilities was negatively correlated with their Lifetime use of illegal drugs, but not their Past Year or Past Month use (i.e., perception of a negative attitude on the part of others was associated with higher drug usage)
- The strongest relationships noted (which were of medium “effect size”) were those between illegal drug use and “attitude toward entitlement” due to disability (i.e., a strong perception that using AOD is one’s “right” or what is referred to as an entitlement attitude was positively correlated with increased consumer drug use)
- Personal risk taking behavior was also consistently and fairly strongly related (average r -value of .21) to illegal drug use (i.e., higher propensity to engage in risky behaviors was positively correlated with drug use)
- Self concept was another of the “psychological Variables” that was consistently correlated with illegal drug use, although in a negative manner (i.e., low self concept was shown to be associated with higher drug use)

- Personal anger (temper) was another of this set of variables that was consistently and significantly related to illegal drug use (i.e., greater personal anger was associated with heightened probability of drug use)

Table 7
Correlations of Selected “Psychological Factors” with Illegal Drug and Alcohol Use Among VR Consumers**

PSYCHOLOGICAL VARIABLES	ILLEGAL DRUG USE					
	1995 Study			2000 Study		
	Lifetime	Past Year	Past Month	Lifetime	Past Year	Past Month
Perceived Restrictiveness of Disability	$r_{pb} = .15^*$	$r_{pb} = .08^*$	$r_{pb} = .10^*$	$r_{pb} = .15^*$	$r_{pb} = .10^*$	$r_{pb} = .12^*$
Acceptance of Disability	$r_{pb} = -.11^*$	$r_{pb} = -.06$	$r_{pb} = -.08^*$	$r_{pb} = -.12^*$	$r_{pb} = -.08^*$	$r_{pb} = -.10^*$
Others’ Attitude re. People with Disability	$r_{pb} = -.12^*$	$r_{pb} = -.02$	$r_{pb} = -.03$	$r_{pb} = -.12^*$	$r_{pb} = -.03$	$r_{pb} = -.00$
Attitude re. Entitlement Due to Disability	$r_{pb} = .42^*$	$r_{pb} = .29^*$	$r_{pb} = .24^*$	$r_{pb} = .42^*$	$r_{pb} = .29^*$	$r_{pb} = .24^*$
Personal Risk Taking Behavior	$r_{pb} = .19^*$	$r_{pb} = .23^*$	$r_{pb} = .22^*$	$r_{pb} = .21^*$	$r_{pb} = .22^*$	$r_{pb} = .16^*$
Self Concept	$r_{pb} = -.19^*$	$r_{pb} = -.14^*$	$r_{pb} = -.14^*$	$r_{pb} = -.19^*$	$r_{pb} = -.14^*$	$r_{pb} = -.15^*$
Personal Anger - Temper	$r_{pb} = .18^*$	$r_{pb} = .20^*$	$r_{pb} = .18^*$	$r_{pb} = .19^*$	$r_{pb} = .18^*$	$r_{pb} = .14^*$
AOD Use Justified Due to Disability	$r_{pb} = .19^*$	$r_{pb} = .24^*$	$r_{pb} = .22^*$	$r_{pb} = .22^*$	$r_{pb} = .30^*$	$r_{pb} = .23^*$
Satisfaction with Life	$r_{pb} = .16^*$	$r_{pb} = .15^*$	$r_{pb} = .15^*$	$r_{pb} = .16^*$	$r_{pb} = .13^*$	$r_{pb} = .12^*$

PSYCHOLOGICAL VARIABLES	ALCOHOL USE					
	1995 Study			2000 Study		
	Lifetime	Past Year	Past Month	Lifetime	Past Year	Past Month
Perceived Restrictiveness of Disability	$r_{pb} = .09^*$	$r_{pb} = -.01$	$r_{pb} = -.03$	$r_{pb} = .11^*$	$r_{pb} = .05$	$r_{pb} = .03$
Acceptance of Disability	$r_{pb} = -.04$	$r_{pb} = -.03$	$r_{pb} = .00$	$r_{pb} = -.04$	$r_{pb} = -.04$	$r_{pb} = -.03$
Others’ Attitude re. People with Disability	$r_{pb} = -.04$	$r_{pb} = .01$	$r_{pb} = .04$	$r_{pb} = -.09^*$	$r_{pb} = -.05$	$r_{pb} = -.00$
Attitude re. Entitlement Due to Disability	$r_{pb} = .37^*$	$r_{pb} = .16^*$	$r_{pb} = .12^*$	$r_{pb} = .26^*$	$r_{pb} = .10^*$	$r_{pb} = .05$
Personal Risk Taking Behavior	$r_{pb} = .19^*$	$r_{pb} = .21^*$	$r_{pb} = .21^*$	$r_{pb} = .17^*$	$r_{pb} = .18^*$	$r_{pb} = .19^*$
Self Concept	$r_{pb} = -.10^*$	$r_{pb} = -.05$	$r_{pb} = -.00$	$r_{pb} = -.09^*$	$r_{pb} = -.05$	$r_{pb} = .01$
Personal Anger - Temper	$r_{pb} = .11^*$	$r_{pb} = .08^*$	$r_{pb} = .06^*$	$r_{pb} = .10^*$	$r_{pb} = .06$	$r_{pb} = .02$
AOD Use Justified Due to Disability	$r_{pb} = .14^*$	$r_{pb} = .14^*$	$r_{pb} = .13^*$	$r_{pb} = .07^*$	$r_{pb} = .13^*$	$r_{pb} = .09^*$
Satisfaction with Life	$r_{pb} = .13^*$	$r_{pb} = .07^*$	$r_{pb} = .07^*$	$r_{pb} = .13^*$	$r_{pb} = .06$	$r_{pb} = .03$

* Significant at $\alpha = .01$ level.

** Based on Cohen (1988), $r = .10$ indicates a *small* “effect size”, $r = .30$ indicates a *medium* “effect size,” and $r = .50$ indicates a *large* “effect size”.

NOTE: Descriptive statistics for the first eight of these variables (those that are “scales” based upon multiple survey items) are summarized in Appendix ??? , while the associated internal consistency reliability estimates are .80, .63, .75, .93, .69, .82, .81, and .78, respectively.

- Consumers' perceptions that their AOD use is justified by their disability is also consistently and significantly related to illegal drug use (i.e., higher reliance on such a rationalization is associated with drug use)
- The single item in the survey questionnaire, "At the present time, how satisfied are you with your life?" (with "Very Satisfied" = 1 "Very Dissatisfied" = 5), was also consistently correlated with illegal drug use (i.e., greater dissatisfaction was related to a heightened probability of illegal drug use)

Generally speaking, these findings would suggest that Sub-hypothesis 1.3 would be rejected with regard to the different "Psychological Factors" addressed - seven out of nine of those factors are significantly related to illegal drug use - Lifetime, Past Year, and Past Month across both studies.

While most of the "Psychological Factors" listed appear to be related in a consistent manner to illegal drug use, the relationships between those same variables and consumers' use of alcohol is not as consistent as is shown by the results summarized in the second part of Table 7.

Those results indicate the following:

- Only two of the "Psychological Variables" - "Personal Risk Taking Behaviors" and "AOD USE Justified Due to disability" - were consistently and significantly related to alcohol use across both time of use and samples
- Five of the "Psychological Variables" were shown to be consistently related to Lifetime alcohol use across the two samples - Perceived Restrictiveness of Disability, Attitude re. Entitlement, Self Concept (negative), Personal Anger, and Satisfaction with Life (with dissatisfaction associated with alcohol use)
- The patterns of relationships for the other time periods across the nine listed variables were not as consistent (e.g., although "scores" on several variables were related to alcohol use for one sample, those relationships were not replicated across the other sample)

Overall, it appears the "Psychological" risk factors considered as a set are not as consistently nor as highly correlated with alcohol use as they are with illegal drug use.

The evaluation of Sub-hypothesis 1.3, via the observed relationships between the different consumer-related "Background Factors" and illegal drug use, is summarized in the top portion of Table 8. The information provided there indicates the following:

Table 8
Relationships of Selected “Background Factors” with Illegal Drug and Alcohol Use Among VR Consumers

BACKGROUND VARIABLES		ILLEGAL DRUG USE					
		1995 Study			2000 Study		
		Lifetime	Past Year	Past Month	Lifetime	Past Year	Past Month
Age (at time of initial interview)		$r_{pb} = .07^*$	$r_{pb} = -.07^*$	$r_{pb} = -.07^*$	$r_{pb} = .07^*$	$r_{pb} = -.06$	$r_{pb} = -.01$
Years of Education Completed		$r_{pb} = .03$	$r_{pb} = -.07^*$	$r_{pb} = -.06$	$r_{pb} = .07$	$r_{pb} = -.04$	$r_{pb} = -.03$
Gender (Female = 2, Males = 1)		$r_{bis} = -.14^*$	$r_{bis} = -.09^*$	$r_{bis} = -.08^*$	$r_{bis} = -.07$	$r_{bis} = -.07$	$r_{bis} = -.06$
Total Family Income		$r_{pb} = -.15^*$	$r_{pb} = -.09^*$	$r_{pb} = -.06^*$	$r_{pb} = -.11^*$	$r_{pb} = -.09^*$	$r_{pb} = -.06$
Live Alone? (Yes = 2, No = 1)		$r_{bis} = .09^*$	$r_{bis} = .04$	$r_{bis} = .02$	$r_{bis} = .05$	$r_{bis} = .04$	$r_{bis} = .05$
Best Friend Drinks? (Yes = 2, No = 1)		$r_{bis} = .21^*$	$r_{bis} = .23^*$	$r_{bis} = .18^*$	$r_{bis} = .21^*$	$r_{bis} = .17^*$	$r_{bis} = .11^*$
Does Family Have Drug/Alcohol Problems? (Yes = 2, No = 1)		$r_{bis} = .27^*$	$r_{bis} = .16^*$	$r_{bis} = .12^*$	$r_{bis} = .27^*$	$r_{bis} = .12^*$	$r_{bis} = .08^*$
Best Friend Uses Drugs? (Yes = 2, No = 1)		$r_{bis} = .27^*$	$r_{bis} = .45^*$	$r_{bis} = .39^*$	$r_{bis} = .24^*$	$r_{bis} = .40^*$	$r_{bis} = .27^*$
Race/Ethnicity	Caucasian	51.2	18.6	10.4	51.7	15.1	8.1
	African American	55.0 $X^2 =$	24.0 $X^2 =$	13.9 $X^2 =$	63.4 $X^2 =$	23.4 $X^2 =$	11.4 $X^2 =$
	Hispanic	32.7 11.7	9.6 10.0	7.7 4.3	57.6 9.1	21.2 10.6	9.1 3.6
	Native American	43.9 (w =	20.7 (w =	12.2 (w =	53.0 (w =	19.7 (w =	10.6 (w =
	Other Minority	43.8 .08)	28.1 .08)	9.4 .05)	61.3 .08)	6.5 .09)	3.2 .05)
Marital Status	Single	44.8 $X^2 =$	19.8 $X^2 =$	11.0 $X^2 =$	46.5 $X^2 =$	18.2 $X^2 =$	8.9 $X^2 =$
	Married/Living w Partner	52.8 35.2 [†]	15.4 6.0	9.2 1.8	51.7 30.6 [†]	11.3 11.7 [†]	6.2 4.2
	Separated/Divorced/Widow	61.6 (w =	22.2 (w =	11.6 (w =	65.0 (w =	17.5 (w =	10.2 (w =
	Other	52.9 .14)	20.6 .06)	14.7 .03)	75.0 .16)	50.0 .10)	0.0 .06)
Job Status	Unemployed	55.0	23.0	13.1	55.4	20.6	10.8
	Student	53.0 $X^2 =$	17.9 $X^2 =$	9.3 $X^2 =$	52.7 $X^2 =$	14.1 $X^2 =$	5.7 $X^2 =$
	Sheltered/Supported/Casual	44.4 16.1 [†]	17.3 10.3	10.1 9.0	45.3 3.1	8.1 13.4 [†]	7.0 7.0
	Working - Part Time	44.8 (w =	16.6 (w =	10.5 (w =	53.1 (w =	14.6 (w =	8.9 (w =
	Working - Full Time	46.9 .09)	16.2 .07)	6.1 .07)	52.7 .05)	13.6 .10)	6.8 .07)
Occupation Level	Do Not Work	53.9	21.8	12.5	55.0	18.3	9.6
	Homemaker	0.0 $X^2 =$	0.0 $X^2 =$	0.0 $X^2 =$	57.9 $X^2 =$	14.0 $X^2 =$	7.0 $X^2 =$
	Unskilled	40.4 17.6 [†]	15.1 9.7	7.4 11.1	45.9 7.1	16.6 6.7	8.3 3.6
	Semiskilled Manual	46.8 (w =	18.8 (w =	9.7 (w =	50.0 (w =	12.3 (w =	7.2 (w =
	Skilled/Clerical/Technical	51.6 .10)	16.7 .07)	10.4 .08)	50.3 .08)	16.6 .07)	8.3 .05)
	Profess/Managerial/Admin	50.6	13.9	3.8	58.7	10.1	4.6

ALCOHOL USE

BACKGROUND VARIABLES		1995 Study			2000 Study		
		Lifetime	Past Year	Past Month	Lifetime	Past Year	Past Month
		Age (at time of initial interview)		$r_{pb} = .18^*$	$r_{pb} = -.10^*$	$r_{pb} = -.09^*$	$r_{pb} = .18^*$	$r_{pb} = -.09^*$	$r_{pb} = -.06$
Years of Education Completed		$r_{pb} = .11^*$	$r_{pb} = .07^*$	$r_{pb} = .08^*$	$r_{pb} = .16^*$	$r_{pb} = .05$	$r_{pb} = .05$
Gender (Female = 2, Males = 1)		$r_{bis} = -.10^*$	$r_{bis} = -.12^*$	$r_{bis} = -.15^*$	$r_{bis} = -.03$	$r_{bis} = -.07$	$r_{bis} = -.10^*$
Total Family Income		$r_{pb} = -.06^*$	$r_{pb} = .04$	$r_{pb} = .06$	$r_{pb} = -.01$	$r_{pb} = .02$	$r_{pb} = .04$
Live Alone? (Yes = 2, No = 1)		$r_{bis} = .08^*$	$r_{bis} = .03$	$r_{bis} = .05$	$r_{bis} = .07^*$	$r_{bis} = -.02$	$r_{bis} = .00$
Best Friend Drinks? (Yes = 2, No = 1)		$r_{bis} = .28^*$	$r_{bis} = .40^*$	$r_{bis} = .43^*$	$r_{bis} = .20^*$	$r_{bis} = .40^*$	$r_{bis} = .37^*$
Does Family Have Drug/Alcohol		$r_{bis} = .23^*$	$r_{bis} = .04$	$r_{bis} = -.01$	$r_{bis} = .20^*$	$r_{bis} = .03$	$r_{bis} = -.01$

Table 8 - Continued

BACKGROUND VARIABLES		ALCOHOL USE - Continued											
		1995 Study						2000 Study					
		Lifetime		Past Year		Past Month		Lifetime		Past Year		Past Month	
Problems? (Yes = 2, No = 1)													
Best Friend Uses Drugs? (Yes = 2, No = 1)		$r_{bis} = .15^*$		$r_{bis} = .22^*$		$r_{bis} = .22^*$		$r_{bis} = .09^*$		$r_{bis} = .14^*$		$r_{bis} = .12^*$	
Race/Ethnicity	Caucasian	84.4		54.6		38.2		90.0		57.7		38.9	
	African American	82.1	$X^2 =$	55.4	$X^2 =$	36.9	$X^2 =$	85.2	$X^2 =$	49.4	$X^2 =$	26.9	$X^2 =$
	Hispanic	75.5	19.8^*	46.0	3.9	25.0	4.1	84.8	4.4	48.4	5.6	25.0	10.7
	Native American	67.5	(w =	46.3	(w =	34.6	(w =	90.9	(w =	51.6	(w =	36.9	(w =
	Other Minority	74.2	.10)	58.1	.04)	37.5	.05)	88.2	.06)	61.3	.07)	37.5	.09)
Marital Status	Single	76.4	$X^2 =$	56.0	$X^2 =$	39.4	$X^2 =$	81.8	$X^2 =$	56.1	$X^2 =$	37.5	$X^2 =$
	Married/Living w Partner	89.1	64.0^*	51.1	3.5	34.2	4.7	94.1	56.3^*	57.0	0.2	38.4	1.4
	Separated/Divorced/Widow	91.8	(w =	53.0	(w =	35.7	(w =	95.7	(w =	55.6	(w =	34.7	(w =
	Other	85.3	.19)	47.1	.04)	29.4	.05)	75.0	.21)	50.0	.01)	25.0	.03)
Job Status	Unemployed	84.6		56.6		39.7		88.3		53.7		33.5	
	Student	81.2	$X^2 =$	53.9	$X^2 =$	38.0	$X^2 =$	89.4	$X^2 =$	58.5	$X^2 =$	40.9	$X^2 =$
	Sheltered/Supported/Casual	83.3	9.6	51.9	8.0	31.9	6.3	77.9	13.5^*	49.4	5.9	32.6	5.8
	Working - Part Time	76.7	(w =	48.0	(w =	35.5	(w =	90.8	(w =	56.3	(w =	37.9	(w =
	Working - Full Time	83.9	.07)	58.3	.07)	38.6	.06)	91.9	.10)	61.6	.07)	39.8	.07)
Occupation Level	Do Not Work	85.1		55.4		38.3		89.4		55.1		35.7	
	Homemaker	0.0	$X^2 =$	0.0	$X^2 =$	0.0	$X^2 =$	91.5	$X^2 =$	52.7	$X^2 =$	31.6	$X^2 =$
	Unskilled	73.2	32.3^*	43.6	18.8^*	23.9	30.0^*	79.2	22.5^*	53.9	5.7	37.5	3.0
	Skill/Semiskilled Manual	77.9	(w =	54.7	(w =	41.7	(w =	88.5	(w =	60.7	(w =	37.2	(w =
	Clerical/Technical	87.2	.13)	60.6	.10)	45.8	.13)	92.5	.13)	63.2	.07)	42.5	.05)
	Profess/Managerial/Admin	91.1		63.3		45.6		95.5		51.9		36.4	

* Significant at $\alpha = .01$ level; Not Significant otherwise

NOTE: Due to rounding errors and differences in sample sizes, in several instances the same value of a test statistic may be noted as significant, while in others it is not. Also, according to Cohen an r-value or w-value of .10 indicates a *small* “effect size”, .30 indicates a *medium* “effect size” and .50 indicates a *large* “effect size”.

- The three “Background Variables” most consistently and strongly (average “effect size estimates of .19, .17, and .34, respectively) related to illegal drug use are the three dichotomous variables, “Best Friend Drinks?”, “Does Family have Drug/Alcohol Problems?”, and “Best Friend Uses Drugs?” (i.e., an affirmative response on each of these variables would be related to illegal drug use across both samples and all three time intervals considered)
- Additionally, several of the other “Background Variables” were related to Lifetime Use across both samples - those variables were Age, Total Family Income (negative), and Marital Status
- Although several of the “Background Variables” (e.g., Years of Education Completed, Gender, and Occupation Level) were significantly related to illegal drug use in one of the samples, those relationships were not replicated in the second sample (and were, therefore, deemed to be not “consistent” - perhaps due to chance fluctuations in the

samples or to differences attributable to the inherent temporal variations between the two samples)

Given these results, it would appear that Sub-hypothesis 1.3 would be partially rejected with regard to the designated set of “Background” related risk factors. That is, only several, not all, of the “Background Variables” listed appear to be consistently and significantly related to illegal drug use.

The second portion of Table 8 shows the relationships between the selected set of 12 “Background Variables” and consumers’ use of alcohol. The results summarized there-in indicate the following:

- Two dichotomous variables, “Best Friend Drinks?” (average “effect size” of .35) and “Best Friend Uses Drugs?” (average “effect size” of .16) out of the 12 considered are consistently and strongly related to alcohol use (i.e., for each variable an affirmative response is significantly related to alcohol use)
- Six of the selected set of “Background Variables” - Age, Years of Education Completed, Live Alone?, Does Family Have Drug/Alcohol Problems?, Marital Status, and Occupation Level - are all related consistently (i.e., across the two samples) to Lifetime Use of alcohol, but not necessarily to either Past Year and/or Past Month alcohol use
- While a number of the other 12 “Background Variables” exhibit significant relationships with alcohol use among VR consumers, the relationships observed are either not consistent across the two study samples and/or across the time intervals considered

Thus, the findings summarized in Table 8 suggest that while consistent relationships exist between several of the listed “Background” variables and alcohol use, especially Lifetime Use, those relationships are neither as “strong” nor consistent for alcohol use among VR consumers as they are for illicit drug use.

In summary, the information presented in Tables 7 and 8 suggests that overall, the “Psychological” and “Background” factors considered are more consistently related to illegal drug use than to alcohol use. This is especially true for the “Psychological Variables” addressed in Table 7. Given that Sub-hypothesis 1.3 deals only with illegal drug use, the findings serve to partially confirm that supposition.

The various analyses related to Sub-hypothesis 1.3 summarized in Tables 7 and 8 deal only with bivariate relationships of individual “Psychological” and “Background” variables with AOD use. For example “Is gender related to Lifetime drug and/or alcohol use by the samples of VR consumers?” Another way of viewing Sub-hypothesis 1.3 would be to look at the overall or composite relationship between the selected sets of variables and AOD use. In such a situation one of the questions raised might be “What is the strength of the combined relationship between the selected set of 9 “Psychological Factors” and Lifetime alcohol use?” Such a question could be addressed by looking at the multiple correlation (and associated “coefficient of determination”) between the set of predictor variables (e.g., the “Psychological Factors”) and AOD use. The key anomaly inherent in such analyses is the fact that substance use, i.e., the dependent variable, is a dichotomous rather than a continuous variable, which could affect the “significance” of any related statistical tests and their associated interpretations. Despite this potential limitation, the descriptive results would still be directly interpretable.

Give the preceding perspective, multiple correlation coefficients resulting from a number of preliminary analyses are summarized in Table 9. To assist in interpreting those statistics, the related “effect size” estimates posited by Cohen (1988) - “small” or $R = .14$; “medium” or $R = .36$; and “large” or $R = .51$ - could be used.

Inspection of the multiple correlations listed in Table 9 indicates the following:

- Over 80% of the relationships shown fall in the “medium” to “large” range, which suggests that the sets of psychological and background variables considered are fairly strongly related to AOD use
- Generally, the relationships between the sets of predictor variables and AOD use criteria are strongest for Lifetime Use, next strongest for Past Year Use, and the weakest (relatively speaking) for Past Month Use (the average multiple Rs across Lifetime, Past Year, and Past Month use are .45, .42, and .39, respectively)
- The relationships are typically slightly stronger for consumers in the 1995 study than the 2000 study (the average multiple Rs are .45 and .40, respectively)
- As a group the background/demographic variables yielded slightly stronger predictions than did the psychological variables, particularly with regard to Past Year and Past Month drug and alcohol use.

Perhaps the most interesting finding reported in Table 9 is related to the last set of analyses reported. That is, the multiple correlations remain quite strong even when only a few (minimum of one and maximum of six) out of the total set of 21 predictor variables are used. These results tend to suggest that the relationships observed between the two sets of predictor variables and AOD use criteria can be explained fairly well by relatively few of the 21 predictor variables

Table 9
Multiple Correlations Between the “Psychological”/”Background” Variables and AOD Use

PREDICTOR VARIABLES	VARIABLES INCLUDED IN THE REGRESSION	DEPENDENT VARIABLES	MULTIPLE CORRELATIONS	
			1995 Study	2000 Study
Psychological	Restrictiveness of Disability, Acceptance of Disability, Others' Attitude re. Disability, Attitude re. Entitlement, Risk Taking, Self Concept, Anger, AOD Use Justified, Satisfaction with Life (9)	Lifetime Drug Use	.46	.46
		Past Yr. Drug Use	.39	.40
		Past Mo. Drug Use	.35	.32
		Lifetime Alcohol Use	.41	.32
		Past Yr. Alcohol Use	.25	.23
		Past Mo. Alcohol Use	.25	.24
Background	Age, Yrs of Education, Gender, Family Income, Live Alone?, Best Friend Drinks, Family AOD Problems, Best Friend Uses Drugs, Race/Ethnicity, Marital Status, Job Status, Occupation (12)	Lifetime Drug Use	.44	.41
		Past Yr. Drug Use	.49	.43
		Past Mo. Drug Use	.44	.29
		Lifetime Alcohol Use	.44	.37
		Past Yr. Alcohol Use	.43	.41
		Past Mo. Alcohol Use	.48	.39
Combined Psychological & Background	Same as the two sets listed Above (21 variables) ⁵	Lifetime Drug Use	.54	.53
		Past Yr. Drug Use	.54	.52
		Past Mo. Drug Use	.50	.38
		Lifetime Alcohol Use	.54	.45
		Past Yr. Alcohol Use	.46	.44
		Past Mo. Alcohol Use	.51	.41
Parsimonious* Combined Psychological & Background	3,4 variables from 21 above ¹	Lifetime Drug Use	.48	.48
		Past Yr. Drug Use	.51	.48
	2,3 variables from 21 above ²	Past Mo. Drug Use	.47	.34
		Lifetime Alcohol Use	.51	.42
	4,3 variables from 21 above ³	Past Yr. Alcohol Use	.40	.41
		Past Mo. Alcohol Use	.44	.37
6,6 variables from 21 above ⁴	Past Yr. Alcohol Use	.40	.41	
	Past Mo. Alcohol Use	.44	.37	

* Stepwise approach used to conduct these analyses with R^2 - Change = .01 or more used to establish resulting number of steps.

¹ Attitude re. Entitlement, Best Friend Used Drugs, & Family AOD Problems; Attitude re. Entitlement, Best Friend Used Drugs, Marital Status, & Risk Taking

² Best Friend Uses Drugs & Attitude re. Entitlement; Best Friend Uses Drugs, Attitude re. Entitlement, & AOD Use Justified

³ Best Friend Uses Drugs, Attitude re. Entitlement, Risk Taking, & Satisfaction with Life; Best Friend Uses Drugs, Attitude re. Entitlement, & AOD Use Justified

⁴ Attitude re. Entitlement, Best Friend Drinks, Family AOD Problems, Risk Taking, & Yrs. of Education; Attitude re. Entitlement, Best Friend Drinks, Yrs. of Education, Family AOD Problems, Age, & Risk Taking

⁵ Best Friend Drinks; Best Friend Drinks & Risk Taking

⁶ Best Friend Drinks & Risk Taking; Best Friend Drinks & Risk Taking

considered. For example, *Attitude Toward Entitlement* and *Best Friend Uses Drugs* are two of the first variables in almost all of the prediction equations related to drug use. Likewise, *Best Friend Drinks* and *Risk Taking* are two predictors found in all but one of the equations dealing with alcohol use.

1.4 African Americans utilizing state VR services will demonstrate higher AOD usage patterns than consumers of other racial backgrounds. This particular sub-hypothesis is related somewhat to the preceding sub-hypothesis - that is, to the analyses in Table 8 which dealt with Race/Ethnicity as a “Background Variable”. In those earlier analyses Race/Ethnicity was defined via five categories - Caucasian, African American, Hispanic, Native American, and Other Minorities. Owing to the relatively small sample sizes in the last three categories, however, for the purposes of the current sub-hypothesis those categories were combined and the composite referred to as “Other Minorities”. Related summary data and analyses are provided in Table 10. In order to help control for the overall alpha associated with the analyses summarized in Table 10, i.e., so it would be no greater than .10 for the analyses involving each of the two independent samples, the α - level per test for each of the 6 related tests was set at $\alpha = .017$.

The results presented in Table 10 suggest the following:

- With regard to overall illicit drug use, the samples of African American VR consumers appear to exhibit higher lifetime prevalence rates than do the other groups of VR consumers, but those differences are statistically significant only for Lifetime rates and not for Past Year and/or Past Month usage rates. (Furthermore, the “effect size” estimates shown are all quite “small”, which suggests that Race/Ethnicity is related, but not strongly to illegal drug use.)
- Though the observed prevalence rates regarding alcohol usage suggest that African American VR consumers generally drink less than do the other groups of consumers, none of the observed differences are consistently significant across time period covered or samples. (And, as in the case of illegal drugs, the associated “effect size” estimates are also quite small.)
- The data regarding illegal drug use suggests that African American VR consumers use some illegal drugs more frequently than the other racial/ethnic groups (e.g., if $\alpha = .005$ per set of 11 drugs listed, Cocaine, Crack, and Heroin were used more frequently by African American than other VR consumers), but they use some other drugs less

Table 10
Percentages of African American, Other Minority, and Caucasian VR Consumers Who**
Reported Using Illicit Drugs and/or Alcohol

USAGE TIMEFRAME	SUBSTANCE	TYPE	1995 STUDY:			2000 STUDY:			
			African American	Other Minority	Caucasian	African American	Other Minority	Caucasian	
Lifetime	Illicit Drugs	Marijuana	52.6	39.2	49.7	61.7	54.6	50.4	
		Hashish	21.5	19.3	24.6	29.7	23.1	25.6	
		Inhalants	10.4	16.3	12.3	10.9	14.0	10.6	
		Cocaine	27.2	20.5	21.6	34.3	26.9	21.4	
		Crack	23.4	12.7	9.2	29.7	19.2	8.8	
		Hallucinogens	15.8	16.9	20.0	16.0	20.2	21.7	
		Heroin	13.9	10.8	8.4	18.3	15.4	9.0	
		Methadone	7.4	8.4	4.6	11.4	7.8	4.9	
		Stimulants	17.7	20.5	25.6	19.4	24.0	26.7	
		Sedatives/Tranquilizers	17.7	16.9	22.5	20.0	21.7	21.1	
		Other Illegal Drugs	4.4	5.4	3.5	4.0	3.1	3.1	
		Any Illegal Drug	55.0	40.4	51.2	63.4	56.2	51.7	
					(X ² = 9.9* (w = .07))			(X ² = 8.5* (w = .08))	
		Alcohol	----	82.1	71.1	84.4	85.2	88.7	90.0
			(X ² = 18.3* (w = .10))			(X ² = 3.5 (w = .05))			
Past Year	Illicit Drugs	Marijuana	19.9	16.9	16.6	18.9	15.4	12.4	
		Hashish	1.9	4.8	2.1	0.6	1.5	0.9	
		Inhalants	1.6	4.2	1.4	0.0	0.0	1.0	
		Cocaine	8.2	4.8	3.2	8.0	3.8	1.4	
		Crack	10.1	4.2	2.3	9.1	2.3	0.6	
		Hallucinogens	1.1	3.0	1.9	0.0	0.8	1.1	
		Heroin	3.3	2.4	1.6	4.0	1.5	0.8	
		Methadone	1.4	1.8	1.1	1.7	0.8	1.0	
		Stimulants	1.9	2.4	3.2	0.6	3.9	1.8	
		Sedatives/Tranquilizers	3.5	3.0	4.1	2.3	3.9	3.9	
		Other Illegal Drugs	0.5	2.4	0.6	0.6	0.8	0.4	
		Any Illegal Drugs	24.0	18.7	18.6	23.4	16.9	15.1	
					(X ² = 5.2 (w = .05))			(X ² = 7.4 (w = .06))	
		Alcohol	----	55.4	48.4	54.6	49.4	53.2	57.7
			(X ² = 2.4 (w = .04))			(X ² = 4.4 (w = .06))			
Past Month	Illicit Drugs	Marijuana	10.4	9.0	8.8	8.6	6.9	5.8	
		Hashish	0.8	1.2	0.5	0.6	0.0	0.2	
		Inhalants	0.8	1.2	0.6	0.0	0.0	0.4	
		Cocaine	3.3	1.2	0.7	4.6	1.5	0.3	
		Crack	4.9	1.8	0.8	4.6	1.5	0.2	
		Hallucinogens	0.3	0.6	0.8	0.0	0.8	0.1	
		Heroin	1.4	1.2	0.7	2.9	1.5	0.3	
		Methadone	0.3	0.0	0.5	1.1	0.0	0.6	
		Stimulants	0.8	0.6	1.2	0.6	0.8	0.8	
		Sedatives/Tranquilizers	1.6	0.0	1.8	1.1	1.6	2.0	
		Other Illegal Drugs	0.3	1.8	0.3	0.0	0.0	0.2	
		Any Illegal Drug	13.9	10.2	10.4	11.4	8.5	8.1	
					(X ² = 3.6 (w = .04))			(X ² = 2.1 (w = .04))	
		Alcohol	----	36.9	32.1	38.2	26.9	34.1	38.9
			(X ² = 2.3 (w = .03))			(X ² = 9.2* (w = .09))			

** In keeping with what occurs in the National Household Survey, the categories of usage noted are inclusive e.g., those individuals who reported using drugs (or alcohol) in the past 30 days were included in the categories lifetime and past year.

* Significant at $\alpha = .01$ level; otherwise, Not Significant; and $w = .10$ represents a small "effect size" (Cohen, 1988).

frequently than the either or both of the other groups (e.g., if $\alpha = .005$ per set of 11 drugs considered, Lifetime Use of stimulants was lower for African Americans than for Caucasians).

Overall, these results indicate that sub-hypothesis 1.4 is only partially rejected, i.e., only for Lifetime drug use rates. Furthermore, they suggest that the relationships between the three racial/ethnic groups and both illegal drugs and alcohol usage are relatively weak (i.e., have very small associated “effect sizes”).

While the comparisons of AOD usage rates between the three Racial/Ethnic groups highlighted via Table 10 are interesting, they only show one part of the “picture” - how African American VR consumers compare with VR consumers from other ethnic groups. Another interesting question one might ask is, “How do the AOD usage rates of African American VR consumers compare with the AOD usage rates of the general population of African Americans who are 18 or older. The data used to evaluate that question and the attendant analyses are summarized in Table 11. As in previous analyses, in order to help control for the overall alpha associated with these analyses, i.e., so it would be no greater than .10 for the composite set of analyses involving each of the two independent samples, the α - level per test for each of the 6 related tests was set at $\alpha = .017$.

The results presented in Table 11 suggest the following:

- With regard to overall illicit drug use, the samples of African American VR consumers appear to exhibit higher Lifetime, Past Year, and Past Month prevalence rates than do the general populations of African Americans as represented by the samples in the 1994 and 1998 National Household Surveys, and those six differences are all statistically significant except for the Past Month usage rate for the 2000 Study. (The associated “effect size” estimates are in the “medium” to “large” range for Lifetime Use, but become smaller as one moves from the Past Year to the Past Month rates.)
- The observed prevalence rates regarding Lifetime alcohol usage suggest that African American VR consumers drank slightly more than did members of the general population of African Americans, however, the related differences were not significant across the two samples. At the same time, for Past Year and Past Month alcohol use, the rates reported for African American VR consumers were somewhat lower than the comparable

Table 11
Percentages of African American VR Consumers Who Reported Using AOD as**
Compared to the 1994 - 1998 National House Survey Estimates for African Americans

USAGE TIMEFRAME	SUBSTANCE	TYPE	1995 STUDY:			2000 STUDY:		
			African American	NHS 94 Study		African American	NHS 98 Study	
Lifetime	Illicit Drugs	Marijuana	52.6	29.9		61.7	32.5	
		Hashish	21.5	**		29.7	**	
		Inhalants	10.4	2.4		10.9	2.2	
		Cocaine	27.2	8.9		34.3	9.7	
		Crack	23.4	3.8		29.7	4.8	
		Hallucinogens	15.8	3.4		16.0	5.4	
		Heroin	13.9	9.9**		18.3	10.6**	
		Methadone	7.4	**		11.4	**	
		Stimulants	17.7	2.1		19.4	3.1	
		Sedatives/Tranquilizers	17.7	3.5		20.0	5.1	
		Other Illegal Drugs	4.4	**		4.0	**	
		Any Illegal Drug	55.0	32.0	X ² =89.5* (w =.49)	63.4	35.21	X ² =61.1* (w =.59)
		Alcohol	-----	82.1	80.1	X ² = 0.9 (w =.05)	85.2	78.4	X^{2}= 4.8 (w =.17)
	Past Year	Illicit Drugs	Marijuana	19.9	10.1		18.9	10.4
Hashish			1.9	**		0.6	**	
Inhalants			1.6	0.3		0.0	0.2	
Cocaine			8.2	3.2		8.0	2.2	
Crack			10.1	1.8		9.2	1.5	
Hallucinogens			1.1	0.4		0.0	0.4	
Heroin			3.3	1.1**		4.0	0.7**	
Methadone			1.4	**		1.7	**	
Stimulants			1.9	0.4		0.6	0.6	
Sedatives/Tranquilizers			1.5	0.9		2.2	1.0	
Other Illegal Drugs			0.6	**		0.6	**	
Any Illegal Drugs			24.0	12.2	X ² =47.5* (w =.36)	23.4	12.8	X ² =17.7* (w =.32)
Alcohol			-----	55.4	60.0	X ² =3.2 (w =.09)	49.4	54.6	X^{2}= 1.8 (w =.10)
Past Month		Illicit Drugs	Marijuana	10.4	5.9		8.6	6.3
	Hashish		0.8	**		0.6	**	
	Inhalants		0.8	0.1		0.0	0.1	
	Cocaine		3.3	1.5		4.6	1.5	
	Crack		4.9	0.8		4.6	1.0	
	Hallucinogens		0.3	0.2		0.0	0.1	
	Heroin		1.4	**		2.9	**	
	Methadone		0.3	**		1.1	**	
	Stimulants		0.8	0.2		0.6	0.2	
	Sedatives/Tranquilizers		1.6	0.3		1.1	0.3	
	Other Illegal Drugs		0.3	**		0.0	**	
	Any Illegal Drug		13.9	7.2	X ² =24.6* (w =.26)	11.4	8.0	X ² = 2.8 (w =.13)
	Alcohol		-----	36.9	47.7	X ² =16.9* (w =.22)	26.9	43.9	X^{2}=19.5* (w =.34)

** In keeping with what occurs in the National Household Survey, the categories of usage noted are inclusive e.g., those individuals who reported using drugs (or alcohol) in the past 30 days were included in the categories lifetime and past year; the indicated values were not examined or of low precision due to data limitations; in the case of sedatives and tranquilizers the NHS Studies examined sedatives and tranquilizers as separate drug, while in the current study they were combined - for comparison purposes the NHS figures were summed to derive the estimates reported; or for the estimates reported for heroin it was not possible to generate the estimate for the past month for the 18+ year old NHS respondents.

* Significant at $\alpha = .017$ level; otherwise, Not Significant; and $w = .10$ represents a *small* "effect size", $w = .30$ represents a *medium* "effect size", and $w = .50$ represents a *large* "effect size" (Cohen, 1988).

rates for the general population of African Americans, but of the four differences only those for Past Month alcohol use were significantly lower.

- While not evaluated statistically, the data regarding the use of specific illegal drugs suggests that African American VR consumers use most of the illegal drugs listed more frequently than does the general population of African Americans across the country (i.e., of the 48 differences for specific drugs reported in Table 11 almost 88% showed that the VR consumers' usage rates were greater (often considerably greater) than the usage rates for the general population of African Americans).

Overall, these results indicate that with regard to AOD use the sample of VR consumers who are African American differ in some significant ways from the overall population of African Americans. Generally these results are similar to those reported in Exhibit 1 for the total samples of VR consumers included in the 1995 and 2000 Studies.

1.5 Women who utilize state VR services will be more likely to report substance abuse related violence and will be less likely to receive treatment for substance abuse problems than their male counterparts. The first portion of this sub-hypothesis deals with violence or other “problems” in VR consumers lives that have occurred because of their use of AOD. Five items on the “Medication and Other Drug Use Survey” dealt with this issue. The results of the analyses of those items for females and males are summarized in Table 12. As occurred with the evaluation of the previous sub-hypotheses, in order to control for the overall α -level at .10 across the sets of tests completed for each of the two samples of respondents, the α -level established for each item-specific analysis was set at the .02 level.

The results summarized in Table 12 clearly show that female consumers of VR services are less likely than their male counterparts to be involved in “trouble” or “problems” related to their drinking, less likely to have sustained an injury as a result of their drinking, but are more likely to be a victim of physical violence related to (either theirs’ and/or someone else’s) alcohol or drug use. Although these relationships are consistent and statistically significant, the associated “effect size” estimates are rather “small” (Cohen, 1988), which suggests that the relationships are not all that “strong.” They do, never-the-less, clearly support this portion of sub-hypothesis 1.5.

The second portion of sub-hypothesis 1.5 deals with the differences between females and males in regard to their receipt of treatment for AOD-related problems. Six items on the survey

Table 12
Substance-Related Violence/Problems Reported by Female vs. Male VR Consumers

ITEMS RELATED TO VIOLENCE/PROBLEMS		1995 STUDY:		2000 STUDY:	
		Males	Females	Males	Females
Has your drinking ever created problems between you and your wife/husband, partner, parents, or other relatives?	Yes	29.9	18.7	32.4	18.3
	No	70.1	81.3	67.6	81.7
		($X^2 = 29.5^*$ (w = .13))		($X^2 = 32.4^*$ (w = .16))	
Have you ever gotten into trouble at work or school because of drinking?	Yes	18.8	10.2	20.3	9.0
	No	81.2	89.8	79.7	91.0
		($X^2 = 26.1^*$ (w = .12))		($X^2 = 33.0^*$ (w = .16))	
Have you ever been arrested because of other drunken behavior (other than DUI)?	Yes	16.5	6.3	17.8	5.8
	No	83.5	93.7	82.2	94.2
		($X^2 = 45.0^*$ (w = .16))		($X^2 = 46.3^*$ (w = .19))	
Have you or someone else been injured as a result of your drinking?	Yes	(No Data)		14.7	7.8
	No			85.3	92.2
				($X^2 = 15.4^*$ (w = .11))	
Have you ever been the victim of any physical violence related to alcohol or drug use?	Yes	28.7	38.9	25.6	39.8
	No	71.3	61.1	74.4	60.2
		($X^2 = 21.3^*$ (w = .11))		($X^2 = 27.4^*$ (w = .15))	

* Significant at $\alpha = .02$ level; Not Significant otherwise.

instrument (2 items on the instrument used in the “1995 Study”), were related to this issue. Those items and the associated results are presented in Table 13. In order to ensure that the overall α -levels for the sets of analyses associated with each of the two samples were no greater than .10, each individual analysis reported in Table 13 was run at an α -level of .017.

The results presented in Table 13 appear to support this portion of Sub-hypothesis 1.5 - female VR consumers appear to be less likely to receive AOD-related treatment services than their male counterparts. More specifically, females are less likely than males to have gone for help or have been treated for drinking problems and are less likely to have received treatment services for drug problems. With regard to their experiences with VR, females appear to be less likely to have been helped with their AOD issues by the VR services they received than their male counterparts. The only analysis yielding a test statistic that did not reach the required α -level, dealt with whether the respondents’ VR counselors ever asked them about their use of AOD. It appears that if VR counselors asked questions about consumers’ use of AOD, they asked those questions of females just about as frequently as they did of males.

In summary, the results presented in Tables 12 and 13 support sub-hypothesis 1.5. The results are consistent and generally statistically significant, but the associated “effect sizes”

Table 13
Receipt of Assistance for Substance Problems Reported by Female vs. Male VR Consumers

ITEMS RELATED TO VIOLENCE/PROBLEMS		1995 STUDY:		2000 STUDY:	
		Males	Females	Males	Females
Have you ever gone to anyone for help about your drinking?	Yes	23.3	15.2	24.7	14.4
	No	76.7	84.8	75.3	85.6
		(X ² = 18.5* (w = .10))		(X ² = 21.2* (w = .13))	
Have you ever been in a hospital because of your drinking?	Yes	14.7	9.6	16.9	8.8
	No	85.3	90.4	83.1	91.2
		(X ² = 11.1* (w = .08))		(X ² = 18.3* (w = .12))	
Has a relative or friend, or a doctor or other health worker been concerned about your drinking or suggested you cut down?	Yes	(No Data)		21.6	9.3
	No			78.4	90.7
				(X ² = 37.3* (w = .17))	
Have you ever received treatment or services for drug problems?	Yes	(No Data)		19.5	13.8
	No			80.5	86.2
				(X ² = 7.5* (w = .08))	
How helpful have the VR services been for you with AOD issues?	Helpful	(No Data)		28.5	18.0
	Not Helpful			71.5	82.0
				(X ² = 18.8* (w = .12))	
Has your VR counselor ever asked you questions about your use of AOD?	Yes	(No Data)		39.6	33.5
	No			60.4	66.5
				(X ² = 4.8 (w = .06))	

* Significant at $\alpha = .02$ level; Not Significant otherwise.

would be characterized as “small” (Cohen, 1988). Generally speaking, female VR consumers appear to be less likely than their male counterparts to have problems or have gotten into trouble due to their drinking, are more likely to have been a victim of physical violence due to AOD use, and are less likely to have received treatment or services for a drinking or drug problem as well.

1.6 For VR consumers, heavy AOD use will be positively correlated with HIV risk behavior. For this sub-hypothesis, items related to HIV/AIDS-related risk behaviors were only available for the respondents to the most recent, 2000 Study. In all, three such questions were asked ---

- How many people have you had sex with in the last 6 months?
- Recall the last 10 times you had sex. How many of those times were you high from alcohol or other drugs?
- When you had sex during the last 6 months, how often did you use a condom?

The results showing the correlations of these risk-related variables and several indicators of AOD use are summarized in Table 14. Across the analyses shown in that table the overall α -level was controlled at about .10 by running the 21 individual tests with α set equal to .005.

Table 14
Correlations of AOD Use with HIV/AIDS Risk Behaviors among VR Consumers

ITEMS RELATED TO AOD USE (Indicators of “Heavy AOD Use”)	ITEMS DEALING WITH HIV/AIDS RISK BEHAVIORS:		
	Number of Different people had sex with past 6 months?	Times had sex when high from AOD?	How often used a condom when having sex?
Have you ever been arrested for drunken driving, driving while intoxicated, or driving under the influence of alcoholic beverages?	$r_{pb} = .02$	$r_{pb} = .16^*$	$r_{pb} = -.05$
Have you ever been in a hospital because of your drinking?	$r_{pb} = .02$	$r_{pb} = .16^*$	$r_{pb} = -.05$
Do you consider yourself an alcoholic in recovery?	$r_{pb} = .08^*$	$r_{pb} = .14^*$	$r_{pb} = -.07$
On average, how often in the past 12 months did you drink alcohol?	$r = .18^*$	$r = .29^*$	$r = -.10^*$
Have you ever received treatment or services for drug problems?	$r_{pb} = .14^*$	$r_{pb} = .23^*$	$r_{pb} = -.12^*$
Consider yourself to be a drug addict in recovery?	$r_{pb} = .10^*$	$r_{pb} = .12^*$	$r_{pb} = -.11^*$
Altogether, about how many times during the past 12 months have you used drugs?	$r = .20^*$	$r = .47^*$	$r = -.09^*$

* Significant at $\alpha = .005$ level; Not Significant otherwise; $r_{pb} = .10$ represents a *small* “effect size”, $r_{pb} = .30$ represents a *medium* “effect size”, and $r_{pb} = .50$ represents a *large* “effect size” (Cohen, 1988).

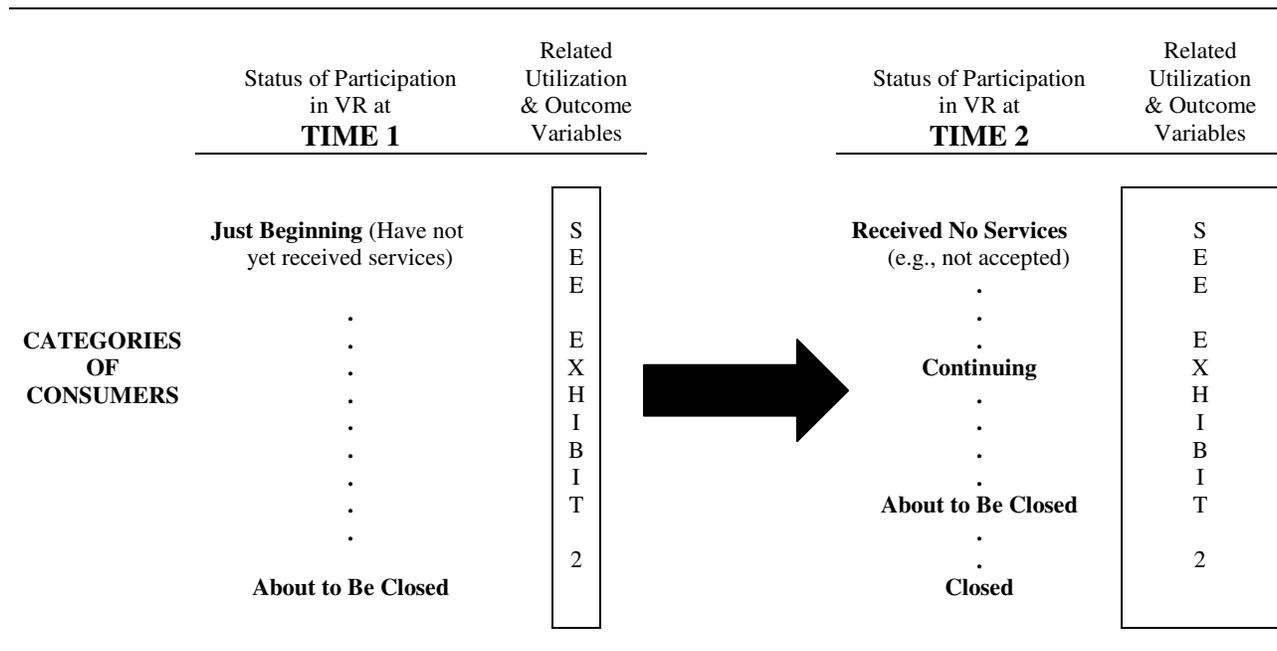
Although related somewhat to the indicator of “heavy AOD use” employed, overall, the findings reported in Table 14 suggest that sub-hypothesis 1.6 is confirmed (at least for the data available via the 2000 Study). That is, heavy AOD use by VR consumers is correlated with their engaging in HIV/AIDS-related risk behaviors. More specifically, the “heaviness” of consumers’ AOD use is positively correlated with “number of people had sex with in the last 6 months” and “Number of time had sex while high from AOD”, but negatively correlated with “how often used a condom when having sex.” These finding are particularly evident with regard to the use of drugs and the three risk behaviors listed. It was also found relative to alcohol use, but the consistency of the associated results was not quite as pervasive and depended upon the way one operationally defines “heavy alcohol use.” Of particular interest is the consistent relationship between all the indicators of AOD use and “having sex when high from AODs”. The associated correlations are the highest in the table and in most instances the

“effect sizes” are noticeably larger than those between AOD use and the two other “HIV/AIDS risk behavior” variables.

Hypothesis 2: Utilization and outcomes of state VR services are different between clients with AOD-related disabilities and those without such disabilities.

This hypothesis and its four associated sub-hypotheses involve two categories or key types of dependent variables - VR consumers’ **utilization** of state VR services and the **outcomes** associated with their utilization of those services. When these sets of dependent variables are considered within the context defined by the “1995” and “2000” Epidemiological Studies conducted by the RRTC on Drugs and Disability, one is placed in somewhat of a logical quandary. That concern is due (1) to the nature of the two studies (i.e., they each involve two “snapshots” taken at sequential points in time (See Figure 1.), but they do not include data that allows for tracking the status of specific consumer’s involvement in VR services at the points in time when the surveys were administered) and (2) to the implicit temporal logic inherent in Hypothesis 2 (i.e., a logic that assumes the RRTC’s two epidemiological studies involve the “longitudinal tracking” of respondents from their entry into VR (hopefully coincident with the point in time when the Time 1 Survey occurred) to their point of exit or near that point (which is also assumed to be basically coincident with the Time 2 Survey). At the same time, the design of the survey instrumentation used did not address either of these issues very well. For example, it did not consistently establish when consumers started receiving VR services (as part of their current “episode”), particularly at Time 1, nor did it ask at Time 2 how long consumers were in their respective VR-related programs or whether they had, in fact, been “closed out” of those programs prior to the time of the follow-up survey. Thus, when asked about an outcome like employment status (say at Time 1), one does not know if the consumers’ employment (or unemployment) status is directly related to their receiving VR services or not, or how their time of employment “matches” their involvement with the VR system. To complicate matters even more, the specific questions raised regarding involvement with VR and perceived outcomes of those experiences differed between the “1995” and “2000” Studies. Such limitations in the data collection associated with the two epidemiological studies represent a basic logical and methodological shortcoming of those efforts as well as severely restrict (and in some instances negate) the ability to replicate findings across the two independent samples of consumers.

Figure 1
Interface of Time 1 - Time 2 Data Collection and Consumers' Participation in VR Services



Given the preceding issues, the first step undertaken in regard to addressing Hypotheses 2 dealt with operationally defining the VR-related “Utilization” and “Outcome” variables. Initially that process involved identifying the items in the various survey instruments related to these two constructs. A summary of the items identified is provided in Exhibit 2.

A review of the items/variables shown in Exhibit 2 (coupled with a review of the related instruments in Appendices A - C) suggests a pivotal variable that will impact any subsequent analyses is reflected in the question, “Have you ever received any state VR services?” (Yes/No) - at both Time 1 and Time 2. This variable is important, since it is fundamental both to describing the respondents’ VR-related “utilization” patterns and to establishing any “causal links” between participation in VR services and responses to the various “utilization” and “outcome” items (as well as interpreting the relationships that emerge). For one thing, the aspect of Hypothesis 2 that deals with the “utilization” variables cannot generally be meaningfully addressed if the individuals considered have not participated in VR services or don’t believe they have participated in VR. (Only the subsamples that have received VR services will be included in the associated analyses.) An overview of how the “participation in VR services” variable relates to the samples from the two epidemiological studies is provided in Figure 2.

Exhibit 2
Survey Items Dealing with “Utilization” and “Outcomes” of VR services by Consumers

ITEMS	ITEM TYPE (U vs. O)*	SOURCE:			
		1995 Study		2000 Study	
		Time 1	Time 2	Time 1	Time 2
How many years of education have you completed?	O	x		x	
Total Family Income?	O	x		x	x
Which of the following best describes your current job status?	O	x	x	x	x
Student or Not (based On Current Job Status)?	O	x	x	x	x
Number of hours worked per week?	O	x	x	x	x
What is your current occupation?	O	x	x	x	x
If not working, how long have you been unemployed?	O	x		x	x
Have you ever applied for state VR services?	U	x			
Have you ever received any state VR services?	U	x	x	x	x
How helpful have the VR services you've received been for you?	O	x	x		
How helpful have the VR services you've received been for you -					
- in general?	O			x	x
- with regard to employment issues?	O			x	x
- with regard to AOD issues?	O			x	x
At the present time, how satisfied are you with your life?	O	x	x	x	x
Has your VR counselor ever asked questions re your AOD use?	U			x	
Number of times you actually met with your VR counselor during the past year?	U		x		
Number of phone contacts with your VR counselor during the past year?	U		x		
Do you feel your VR counselor was in touch with you often enough during the past year?	O		x		
Type of VR services arranged by your VR counselor? (17 Parts)	U		x		
If now working or in school, did the VR services help?	O		x		
If involved in job-related training during the past 12 months, how many total hours of training did you receive?	U		x		
If involved in job-related training, did you complete that training?	O		x		
If you completed training, are you working in that area now?	O		x		
Were you involved in planning for or writing your own Individualized Work Rehabilitation Plan with your VR counselor?	U		x		
While participating in VR, who else did you work with? (7 Parts)	U		x		

Exhibit 2 - Continued

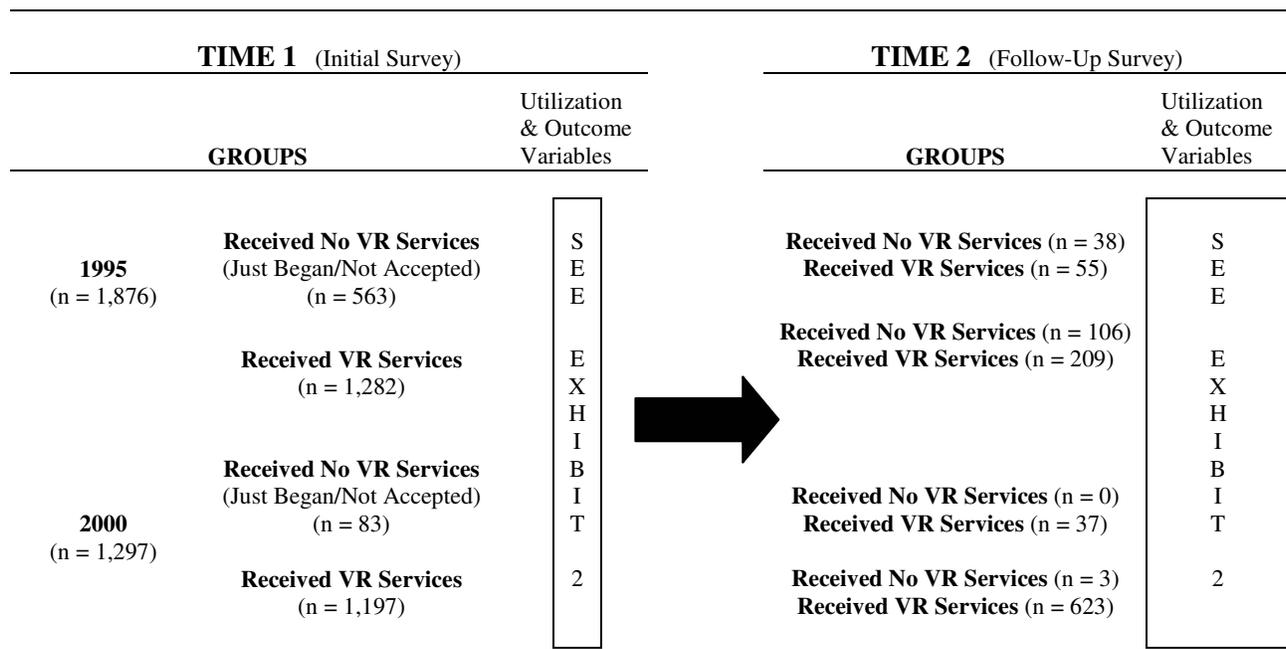
ITEMS	ITEM TYPE (U vs. O)*	SOURCE:			
		1995 Study		2000 Study	
		Time 1	Time 2	Time 1	Time 2
When VR counselor developed your rehabilitation plan did s/he know you had a substance abuse problem?	U		x		
Did you tell your VR counselor you had an AOD abuse problem?	U		x		
Do you feel your VR counselor understands your substance abuse issues that relate to employment?	U		x		
Were you in drug treatment while enrolled in the VR system?	U		x		
What VR services were received in past 18 months? (18 parts)	U				x
Are you still receiving VR Services?	U				x
Did your VR counselor require that you attend a chemical dependency treatment program in order to assist you?	U				x
Did your alcohol or drug use interfere with your goals or progress in VR?	O				x
Did your alcohol or drug use interfere with locating or keeping a job since you enrolled in VR?	O				x
Did your VR counselor require that you have urine or toxicology testing while you were enrolled as a client?	U				x
Did you have difficulty locating a chemical dependency treatment program that was accessible to you?	U				x
Have you received VR services in the past 12 months?	U		x		

* U refers to “Utilization” and O refers to “Outcomes”.

With regard to the “outcome” variables the situation is generally more complex than it is with the “utilization” variables. For example, how can consumers be expected to assess how much they were “helped” by VR services if they have never received such services or don’t believe they participated in such services? This situation is reflected in part by the following set of questions:

1. What VR service utilization patterns are observed for consumers? (Both for Time 1 and Time 2; 1995 and 2000 Studies)
2. Are Time 1 outcomes different for those consumers who received VR services vs. those who did not receive such services? (Time 1 only; 1995 and 2000 Studies)

Figure 2
Subdividing the Two Epidemiological Samples* via “Receipt of VR Services”



* The reductions in sample sizes both for Time 1 (i.e., 1280 vs. 1297 for 2000 Study) and from Time 1 to Time 2 are due to (1) missing data on the critical variable (“Receipt of VR Services”) and (2) reductions in the samples from Time 1 to Time 2.

3. Are Time 2 outcomes different for those consumers who are no longer receiving VR services (i.e., closed cases only, given the data in Exhibit 2) than for consumers who are still active? (Time 2 Only; 2000 only)
4. Are there changes in outcomes from Time 1 to Time 2 for consumers who have received VR services? (Both Time 1 and Time 2; 1995 and 2000)
5. Are the outcomes for Time 2 different for those consumers who have never received VR services vs. those who have received services that are still ongoing vs. those who have received services at one point (e.g., at Time 1), but have been closed? (Both Time 1 and Time 2; 1995 only)

As should be obvious from the last 4 questions listed above, the preceding discussion is important, particularly with regard to consumer “outcomes,” because the “receipt of VR services” variable represents a second independent variable that must be considered as part of any analyses related to Hypothesis 2. That is, one cannot assess whether AOD as a co-existing disability (i.e., Yes/No) is related to “utilization” and “outcomes” of VR services, without

consideration of whether or not the consumers in question have actually received VR services during the timeframe covered by the “Initial” (Time 1) and “Follow-Up” (Time 2) Surveys. Operationally, such a consideration may involve looking at only the subsamples that have received VR services (e.g., as would occur for the “utilization” variables or question # 4 above) or concurrently addressing “receipt of VR services” and presence of “AOD as a co-existing disability” during any analyses (e.g., through the evaluation of an “interaction effect” - e.g., via question # 5 above).

With the preceding issues in mind, that aspect of Hypothesis 2 dealing with consumer “utilization” of VR services (i.e., related to question # 1 above) was addressed first. The associated results are summarized in Tables 15 (1995 Study; primarily Time 2 except for the initial item) and Table 16 (2000 Study; primarily Time 2, except for the initial item). During those analyses, only consumers who reported that they participated in VR services are considered. When reviewing those two tables, it will become obvious that another issue that had to be addressed was the operational definition used to identify and categorize “consumers with and without a co-existing AOD disability”. For the purposes of those analyses the following two basic definitions were used:

- Those consumers identified by their respective state VR agencies as having **Chemical Dependency** as either a primary or secondary disability. (NOTE: More than a third of the 1995 sample had missing data on the associated variables and, therefore, it could be argued that this should not be the sole definition used for the projected analyses.)
- Those consumers who self-reported that they were either an alcoholic and/or a drug addict in recovery.

Furthermore, owing to the exploratory nature of Hypothesis 2 and the number of statistical tests undertaken, the overall α -level was not controlled, but the α -level for the individual tests was set at a rather conservative level of .01. In addition, when reviewing Tables 15 and 16, it is important to remember that the consistency of the observed statistical results across the groups resulting from the two preceding definitions of “a co-existing AOD disability” is seen as fundamental to the identification of replicable relationships between that independent variables and the array of “utilization” variables listed in Exhibit 2.

Given the preceding considerations, results presented in Table 15 indicate the following:

- Across the 32 dependent (“utilization”) variables considered (and an overall α -level that would be $\leq .32$ per “AOD disability” designation) only three of the related sets of tests reached statistical significance and were also consistent across the two “AOD disability” designations. Those three variables and the related findings were as follows:
 - “*Worked with a substance abuse treatment counselor while in VR?*” - more likely to occur among those consumers who were denoted as having an AOD problem
 - “*When your VR counselor developed your VR plan did s/he know of your substance problem?*” - more likely reported as affirmative by those consumers with an AOD problem than by those without such a problem
 - “*Did you tell your VR counselor about your AOD problem?*” - substantially more of those consumers classified as having an AOD problem responded affirmatively to this issue.

- There were three other of the 32 dependent variables that were close to matching the statistical/consistency criterion and represent relationships that perhaps should be explored further in the future. Those variables and the related findings were as follows:
 - “*Worked with a social worker while in VR*” - more consumers with AOD problems reported working with such individuals
 - “*Do you feel your VR counselor understands how your AOD problem relates to employment?*” - more of those consumers with an AOD problem were affirmative in their responses to this item than were the consumers not having such a problem
 - “*Were you enrolled in drug treatment while enrolled in the VR system?*” - more consumers with AOD problems reported being enrolled in such treatment programs than did the samples of consumers with no AOD Problems.

- Although not specifically related to the relationships between the cited “utilization” variables and “AOD disability status” (and thus, Hypothesis 2), the descriptive information presented in the first part of the table provides an interesting picture of VR consumers’ interactions with the VR system. For example, they ---
 - report meeting with their VR counselors about 3.7 times per year;
 - participated in 6.1 phone calls with their counselors;
 - most often received counseling (21.4%), job coaching (13.3%), job referral (11.1%), testing (12.0%), vocational evaluation services (13.1%), college tuition (24.2%), and

- transportation services (17.4%);
- least often received independent living services (3.3%), job placement services (8.7%), life training skills (6.4%), supported employment assistance (6.4%) personal care assistance (3.3%) medical evaluations/services (7.6%) and other VR services (8.3%);
- had a 60+ % probability of participating in the preparation of their Individualized Work Rehabilitation Plan; and
- roughly a quarter of the consumers reported working with medical doctors, case managers, and psychologists/psychiatrists when participating in VR, while only 5% reported working with a substance abuse treatment counselor during that same timeframe

Thus, in general across the array of VR service “utilization” variables considered, consumers with an AOD problem in the 1995 Study appeared to differ significantly from those consumers without such a problem only in regard to the services they received that could be tracked directly to needs related to their AOD use. Otherwise, the VR services in which the two subgroups of consumers reported participating did not appear to differ all that much.

The results related to the “2000” epidemiological study, which are summarized in Table 16, indicate the following:

- Across the 23 dependent (“utilization”) variables considered (with an attendant α -level \leq .23 per “AOD disability” designation), only one of the related sets of tests reached statistical significance consistently across both “AOD disability” designations. That variable was “*Has your VR counselor ever asked questions regarding your AOD use?*” - more consumers with an AOD problem responded affirmatively than did consumers who did not have such a problem.
- From a descriptive perspective, the results in Table 16, like those noted earlier in regard to Table 15, help provide an interesting picture of VR consumers’ reported interactions with the VR system. For example, they ---
 - most frequently reported receiving through VR on-the-job training (9.9%), job placement assistance (11.2%), college/university based training (19.5%), counseling (17.5%) and job coaching (9.9%), which shows considerable overlap with the results from the 1995 Study;
 - least frequently received services involving personal adjustment training (2.3%),

Table 15
Consumers' "Utilization" of VR Services and AOD Disability – 1995 Sample

ITEMS		VR DESIGNATION		SELF DESIGNATION		OVERALL SAMPLE
		AOD Disability	No AOD Disability	AOD Disability	No AOD Disability	
Have you ever applied for VR services?	% Yes	82.5	76.9	82.0	78.1	78.7
	% No	17.5 (X ² = 1.9; w = .04)	23.1 (X ² = 1.9; w = .04)	18.0 (X ² = 2.9; w = .04)	21.9 (X ² = 2.9; w = .04)	21.3
Number of times met with VR counselor in past year?	Mean	3.3	3.7	3.2	3.9	3.7
	St. Dev.	4.8 (t = - 0.2; d = .01)	10.4 (t = - 0.2; d = .01)	5.0 (t = - 0.5; d = .03)	11.1 (t = - 0.5; d = .03)	---
Number of phone contacts with VR counselor in past year?	Mean	5.1	6.1	7.7	5.7	6.1
	St. Dev.	9.5 (t = - 0.4; d = .02)	13.2 (t = - 0.4; d = .02)	15.3 (t = 0.6; d = .06)	12.4 (t = 0.6; d = .06)	---
Types of VR services arranged by counselor -						
* Counseling	% Yes	33.3 (X ² = 2.4; w = .08)	20.5	21.9 (X ² = 0.0; w = .01)	21.1	21.4
* Independent Living	% Yes	0.0 (X ² = 1.0; w = .05)	3.7	2.7 (X ² = 0.1; w = .01)	3.3	3.3
* Job Coaching	% Yes	11.1 (X ² = 0.1; w = .02)	13.5	13.7 (X ² = 0.0; w = .01)	13.1	13.3
* Job Placement	% Yes	3.7 (X ² = 0.9; w = .05)	9.2	8.2 (X ² = 0.0; w = .01)	8.7	8.7
* Job Referral	% Yes	11.1 (X ² = 0.0; w = .00)	11.0	9.9 (X ² = 0.2; w = .03)	11.6	11.1
* Life Skills Training	% Yes	3.7 (X ² = 0.4; w = .03)	6.7	4.1 (X ² = 0.8; w = .05)	6.9	6.4
* Testing	% Yes	22.2 (X ² = 2.8; w = .09)	11.3	15.1 (X ² = 1.0; w = .05)	10.9	12.0
* Training/Basic Educ.	% Yes	14.8 (X ² = 1.2; w = .06)	8.6	12.3 (X ² = 1.1; w = .06)	8.4	9.1
* Supported Employ.	% Yes	3.7 (X ² = 0.3; w = .03)	6.4	5.5 (X ² = 0.1; w = .01)	6.2	6.1
* Personal Care Assis.	% Yes	0.0 (X ² = 1.0; w = .05)	3.7	2.7 (X ² = 0.1; w = .01)	3.3	3.3
* Vocational Eval.	% Yes	29.6 (X ² = 6.8*; w = .14)	11.9	19.2 (X ² = 3.2; w = .10)	11.3	13.1
* Medical Eval./Serv.	% Yes	18.5 (X ² = 4.9; w = .12)	6.7	13.7 (X ² = 5.2; w = .12)	5.8	7.6
* College Tuition	% Yes	18.5 (X ² = 0.5; w = .04)	24.5	19.2 (X ² = 1.3; w = .06)	25.5	24.2
* Work Supplies	% Yes	0.0 (X ² = 3.0; w = .09)	10.1	9.6 (X ² = 0.0; w = .01)	9.1	9.3
* Transportation	% Yes	18.5 (X ² = 0.0; w = .01)	17.4	17.8 (X ² = 0.0; w = .01)	17.1	17.4
* Other Services	% Yes	3.7 (X ² = 0.8; w = .05)	8.6	15.1 (X ² = 5.5; w = .13)	6.5	8.3

Table 15 - Continued

ITEMS		VR DESIGNATION		SELF DESIGNATION		OVERALL SAMPLE
		AOD Disability	No AOD Disability	AOD Disability	No AOD Disability	
If involved in job training, how many total hours of training received?	Mean	801.0	773.9	792.2	767.0	774.1
	St. Dev.	390.5	398.0	398.2	400.0	---
		(t = 0.3; d = .02)		(t = 0.5; d = .03)		
Were you involved in planning or writing your Individualized Work Rehabilitation Plan?	% Yes	64.3	60.1	65.2	59.3	60.5
	% No	14.3	21.5	18.8	21.3	20.9
	% Not Sure	21.4	18.5	15.9	19.4	18.6
		(X ² = 0.8; w = .05)		(X ² = 0.8; w = .05)		
While participating in VR who else did you work with? ---						
* Medical Doctor	% Yes	32.1	25.7	36.5	24.1	26.5
		(X ² = 0.5; w = .04)		(X ² = 4.6; w = .11)		
* Social Worker	% Yes	28.6	12.6	24.3	11.0	13.8
		(X ² = 5.6; w = .12)		(X ² = 8.8*; w = .16)		
* Case Manager	% Yes	21.4	26.9	25.7	25.9	26.2
		(X ² = 0.4; w = .03)		(X ² = 0.0; w = .00)		
* Job Coach/Trainer	% Yes	7.1	20.4	16.2	20.6	19.5
		(X ² = 2.9; w = .09)		(X ² = 0.7; w = .04)		
* Sub. Abuse Tx Coun	% Yes	28.6	2.7	18.9	1.1	4.8
		(X ² = 38.7*; w = .33)		(X ² = 41.1*; w = .34)		
* Psychol/Psychiatrist	% Yes	35.7	23.4	32.4	22.7	24.5
		(X ² = 2.1; w = .08)		(X ² = 3.0; w = .09)		
* Mental Hlth Worker	% Yes	7.1	9.9	17.6	7.8	9.8
		(X ² = 0.2; w = .02)		(X ² = 6.3; w = .13)		
When VR counselor developed your rehabilitation plan did s/he know of your substance problem?	% Yes	92.0	45.0	83.3	25.0	58.6
	% No	4.0	35.0	6.3	52.8	26.0
	% Not Sure	4.0	20.0	10.4	22.2	15.4
		(X ² = 16.1*; w = .44)		(X ² = 30.9*; w = .61)		
Did you tell your VR counselor about your AOD problem?	% Yes	96.0	46.9	89.9	23.1	60.5
	% No	4.0	53.1	10.2	76.9	39.5
		(X ² = 18.2*; w = .45)		(X ² = 40.4*; w = .70)		
Do you feel VR counselor understands how your AOD Issues relate to employment?	% Yes	64.0	39.7	56.3	32.4	46.7
	% Some	12.0	5.6	10.4	2.9	7.2
	% Little	12.0	36.2	25.0	35.3	29.1
	% Don't Know	8.0	1.7	4.2	2.9	3.6
	% No	4.0	17.2	4.2	26.5	13.4
		(X ² = 11.1; w = .37)		(X ² = 12.2; w = .39)		
Were you in drug treatment while enrolled in the VR system?	% Yes	44.0	9.7	29.2	7.9	19.7
	% No	56.0	83.9	68.8	84.2	75.7
	% Not Sure	0.0	6.5	2.1	7.9	4.6
		(X ² = 14.2*, w = .40)		(X ² = 7.1, w = .30)		

* Significant at $\alpha = .01$ level, and Not Significant otherwise; w = .10 reflects a *small* "effect size", w = .30 reflects a *medium* "effect size", and w = .50 reflects a *large* "effect size"; d = .20 reflects a *small* "effect size", d = .50 reflects a *medium* "effect size", and d = .80 reflects a *large* "effect size" (Cohen, 1988).

Table 16
Consumers' "Utilization" of VR Services and AOD Disability - 2000 Sample

ITEMS		VR DESIGNATION		SELF DESIGNATION		OVERALL SAMPLE
		AOD Disability	No AOD Disability	AOD Disability	No AOD Disability	
Has your VR counselor ever asked questions re. your AOD use?	% Yes	69.5	33.7	60.2	31.2	37.3
	% No	29.7	61.6	36.9	64.1	58.3
	% Never	0.8	4.8	2.9	4.8	4.4
	Talked	(X ² = 58.6*; w = .23)		(X ² = 69.5*; w = .25)		
What VR services have you received in the past 18 months? ---						
* On-the-Job Training	% Yes	14.5 (X ² = 1.5; w = .05)	9.5	11.3 (X ² = 0.3; w = .02)	9.6	9.9
* Job Placement	% Yes	10.9 (X ² = 0.0; w = .00)	11.2	11.3 (X ² = 0.0; w = .00)	11.1	11.2
* Tr in Job Seek Skills	% Yes	10.9 (X ² = 0.4; w = .02)	8.5	12.1 (X ² = 2.1; w = .06)	8.0	8.7
* Voc/Bus School Tr	% Yes	9.1 (X ² = 0.0; w = .01)	8.1	8.1 (X ² = 0.0; w = .00)	8.2	8.2
* College/Univ Tr	% Yes	34.5 (X ² = 8.7*; w = .11)	18.2	27.4 (X ² = 6.1; w = .09)	17.7	19.5
* Personal Adjust Tr	% Yes	5.5 (X ² = 2.7; w = .06)	2.0	4.8 (X ² = 4.4; w = .08)	1.7	2.3
* Physical Therapy	% Yes	5.5 (X ² = 0.0; w = .01)	5.9	8.1 (X ² = 1.4; w = .04)	5.4	5.9
* Occup Therapy	% Yes	3.6 (X ² = 1.0; w = .04)	1.7	3.2 (X ² = 1.5; w = .05)	1.6	1.9
* Counseling	% Yes	25.5 (X ² = 2.7; w = .06)	16.8	26.6 (X ² = 8.8*; w = .11)	15.5	17.5
* Job Coaching	% Yes	5.5 (X ² = 1.3; w = .04)	10/2	9.7 (X ² = 0.0; w = .00)	9.9	9.9
* Equipmnt/Work Sup	% Yes	3.6 (X ² = 0.1; w = .01)	4.3	8.1 (X ² = 5.2; w = .09)	3.5	4.3
* Other Medical Tx	% Yes	10.9 (X ² = 3.0; w = .07)	5.3	12.9 (X ² = 14.4*; w = .14)	4.2	5.7
* Special Aids/Tech	% Yes	7.3 (X ² = 0.1; w = .01)	6.1	7.3 (X ² = 0.3; w = .02)	5.9	6.2
* Tr Homemak/Self C	% Yes	1.8 (X ² = 0.0; w = .01)	1.6	0.8 (X ² = 0.6; w = .01)	1.7	1.6
* Sheltered Workshop	% Yes	3.6 (X ² = 0.5; w = .03)	2.2	1.6 (X ² = 0.3; w = .02)	2.4	2.3
* Supported Employ	% Yes	1.8 (X ² = 0.7; w = .03)	4.2	1.6 (X ² = 2.2; w = .06)	4.5	4.0
* Driver Training	% Yes	0.0 (X ² = 1.1; w = .04)	2.0	1.6 (X ² = 0.0; w = 0.1)	1.9	1.9
* Other Rehab Service	% Yes	10.9 (X ² = 1.0; w = .04)	7.2	12.2 (X ² = 4.9; w = .08)	6.4	7.4

Table 16 - Continued

ITEMS		VR DESIGNATION		SELF DESIGNATION		OVERALL SAMPLE
		AOD Disability	No AOD Disability	AOD Disability	No AOD Disability	
Are you still receiving VR services?	% Yes	33.9	30.0	30.6	30.2	30.3
	% No	66.1	70.0	69.4	69.8	69.7
		(X ² = 0.4; w = .02)		(X ² = 0.0; w = .00)		
Did your VR counselor require that you attend AOD Tx program?	% Yes	6.9	0.3	1.6	0.7	0.8
	% No	93.1	99.7	98.4	99.3	99.2
		(X ² = 27.4*; w = .20)		(X ² = 1.0; w = .04)		
Did your VR counselor require urine/toxicology testing while in VR?	% Yes	12.1	7.3	12.3	4.0	8.7
	% No	87.9	92.7	87.7	96.0	91.3
		(X ² = 0.7; w = .08)		(X ² = 2.5; w = .15)		
Did you have trouble locating an AOD tx program that was accessible to you?	% Yes	8.8	2.6	4.8	4.2	4.5
	% No	91.2	97.4	95.2	95.8	95.5
		(X ² = 2.1; w = .14)		(X ² = 0.0; w = .01)		

* Significant at $\alpha = .01$ level, and Not Significant otherwise; w = .10 represents a *small* “effect size”, w = .30 represents a *medium* “effect size”, and w = .50 represents a *large* “effect size” (Cohen, 1988).

occupational therapy (1.9%), homemaker training (1.6%), sheltered workshop opportunities (2.3%), and driver training (1.9%); and

- reported in the preponderance of cases that their VR counselors “did not require” that they attend an AOD treatment program (99.2%) or that they undergo urine/toxicological testing (91.3%).

Thus, with regard to the “2000” sample of VR consumers, it appears that the services participated in by consumers with an AOD problem do not differ substantially and systematically from the VR services participated in by those consumers without an AOD problem. In addition, when the results presented in Table 15 and 16 are combined, it appears that Hypothesis 2 (overall) with regard to the predicted relationship(s) between having an AOD problem and the pattern of VR services “utilized” would not be confirmed.

As pointed out earlier, the relationships between having a “co-existing AOD disability” and the “outcomes” of VR service delivery are not as straight forward as those for the “utilization” variables reported in Tables 15 and 16. In all, four different sets of analyses were undertaken in order to address this second aspect of Hypothesis 2. The first of those sets of analyses is summarized in Table 17. When reviewing that table, it is important to remember that

for each reported analysis three questions (or hypotheses) are being addressed. Those questions are as follows:

1. Is “receipt of VR services¹” related to the “outcome” or dependent variable listed?
2. Is having “an AOD problem - Yes/No” related to the designated “outcome”?
3. Do “receipt of VR services” and “having an AOD problem” interact to form a relationship with the “outcome” listed?

The “answers” to these questions are reflected in the three F-values provided for each set of tests. Accompanying those inferential statistics are power estimates that serve as rough indicators of the “strength” of the observed relationships (e.g., .99 signals a very strong, while .04 signals a very weak relationship). Given the total number of tests conducted, (3 x 11 =) 33 for each subsample, the α -level per test was set at .01. Thus, the overall α -level for each sample would be $\leq .33$, which is comparable to that used in Tables 15 and 16.

It should also be noted that a number of the “outcome” variables listed in Table 17 (and the three subsequent tables as well) are not metric variables like the ones that would normally be used when undertaking ANOVA-type tests like the ones reported. For example, “employed” and “student” are both dichotomous variables and thus lack the “potential normality” some analysts would argue they should have if they are to be used in ANOVA analyses such as those reported. Given the robustness of the F-test to basic violations of its underlying assumptions (including the “nature” of the dependent variables being addressed) and the exploratory nature of the analyses being undertaken, however, the decision was made to include these variables in the reported analyses. The alternatives would involve undertaking less “complicated” analyses and/or use test statistics with less power. This issue also signals an area where future epidemiological studies need to be improved - in the items and related operational definitions used to generate “outcome” variables, including employment-related variables.

With the preceding caveats in mind, the information summarized in Table 17 indicates the following:

¹ The “receipt of VR services” variable is used to help establish a “causal link” between participation in VR services (Yes/No) and the outcomes specified. For example, those who reported not receiving any VR services would serve as a “control” group, while those who reported receiving services would function like a “treatment” or “experimental” group. However, its “sensitivity” is not very great, since a “Yes” response may signal a level of involvement with the VR system that ranges from very low to “completed.” Furthermore, the dichotomous nature of this variable serves to limit the size of any relationship one might observe.

- “years of education” was found to be significantly related to “receipt of VR services” - those consumers who reported that they received VR services generally had higher levels of education (at Time 1) than those who reported that they had not received VR services. (**NOTE:** Given the nature of the data and underlying survey design, one cannot unequivocally conclude that participation in VR services “caused” the associated consumers to get more education. Rather, one is left with concluding only that the two variables are correlated.) However, the dependent variable was not found to have a significant relationship with either “AOD Disability” or its interaction with “receipt of VR services”.
- “family income” was shown to be significantly related to “AOD disability” - Yes/No”, but not to either “receipt of VR services” or its interaction with “AOD disability”. Generally, the results indicate that the total family income reported by those consumers without an “AOD disability” is greater than that reported by those with an “AOD problem”.
- “perceived helpfulness of VR services re. AOD issues” was also shown to be significantly related to “having a co-existing AOD disability”. That is, those consumers who had such a disability felt their VR experiences helped them with their “problem” more than did the consumers who did not have “an AOD problem”, a result that could be expected given the nature of the two variables under consideration.

Overall, this set of analyses provides rather limited support for Hypothesis 2 - that having a “co-existing AOD-related disability” is related to the quality of the “outcomes” consumers experience via their involvement in the VR system.

The second set of analyses regarding the relationships between having a “co-existing AOD disability” and VR “outcomes” is summarized in Table 18. For these analyses the second independent variable considered was “were consumers still receiving VR services - Yes/No - at the time of the follow-up survey” (for the “current” study participants only). Thus, in regard to this variable two groups of VR consumers are being compared – (1) those who were in VR at Time 1 and continued in that status through the Time 2 interview and (2) those who were in VR at Time 1 and were “closed out” by Time 2 (i.e., either completed their planned rehabilitation activities or quit for one reason or another). (**NOTE:** This variable could be considered a proxy for the “length of time VR services received” alluded to in the earlier discussions, since length

Table 17
Relationships of Selected Outcomes (Time 1) to “Received VR Services” (Yes/No) and
“Have AOD Disability” (Yes/No)

DEPENDENT VARIABLE	SAMPLE & SOURCE AOD DISABILITY DESIGNATION	EFFECT & F-VALUE	POWER ESTIMATE	Received Services?	ASSOCIATED MEANS:		
					AOD Disability	No AOD Disability	
Years of Education	1995 - VR Designated	F _{Service} = 20.7*	.99	Yes	13.0	13.2	13.1
		F _{AOD Disab.} = 3.2	.43	Not Rec.	11.7	12.3	12.0
		F _{interaction} = 0.8	.18		12.3	12.8	
	1995 - Self Designated	F _{Service} = 36.0*	.99	Yes	13.0	12.9	13.0
		F _{AOD Disab.} = 1.6	.24	Not Rec.	12.3	12.0	12.1
		F _{interaction} = 0.3	.04		12.6	12.5	
	2000 - VR Designated	F _{Service} = 5.6*	.65	Yes	13.0	13.1	13.0
		F _{AOD Disab.} = 0.4	.05	Not Rec.	11.8	12.2	12.0
		F _{interaction} = 0.1	.04		12.4	12.6	
	2000 - Self Designated	F _{Service} = 9.7*	.88	Yes	12.9	13.1	13.0
		F _{AOD Disab.} = 1.3	.20	Not Rec.	11.7	12.3	12.0
		F _{interaction} = 0.2	.04		12.3	12.7	
Total Family Income	1995 - VR Designated	F _{Service} = 0.4	.04	Yes	2.9	3.9	3.4
		F _{AOD Disab.} = 17.3*	.99	Not Rec.	2.4	4.0	3.2
		F _{interaction} = 0.8	.18		2.7	4.0	
	1995 - Self Designated	F _{Service} = 0.0	.03	Yes	3.8	2.9	3.4
		F _{AOD Disab.} = 38.8*	.99	Not Rec.	4.1	2.7	3.4
		F _{interaction} = 1.7	.25		3.9	2.8	
	2000 - VR Designated	F _{Service} = 0.9	.18	Yes	3.2	3.9	3.5
		F _{AOD Disab.} = 5.5*	.65	Not Rec.	2.1	3.9	3.0
		F _{interaction} = 1.2	.19		2.7	3.9	
	2000 - Self Designated	F _{Service} = 0.0	.03	Yes	3.0	4.0	3.5
		F _{AOD Disab.} = 5.9*	.68	Not Rec.	3.1	3.9	3.5
		F _{interaction} = 0.0	.04		3.0	4.0	
Employed vs. Not Employed (Dichotomous Variable)	1995 - VR Designated	F _{Service} = 0.0	.03	Yes	1.2	1.4	1.3
		F _{AOD Disab.} = 4.8	.59	Not Rec.	1.3	1.4	1.3
		F _{interaction} = 0.0	.04		1.3	1.4	
	1995 - Self Designated	F _{Service} = 0.5	.12	Yes	1.3	1.3	1.3
		F _{AOD Disab.} = 8.5*	.83	Not Rec.	1.4	1.2	1.3
		F _{interaction} = 1.6	.24		1.4	1.3	
	2000 - VR Designated	F _{Service} = 0.3	.04	Yes	1.5	1.4	1.4
		F _{AOD Disab.} = 1.3	.21	Not Rec.	1.4	1.3	1.4
		F _{interaction} = 0.1	.04		1.4	1.3	
	2000 - Self Designated	F _{Service} = 1.0	.18	Yes	1.4	1.4	1.4
		F _{AOD Disab.} = 0.0	.04	Not Rec.	1.3	1.3	1.3
		F _{interaction} = 0.0	.04		1.4	1.4	
Level of Occupation at which Currently Employed	1995 - VR Designated	F _{Service} = 0.1	.04	Yes	1.7	2.0	1.9
		F _{AOD Disab.} = 2.0	.29	Not Rec.	1.8	1.9	1.8
		F _{interaction} = 0.1	.05		1.8	2.0	
	1995 - Self Designated	F _{Service} = 0.8	.18	Yes	1.8	1.8	1.8
		F _{AOD Disab.} = 3.6	.47	Not Rec.	1.9	1.6	1.7
		F _{interaction} = 1.2	.19		1.9	1.7	
	2000 - VR Designated	F _{Service} = 2.0	.29	Yes	2.3	2.0	2.1
		F _{AOD Disab.} = 0.0	.03	Not Rec.	1.7	1.9	1.8
		F _{interaction} = 0.8	.17		2.0	2.0	

Table 17 - Continued

DEPENDENT VARIABLE	SAMPLE & SOURCE AOD DISABILITY DESIGNATION	EFFECT & F-VALUE	POWER ESTIMATE	Received Services?	ASSOCIATED MEANS:		
					AOD Disability	No AOD Disability	
Student vs. Not Student (Dichotomous Variable)	2000 - Self Designated	F _{Service} = 2.1	.30	Yes	2.1	2.0	2.1
		F _{AOD Disab.} = 0.6	.14	Not Rec.	1.6	2.0	1.8
		F _{interaction} = 0.9	.18		1.9	2.0	
	1995 - VR Designated	F _{Service} = 0.8	.17	Yes	1.2	1.2	1.2
		F _{AOD Disab.} = 0.1	.05	Not Rec.	1.1	1.1	1.1
		F _{interaction} = 0.0	.03		1.1	1.1	
1995 - Self Designated	F _{Service} = 16.5*	.98	Yes	1.2	1.2	1.2	
	F _{AOD Disab.} = 0.1	.04	Not Rec.	1.1	1.1	1.1	
	F _{interaction} = 2.0	.29		1.1	1.1		
2000 - VR Designated	F _{Service} = 3.3	.44	Yes	1.2	1.2	1.2	
	F _{AOD Disab.} = 1.3	.20	Not Rec.	1.0	1.1	1.1	
	F _{interaction} = 0.3	.04		1.1	1.2		
2000 - Self Designated	F _{Service} = 5.2	.62	Yes	1.2	1.2	1.2	
	F _{AOD Disab.} = 3.3	.44	Not Rec.	1.0	1.1	1.1	
	F _{interaction} = 0.6	.15		1.1	1.2		
Length of Unemployment (in Months)	1995 - VR Designated	F _{Service} = 0.4	.05	Yes	45.7	47.9	46.8
		F _{AOD Disab.} = 0.3	.04	Not Rec.	57.8	46.3	52.0
		F _{interaction} = 0.6	.17		51.7	47.1	
	1995 - Self Designated	F _{Service} = 0.3	.04	Yes	39.9	53.6	46.7
		F _{AOD Disab.} = 3.2	.43	Not Rec.	43.2	45.3	44.2
		F _{interaction} = 1.7	.25		41.5	49.4	
2000 - VR Designated	F _{Service} = 2.3	.33	Yes	40.4	46.0	43.2	
	F _{AOD Disab.} = 0.2	.05	Not Rec.	62.2	67.6	64.9	
	F _{interaction} = 0.0	.03		51.3	56.8		
2000 - Self Designated	F _{Service} = 0.8	.17	Yes	48.8	44.5	46.7	
	F _{AOD Disab.} = 4.5	.56	Not Rec.	31.7	80.7	66.9	
	F _{interaction} = 6.4*	.71		40.2	62.6		
Satisfaction with Life	1995 - VR Designated	F _{Service} = 1.6	.24	Yes	2.7	2.9	2.8
		F _{AOD Disab.} = 7.4*	.78	Not Rec.	2.7	3.3	3.0
		F _{interaction} = 2.3	.32		2.7	3.1	
	1995 - Self Designated	F _{Service} = 7.7*	.79	Yes	2.6	2.7	2.6
		F _{AOD Disab.} = 8.5*	.83	Not Rec.	2.7	3.1	2.9
		F _{interaction} = 3.5	.46		2.6	2.9	
2000 - VR Designated	F _{Service} = 1.6	.24	Yes	2.9	2.7	2.8	
	F _{AOD Disab.} = 0.1	.05	Not Rec.	2.4	2.5	2.5	
	F _{interaction} = 0.3	.04		2.7	2.6		
2000 - Self Designated	F _{Service} = 3.8	.50	Yes	2.9	2.6	2.8	
	F _{AOD Disab.} = 0.0	.03	Not Rec.	2.3	2.5	2.4	
	F _{interaction} = 2.1	.31		2.6	2.6		
Estimated Helpfulness of VR Services Received	1995 - VR Designated	F _{AOD Disab.} = 0.6	.15	Yes	1.6	1.6	1.6
	1995 - Self Designated	F _{AOD Disab.} = 3.4	.45	Yes	1.6	1.5	1.6
General Helpfulness of VR Services Received	2000 - VR Designated	F _{AOD Disab.} = 2.8	.39	Yes	1.7	1.9	1.8
	2000 - Self Designated	F _{AOD Disab.} = 6.2	.79	Yes	1.7	1.9	1.8

Table 17 - Continued

DEPENDENT VARIABLE	SAMPLE & SOURCE AOD DISABILITY DESIGNATION	EFFECT & F-VALUE	POWER ESTIMATE	Received Services?	ASSOCIATED MEANS:		
					AOD Disability	No AOD Disability	
Helpfulness of VR Services re. Employment Issues	2000 - VR Designated	$F_{AOD\ Disab.} = 1.5$	.23	Yes	2.3	2.4	2.4
	2000 - Self Designated	$F_{AOD\ Disab.} = 4.2$	.53	Yes	2.3	2.5	2.4
Helpfulness of VR Services re. AOD Issues	2000 - VR Designated	$F_{AOD\ Disab.} = 95.7^*$	.99	Yes	3.0	3.9	3.8
	2000 - Self Designated	$F_{AOD\ Disab.} = 69.5^*$	.99	Yes	3.3	3.9	3.8

* Significant at $\alpha = .01$ level, and Not Significant otherwise.

in VR was not “collected” as part of either the “1995” or “2000” survey instruments as was pointed out earlier.)

With the preceding in mind, each analysis reported in Table 18 involved the evaluation of the following three questions (or hypotheses):

1. Is “still receiving VR services” (vs. being “closed”) related to the “outcomes” or dependent variables listed?
2. Is “having an AOD problem - Yes/No” related to the designated “outcomes”?
3. Do “still receiving VR services” and “having an AOD problem” interact to form any relationships with the “outcomes” listed?

The “answers” to these questions are addressed via the three F-values listed under each analysis. Those inferential statistics are each accompanied by related power estimates, which serve as rough indicators of the “strength” of the relationships observed. Given the exploratory nature of these analyses and the number of statistical tests completed - 33 per subsample - the α -level used per test was set at .01. The analyses summarized in Table 18 are also “limited” somewhat by the “quality” of the dependent variables (i.e., “outcomes”) being considered, an issue described previously in relation to the analyses summarized in Table 17.

With the preceding in mind, the results provided in Table 18 indicate the following:

- “total family income” is significantly related to “having an AOD problem” in that those consumers who do not have an “AOD problem” report having higher incomes than do consumers with an “AOD problem”. (These results are consistent with those reported in

Table 17, as would be expected.) At the same time, neither of the other effects tested were shown to indicate a significant relationship with “total family income”.

Table 18
Relationships of Selected Outcomes (Time 2) to “Still Receiving VR Services” (Yes/No)
and “Have AOD Disability” (Yes/No)

DEPENDENT VARIABLE	SAMPLE & SOURCE AOD DISABILITY DESIGNATION	EFFECT & F-VALUE	POWER ESTIMATE	Received Services?	ASSOCIATED MEANS:		
					AOD Disability	No AOD Disability	
Total Family Income	2000 - VR Designated	F _{Still in VR} = 0.5	.13	Yes, Rec.	2.8	4.0	3.4
		F _{AOD Disab.} = 8.1*	.81	Not Rec.	3.1	4.3	3.7
		F _{interaction} = 0.0	.03		2.9	4.1	
	2000 - Self Designated (T1)	F _{Still in VR} = 1.2	.19	Yes, Rec.	2.9	4.1	3.5
		F _{AOD Disab.} = 13.2*	.95	Not Rec.	3.3	4.4	3.8
		F _{interaction} = 0.0	.04		3.1	4.2	
2000 - Self Designated (T1 & T2)	F _{Still in VR} = 1.9	.28	Yes, Rec.	2.9	4.1	3.5	
	F _{AOD Disab.} = 7.5*	.78	Not Rec.	3.6	4.4	4.0	
	F _{interaction} = 0.4	.05		3.3	4.3		
Employed vs. Not Employed (Dichotomous Variable)	2000 - VR Designated	F _{Still in VR} = 0.3	.04	Yes, Rec.	1.5	1.4	1.5
		F _{AOD Disab.} = 0.3	.04	Not Rec.	1.5	1.5	1.5
		F _{interaction} = 2.0	.29		1.5	1.5	
	2000 - Self Designated (T1)	F _{Still in VR} = 7.2*	.76	Yes, Rec.	1.3	1.4	1.4
		F _{AOD Disab.} = 0.4	.06	Not Rec.	1.5	1.5	1.5
		F _{interaction} = 0.5	.09		1.4	1.5	
2000 - Self Designated (T1 & T2)	F _{Still in VR} = 3.6	.48	Yes, Rec.	1.4	1.4	1.4	
	F _{AOD Disab.} = 0.5	.12	Not Rec.	1.5	1.5	1.5	
	F _{interaction} = 0.0	.03		1.4	1.5		
Level of Occupation at which Currently Employed	2000 - VR Designated	F _{Still in VR} = 0.3	.04	Yes, Rec.	2.4	2.1	2.3
		F _{AOD Disab.} = 0.0	.03	Not Rec.	2.3	2.5	2.4
		F _{interaction} = 1.4	.22		2.3	2.3	
	2000 - Self Designated (T1)	F _{Still in VR} = 2.7	.38	Yes, Rec.	2.2	2.2	2.2
		F _{AOD Disab.} = 0.5	.11	Not Rec.	2.3	2.6	2.4
		F _{interaction} = 0.4	.07		2.2	2.4	
2000 - Self Designated (T1 & T2)	F _{Still in VR} = 3.8	.50	Yes, Rec.	2.1	2.2	2.1	
	F _{AOD Disab.} = 0.6	.16	Not Rec.	2.4	2.6	2.5	
	F _{interaction} = 0.1	.04		2.2	2.4		
Length of Unemployment (in months)	2000 - VR Designated	F _{Still in VR} = 1.8	.26	Yes, Rec.	87.3	60.7	74.0
		F _{AOD Disab.} = 0.1	.04	Not Rec.	44.0	58.8	51.4
		F _{interaction} = 1.5	.23		65.6	59.8	
	2000 - Self Designated (T1)	F _{Still in VR} = 0.0	.17	Yes, Rec.	69.5	60.7	65.1
		F _{AOD Disab.} = 0.0	.03	Not Rec.	50.2	59.1	54.6
		F _{interaction} = 0.6	.17		59.9	59.9	
2000 - Self Designated (T1 & T2)	F _{Still in VR} = 0.7	.17	Yes, Rec.	75.5	60.8	68.2	
	F _{AOD Disab.} = 0.2	.05	Not Rec.	55.5	59/9	57.7	
	F _{interaction} = 0.6	.15		65.5	60.4		
Student vs. Not Student (Dichotomous Variable)	2000 - VR Designated	F _{Still in VR} = 10.5*	.90	Yes, Rec.	1.1	1.3	1.2
		F _{AOD Disab.} = 11.1*	.91	Not Rec.	1.0	1.1	1.0
		F _{interaction} = 4.4	.55		1.0	1.2	

Table 18 - Continued

DEPENDENT VARIABLE	SAMPLE & SOURCE AOD DISABILITY DESIGNATION	EFFECT & F-VALUE	POWER ESTIMATE	Received Services	ASSOCIATED MEANS:		
					AOD Disability	No AOD Disability	
How Much Money Do You Make? (per Hour)	2000 - Self Designated (T1)	F _{Still in VR} = 51.2*	.99	Yes, Rec.	1.3	1.3	1.3
		F _{AOD Disab.} = 0.0	.03	Not Rec.	1.0	1.1	1.0
		F _{interaction} = 1.0	.18		1.2	1.2	
	2000 - Self Designated (T1 & T2)	F _{Still in VR} = 30.4*	.99	Yes, Rec.	1.2	1.3	1.3
		F _{AOD Disab.} = 0.2	.04	Not Rec.	1.0	1.1	1.0
		F _{interaction} = 0.0	.03		1.1	1.2	
Hours Working per Week?	2000 - VR Designated	F _{Still in VR} = 4.6	.57	Yes, Rec.	8.0	7.2	7.6
		F _{AOD Disab.} = 3.2	.43	Not Rec.	12.7	8.6	10.6
		F _{interaction} = 1.4	.21		10.4	7.9	
	2000 - Self Designated (T1)	F _{Still in VR} = 2.5	.35	Yes, Rec.	7.8	7.2	7.5
		F _{AOD Disab.} = 0.7	.17	Not Rec.	9.9	8.6	9.2
		F _{interaction} = 0.1	.05		8.8	7.8	
How Helpful VR Services - in General	2000 - Self Designated (T1 & T2)	F _{Still in VR} = 4.2	.53	Yes, Rec.	7.9	7.2	7.6
		F _{AOD Disab.} = 2.2	.31	Not Rec.	11.5	8.6	10.1
		F _{interaction} = 0.8	.17		9.7	7.9	
	2000 - VR Designated	F _{Still in VR} = 0.8	.18	Yes, Rec.	12.4	12.2	12.3
		F _{AOD Disab.} = 0.2	.04	Not Rec.	16.4	26.0	21.2
		F _{interaction} = 0.2	.04		14.4	19.1	
How Helpful VR Services - re. Employment Issues	2000 - Self Designated (T1)	F _{Still in VR} = 2.0	.29	Yes, Rec.	11.9	12.3	12.1
		F _{AOD Disab.} = 0.3	.04	Not Rec.	18.5	26.8	22.6
		F _{interaction} = 0.3	.04		15.2	19.5	
	2000 - Self Designated (T1 & T2)	F _{Still in VR} = 1.6	.24	Yes, Rec.	10.4	12.5	11.5
		F _{AOD Disab.} = 0.5	.10	Not Rec.	17.1	27.4	22.3
		F _{interaction} = 0.2	.04		13.8	20.0	
How Helpful VR Services - re. AOD Issues	2000 - VR Designated	F _{Still in VR} = 7.9*	.80	Yes, Rec.	1.4	1.7	1.6
		F _{AOD Disab.} = 2.3	.32	Not Rec.	1.8	2.2	2.0
		F _{interaction} = 0.0	.03		1.6	2.0	
	2000 - Self Designated (T1)	F _{Still in VR} = 19.1*	.99	Yes, Rec.	1.4	1.8	1.6
		F _{AOD Disab.} = 4.5	.56	Not Rec.	2.1	2.2	2.1
		F _{interaction} = 1.0	.18		1.7	2.0	
How Helpful VR Services - re. AOD Issues	2000 - Self Designated (T1 & T2)	F _{Still in VR} = 12.0*	.93	Yes, Rec.	1.4	1.8	1.6
		F _{AOD Disab.} = 6.3	.70	Not Rec.	1.9	2.2	2.1
		F _{interaction} = 0.1	.04		1.7	2.0	
	2000 - VR Designated	F _{Still in VR} = 4.9	.60	Yes, Rec.	2.4	2.4	2.4
		F _{AOD Disab.} = 0.0	.03	Not Rec.	2.8	2.8	2.8
		F _{interaction} = 0.1	.04		2.6	2.6	
How Helpful VR Services - re. AOD Issues	2000 - Self Designated (T1)	F _{Still in VR} = 11.0*	.91	Yes, Rec.	2.3	2.5	2.4
		F _{AOD Disab.} = 0.4	.07	Not Rec.	2.8	2.8	2.8
		F _{interaction} = 0.9	.17		2.6	2.6	
	2000 - Self Designated (T1 & T2)	F _{Still in VR} = 9.2*	.86	Yes, Rec.	2.3	2.5	2.4
		F _{AOD Disab.} = 0.0	.03	Not Rec.	2.9	2.8	2.9
		F _{interaction} = 0.6	.16		2.6	2.6	
How Helpful VR Services - re. AOD Issues	2000 - VR Designated	F _{Still in VR} = 0.1	.04	Yes, Rec.	3.3	3.9	3.6
		F _{AOD Disab.} = 24.9*	.99	Not Rec.	3.3	3.9	3.6
		F _{interaction} = 0.6	.16		3.3	3.9	

Table 18 - Continued

DEPENDENT VARIABLE	SAMPLE & SOURCE AOD DISABILITY DESIGNATION	EFFECT & F-VALUE	POWER ESTIMATE	Received Services?	ASSOCIATED MEANS:		
					AOD Disability	NO AOD Disability	
Satisfaction with Life	2000 - Self Designated (T1)	F _{Still in VR} = 1.5	.23	Yes, Rec.	3.5	3.9	3.7
		F _{AOD Disab.} = 16.3*	.98	Not Rec.	3.6	3.9	3.8
		F _{interaction} = 0.9	.17		3.6	3.9	
	2000 - Self Designated (T1 & T2)	F _{Still in VR} = 1.5	.23	Yes, Rec.	3.5	3.9	3.7
		F _{AOD Disab.} = 16.5*	.98	Not Rec.	3.6	4.0	3.8
		F _{interaction} = 0.3	.04		3.5	3.9	
	2000 - VR Designated	F _{Still in VR} = 1.4	.22	Yes, Rec.	2.6	2.5	2.5
		F _{AOD Disab.} = 0.2	.04	Not Rec.	2.8	2.7	2.7
		F _{interaction} = 0.0	.03		2.7	2.6	
	2000 - Self Designated (T1)	F _{Still in VR} = 2.7	.37	Yes, Rec.	2.6	2.5	2.5
		F _{AOD Disab.} = 2.3	.32	Not Rec.	2.9	2.6	2.8
		F _{interaction} = 0.1	.04		2.8	2.6	
2000 - Self Designated (T1 & T2)	F _{Still in VR} = 2.1	.30	Yes, Rec.	2.6	2.5	2.5	
	F _{AOD Disab.} = 1.3	.21	Not Rec.	2.9	2.7	2.8	
	F _{interaction} = 0.0	.04		2.7	2.6		

* Significant at $\alpha = .01$ level, and Not Significant otherwise.

Given the preceding considerations, the results provided in Table 18 indicate the following:

- “total family income” is significantly related to “having an AOD problem” in that those consumers who do not have an “AOD problem” report having higher incomes than do consumers with an “AOD problem”. (These results are consistent with those reported in Table 17, as would be expected.) At the same time, neither of the other effects tested were shown to indicate a significant relationship with “total family income”.
- “helpfulness of VR services re. AOD issues” was also found to be significantly related to “having an AOD problem”. More specifically, those consumers with an “AOD problem” felt the services they received to address their problem were more helpful than did the other VR consumers (i.e., those without an “AOD problem”). At the same time, neither of the other effects tested (i.e., “still receiving VR services” or the “interaction” effect) was shown to indicate a significant relationship with “helpfulness of VR services re. AOD issues”.
- “student vs. not a student” was shown to be consistently, significantly related to “still receiving VR services” - those consumers who are still receiving VR services are more likely to be in a “student status” than are those consumers who are no longer receiving

VR services. Neither of the other two effects tested met the statistical and consistency criteria with regard to this dependent variable.

- “general perceived helpfulness of VR services received” was also shown to be consistently, statistically significantly related to “still receiving VR services”, where-in those consumers who are still receiving services consistently express a more positive perception than do those consumers who are no longer receiving services. Neither of the other effects tested reflected any significant relationships with this criterion or dependent variable.

Overall, with regard to Hypothesis 2 and its projected relationships between “having a co-existing AOD disability” and VR “outcomes”, the results in Table 18 replicate those reported in Table 17 (as would be expected) and generally provide only limited support for the hypothesis.

The third set of “outcome”- related analyses dealing with the overall evaluation of Hypothesis 2 is summarized in Table 19. In that set of analyses a “mixed model”- one between subjects effect (“have a co-existing disability - Yes/No”), one within subjects effect (Time 1 survey vs. Time 2 survey), and an interaction effect - was evaluated. The associated F-tests were used to assess whether these effects were significant for each of the dependent variables considered. The “within subjects” factor (Time 1 vs. Time 2) deals with how the respective dependent variables changed between the first and second surveys for each subject, with the associated F-test being used to assess whether that change is “large enough” to be considered as due to something other than “chance”. The tests of the three effects presented in this set of analyses are accompanied by related power estimates, which serve to describe the “strength” of the relationships observed.

As occurred in the preceding two sets of analyses, the α -level established for each statistical test completed was .01. In addition, in order to warrant further consideration any result had to be consistently significant across the various subsamples under consideration.

The observed results presented in Table 19 indicate the following:

- as occurred in the two previous sets of analyses, “total family income” appears to be related to “having an AOD problem” - income is higher for those consumers without an “AOD problem”. Although strictly speaking the relationship found for the first subsample (i.e., “1995 - VR Designated”) did not reach the .01 statistical criterion (it was .012), for all intents and purposes, the findings summarized in Table 19 were seen as

Table 19
Relationships of Changes in Selected Outcomes (Time1 to Time 2) to “Have AOD Disability” (Yes/No)

DEPENDENT VARIABLE	SAMPLE & SOURCE AOD DESIGNATION	EFFECT & F-VALUE	POWER ESTIMATE	Time Surveyed	ASSOCIATED MEANS:		
					AOD Disability	No AOD Disability	
Total Family Income	1995 - VR Designated	F _{AOD Disab.} = ---		Time 1			
		F _{T1 vs. T2} = ---		Time 2			
		F _{interaction} = ---					
	1995 - Self Designated	F _{AOD Disab.} = ---		Time 1			
		F _{T1 vs. T2} = ---		Time 2			
		F _{interaction} = ---					
	2000 - VR Designated	F _{AOD Disab.} = 6.3	.71	Time 1	3.0	3.9	3.8
		F _{T1 vs. T2} = 2.6	.36	Time 2	3.2	4.1	4.1
		F _{interaction} = 0.0	.03				
	2000 - Self Designated (T1)	F _{AOD Disab.} = 19.3*	.99	Time 1	2.8	4.0	3.8
F _{T1 vs. T2} = 7.2*		.76	Time 2	3.2	4.3	4.1	
F _{interaction} = 0.2		.04					
2000 - Self Designated (T1 & T2)	F _{AOD Disab.} = 8.5*	.83	Time 1	3.0	4.0	3.9	
	F _{T1 vs. T2} = 7.7*	.79	Time 2	3.5	4.2	4.1	
	F _{interaction} = 0.4	.06					
Employed vs. Not Employed (Dichotomous Variable)	1995 - VR Designated	F _{AOD Disab.} = 0.1	.05	Time 1	1.3	1.4	1.4
		F _{T1 vs. T2} = 15.1*	.97	Time 2	1.6	1.4	1.4
		F _{interaction} = 6.1	.69				
	1995 - Self Designated (T1)	F _{AOD Disab.} = 0.2	.05	Time 1	1.3	1.4	1.4
		F _{T1 vs. T2} = 11.0*	.91	Time 2	1.5	1.4	1.4
		F _{interaction} = 1.2	.19				
	2000 - VR Designated	F _{AOD Disab.} = 0.1	.05	Time 1	1.4	1.4	1.4
		F _{T1 vs. T2} = 7.2*	.76	Time 2	1.5	1.5	1.5
		F _{interaction} = 0.1	.05				
	2000 - Self Designated (T1)	F _{AOD Disab.} = 0.0	.03	Time 1	1.4	1.4	1.4
F _{T1 vs. T2} = 12.9*		.95	Time 2	1.5	1.5	1.5	
F _{interaction} = 0.8		.17					
2000 - Self Designated (T1 & T2)	F _{AOD Disab.} = 0.0	.03	Time 1	1.4	1.4	1.4	
	F _{T1 vs. T2} = 6.6	.72	Time 2	1.5	1.5	1.5	
	F _{interaction} = 1.3	.20					
Level of Occupation at which Currently Employed	1995 - VR Designated	F _{AOD Disab.} = 0.2	.05	Time 1	1.9	2.1	2.1
		F _{T1 vs. T2} = 11.1*	.91	Time 2	2.6	2.3	2.3
		F _{interaction} = 3.4	.46				
	1995 - Self Designated (T1)	F _{AOD Disab.} = 1.2	.19	Time 1	2.0	2.0	2.0
		F _{T1 vs. T2} = 15.9*	.98	Time 2	2.6	2.2	2.3
		F _{interaction} = 3.7	.48				
	2000 - VR Designated	F _{AOD Disab.} = 0.0	.03	Time 1	2.0	2.0	2.0
		F _{T1 vs. T2} = 13.2*	.95	Time 2	2.4	2.4	2.4
		F _{interaction} = 0.1	.04				
	2000 - Self Designated (T1)	F _{AOD Disab.} = 0.0	.03	Time 1	2.1	2.0	2.0
F _{T1 vs. T2} = 17.0*		.98	Time 2	2.3	2.4	2.4	
F _{interaction} = 3.8		.49					
2000 - Self Designated (T1 & T2)	F _{AOD Disab.} = 0.0	.04	Time 1	2.2	2.0	2.0	
	F _{T1 vs. T2} = 10.3*	.89	Time 2	2.3	2.4	2.4	
	F _{interaction} = 3.7	.48					

Table 19 - Continued

DEPENDENT VARIABLE	SAMPLE & SOURCE AOD DISABILITY DESIGNATION	EFFECT & F-VALUE	POWER ESTIMATE	Time Surveyed	ASSOCIATED MEANS:		
					AOD Disability	No AOD Disability	
Length of Unemployment (in months)	1995 - VR Designated	F _{AOD Disab.} = ---		Time 1			
		F _{T1 vs. T2} = ---		Time 2.			
		F _{interaction} = ---					
	1995 - Self Designated (T1)	F _{AOD Disab.} = ---		Time 1			
		F _{T1 vs. T2} = ---		Time 2			
		F _{interaction} = ---					
	2000 - VR Designated	F _{AOD Disab.} = 0.1	.04	Time 1	59.1	54.9	55.2
		F _{T1 vs. T2} = 5.1	.61	Time 2	71.9	67.6	67.9
		F _{interaction} = 0.0	.03				
	2000 - Self Designated (T1)	F _{AOD Disab.} = 0.4	.05	Time 1	49.2	57.0	55.2
		F _{T1 vs. T2} = 14.0*	.96	Time 2	64.4	68.9	67.9
		F _{interaction} = 0.2	.05				
2000 - Self Designated (T1 & T2)	F _{AOD Disab.} = 0.0	.03	Time 1	56.6	57.3	57.2	
	F _{T1 vs. T2} = 11.5*	.92	Time 2	73.0	69.8	70.4	
	F _{interaction} = 0.2	.05					
Student vs. Not Student (Dichotomous Variable)	1995 - VR Designated	F _{AOD Disab.} = 1.7	.25	Time 1	1.1	1.1	1.1
		F _{T1 vs. T2} = 0.4	.05	Time 2	1.1	1.2	1.2
		F _{interaction} = 1.1	.18				
	1995 - Self Designated	F _{AOD Disab.} = 0.0	.04	Time 1	1.2	1.1	1.1
		F _{T1 vs. T2} = 0.0	.03	Time 2	1.1	1.2	1.2
		F _{interaction} = 0.3	.04				
	2000 - VR Designated	F _{Still in VR} = 5.0	.60	Time 1	1.2	1.2	1.2
		F _{T1 vs. T2} = 64.1*	.99	Time 2	1.0	1.1	1.1
		F _{interaction} = 0.1	.04				
	2000 - Self Designated (T1)	F _{AOD Disab.} = 5.1	.61	Time 1	1.2	1.2	1.2
		F _{T1 vs. T2} = 91.0*	.99	Time 2	1.0	1.1	1.1
		F _{interaction} = 3.0	.41				
2000 - Self Designated (T1 & T2)	F _{AOD Disab.} = 0.1	.05	Time 1	1.2	1.2	1.2	
	F _{T1 vs. T2} = 20.0*	.99	Time 2	1.1	1.1	1.1	
	F _{interaction} = 0.0	.04					
Hours Working per Week?	1995 - VR Designated	F _{AOD Disab.} = 1.5	.22	Time 1	9.9	12.5	12.3
		F _{T1 vs. T2} = 34.1*	.99	Time 2	24.8	15.6	16.3
		F _{interaction} = 14.7*	.97				
	1995 - Self Designated	F _{AOD Disab.} = 0.3	.04	Time 1	10.8	12.5	12.2
		F _{T1 vs. T2} = 30.2*	.99	Time 2	19.5	15.7	16.4
		F _{interaction} = 6.7*	.73				
	2000 - VR Designated	F _{AOD Disab.} = 0.0	.04	Time 1	15.6	12.9	13.1
		F _{T1 vs. T2} = 1.3	.20	Time 2	17.7	22.2	21.9
		F _{interaction} = 0.5	.11				
	2000 - Self Designated (T1)	F _{AOD Disab.} = 0.2	.04	Time 1	14.3	12.8	13.1
		F _{T1 vs. T2} = 3.5	.46	Time 2	17.6	22.8	21.9
		F _{interaction} = 0.9	.17				
2000 - Self Designated (T1 & T2)	F _{AOD Disab.} = 0.4	.05	Time 1	14.3	13.0	13.2	
	F _{T1 vs. T2} = 1.9	.28	Time 2	16.2	23.0	22.1	
	F _{interaction} = 0.9	.17					
How Helpful VR Services - In General	1995 - VR Designated	F _{AOD Disab.} = 0.9	.17	Time 1	1.5	1.7	1.6
		F _{T1 vs. T2} = 0.6	.17	Time 2.	1.6	1.7	1.7
		F _{interaction} = 0.0	.03				

Table 19 - Continued

DEPENDENT VARIABLE	SAMPLE & SOURCE OF DISABILITY DESIGNATION	EFFECT & F-VALUE	POWER ESTIMATE	Time Surveyed	ASSOCIATED MEANS:			
					AOD Disability	No AOD Disability		
How Helpful VR Services - Re. Employment Issues	1995 - Self Designated (T1)	F _{AOD Disab.} =	1.2	.19	Time 1	1.6	1.7	1.6
		F _{T1 vs. T2} =	1.2	.19	Time 2	1.6	1.7	1.7
		F _{interaction} =	0.0	.03				
	2000 - VR Designated	F _{AOD Disab.} =	0.1	.05	Time 1	2.4	2.1	2.1
		F _{T1 vs. T2} =	8.1*	.81	Time 2	1.8	2.0	2.0
		F _{interaction} =	5.8	.67				
	2000 - Self Designated (T1)	F _{AOD Disab.} =	1.1	.18	Time 1	2.1	2.1	2.1
		F _{T1 vs. T2} =	3.2	.43	Time 2	1.8	2.0	2.0
		F _{interaction} =	0.9	.17				
	2000 - Self Designated (T1 & T2)	F _{AOD Disab.} =	4.6	.57	Time 1	1.9	2.1	2.1
		F _{T1 vs. T2} =	2.1	.30	Time 2	1.7	2.1	2.0
		F _{interaction} =	0.4	.05				
How Helpful VR Services - re. AOD Issues	1995 - VR Designated	F _{AOD Disab.} =	---		Time 1			
		F _{T1 vs. T2} =	---		Time 2			
		F _{interaction} =	---					
	1995 - Self Designated	F _{AOD Disab.} =	---		Time 1			
		F _{T1 vs. T2} =	---		Time 2			
		F _{interaction} =	---					
	2000 - VR Designated	F _{AOD Disab.} =	0.3	.04	Time 1	2.8	2.7	2.7
		F _{T1 vs. T2} =	0.0	.03	Time 2	2.8	2.7	2.7
		F _{interaction} =	0.0	.03				
	2000 - Self Designated (T1)	F _{AOD Disab.} =	0.2	.05	Time 1	2.6	2.7	2.7
		F _{T1 vs. T2} =	0.1	.05	Time 2	2.7	2.7	2.7
		F _{interaction} =	0.2	.04				
2000 - Self Designated (T1 & T2)	F _{AOD Disab.} =	0.9	.17	Time 1	2.4	2.7	2.7	
	F _{T1 vs. T2} =	1.5	.23	Time 2	2.7	2.7	2.7	
	F _{interaction} =	1.8	.26					
Satisfaction with Life	1995 - VR Designated	F _{AOD Disab.} =	---		Time 1			
		F _{T1 vs. T2} =	---		Time 2			
		F _{interaction} =	---					
	1995 - Self Designated	F _{AOD Disab.} =	---		Time 1			
		F _{T1 vs. T2} =	---		Time 2			
		F _{interaction} =	---					
	2000 - VR Designated	F _{AOD Disab.} =	26.8*	.99	Time 1	3.4	3.9	3.8
		F _{T1 vs. T2} =	0.0	.03	Time 2	3.3	3.9	3.9
		F _{interaction} =	0.3	.04				
	2000 - Self Designated (T1)	F _{AOD Disab.} =	21.9*	.99	Time 1	3.5	3.9	3.8
		F _{T1 vs. T2} =	1.6	.24	Time 2	3.6	3.9	3.9
		F _{interaction} =	1.1	.18				
2000 - Self Designated (T1 & T2)	F _{AOD Disab.} =	23.0*	.99	Time 1	3.5	3.9	3.8	
	F _{T1 vs. T2} =	2.6	.37	Time 2	3.6	3.9	3.9	
	F _{interaction} =	1.1	.19					
1995 - VR Designated	F _{AOD Disab.} =	0.4	.05	Time 1	2.6	2.6	2.6	
	F _{T1 vs. T2} =	5.1	.61	Time 2	2.2	2.4	2.4	
	F _{interaction} =	1.1	.18					
1995 - Self Designated	F _{AOD Disab.} =	1.0	.18	Time 1	2.4	2.6	2.6	
	F _{T1 vs. T2} =	3.2	.43	Time 2	2.3	2.4	2.4	
	F _{interaction} =	0.4	.04					

Table 19 - Continued

DEPENDENT VARIABLE	SAMPLE & SOURCE AOD DISABILITY DESIGNATION	EFFECT & F-VALUE	POWER ESTIMATE	Time Surveyed	ASSOCIATED MEANS:			
					AOD Disability	No AOD Disability		
	2000 - VR Designated	F _{AOD Disab.} =	0.4	.07	Time 1	2.8	2.7	2.7
		F _{T1 vs. T2} =	1.1	.19	Time 2	2.7	2.6	2.6
		F _{interaction} =	0.0	.03				
	2000 - Self Designated (T1)	F _{AOD Disab.} =	1.6	.25	Time 1	2.8	2.7	2.7
		F _{T1 vs. T2} =	1.1	.18	Time 2	2.8	2.6	2.6
		F _{interaction} =	0.6	.17				
	2000 - Self Designated (T1 & T2)	F _{AOD Disab.} =	0.3	.04	Time 1	2.7	2.7	2.7
		F _{T1 vs. T2} =	0.5	.09	Time 2	2.7	2.6	2.6
		F _{interaction} =	0.7	.17				

* Significant at $\alpha = .01$ level, and Not Significant otherwise

replicating the results reported earlier in Tables 17 and 18. (**NOTE:** The slight reduction in the F-values for the initial subsample during this analysis may well have been due directly to the reduction in the “n” that occurred between the first and second surveys.)

- the results reported in Tables 17 and 18 for “how helpful VR services re. AOD issues” were also replicated - VR consumers with an “AOD problem” generally saw the services they received for that problem as better than did the consumers with no “AOD problem”.
- For all intents and purposes “employed vs. not employed” was shown to change over time (with the only “glitch” being the test for the “Current - Self Designated (T1 & T2)” subsample, which was significant at the $\alpha = .013$ level rather the .01). Generally speaking, those consumers who completed both Time 1 and Time 2 forms were more apt to be employed at Time 2 than at Time 1, which could be construed to mean that participation in VR increased their chances of securing employment. Neither of the other effects tested yielded any significant relationships.
- While the results for “length of unemployment” and “student vs. not student” did not attain the established statistical significance and consistency criteria (e.g., in the case of “student vs. not student” the tests involving consumers from the 1995 Study did not reach the specified α -level, the results for consumers from the 2000 Study were consistently significant), they do represent areas that could provide interesting results and should be studied further during future studies.

The fourth and final set of analyses dealing with the overall, “outcome”-related assessment of Hypothesis 2 is summarized in Table 20. One of the major independent variables considered

during the analyses reported in that table, which is referred to as “level of participation in VR”, has three levels - “never participated in VR services” vs. “participated in VR services and is still participating at Time 2” vs. “participated in VR services (Time 1), but not participating at Time 2” (i.e., “closed out”). As occurred with the preceding sets of analyses, those presented in Table 20 address three basic questions (or hypotheses). Those questions are as follows:

1. Is “level of participation in VR” (as defined by the three levels or categories noted above) related to the selected “outcome” variables?
2. Is “having a co-existing AOD problem” related to the designated “outcome” variables?
3. Do the preceding two independent variables, “level of participation in VR” and “having a co-existing AOD disability”, interact to form any relationships with the “outcomes” listed?

The “answers” to these questions are addressed via the three F-values listed for each analysis, and those inferential statistics are accompanied by related power estimates or indicators of the “strength” of the observed relationships. Given the number of tests undertaken per subsample and the exploratory nature of the analyses, the α -level per test was set at .01. Finally, as in previous analyses, the results presented in Table 20 are also “limited” somewhat by the “quality” of the dependent variables (i.e., “outcomes”) being addressed.

Given the preceding general context, the results found in Table 20 indicate the following:

- None of the 10 dependent variables was found to be consistently and significantly related to “having a co-existing AOD problem” as would be predicted via Hypothesis 2
- “was VR helpful in getting a job and/or getting into school” (Yes/No) was shown to be related to “level of participation in VR”, but not to either of the other two effects tested (those most closely aligned with Hypothesis 2). More specifically, members of the “No VR” group were significantly more likely to respond “No” than were members of the “Still in VR” group, with the members from “Not Now” falling between these two other groups.

Thus, overall the results in Table 20 do not lend support to Hypothesis 2.

Generally speaking, the overall assessment of Hypothesis 2, as reflected in the numerous analyses summarized in Tables 15 through 20, suggests that the negative effects of “having a co-existing AOD disability” on consumers’ VR utilization and associated outcomes may not be as

Table 20
Relationships of Changes in Selected Outcomes (Time 2) to “Never Participated vs. Still Participating vs. Participated but Not Still in VR” and “Have AOD Disability” (Yes/No)

DEPENDENT VARIABLE	SAMPLE & SOURCE AOD DISABILITY DESIGNATION	EFFECT & F-VALUE	POWER ESTIMATE	Level Participation	ASSOCIATED MEANS:		
					AOD Disability	No AOD Disability	
Employed vs. Not Employed (Dichotomous Variable)	1995 - VR Designated	F _{Participation} = 3.0	.58	No VR	2.0	1.5	1.7
		F _{AOD Disab.} = 3.2	.43	Still VR	1.5	1.4	1.4
		F _{Interaction} = 1.8	.37	Not Now	1.9	1.5	1.7
					1.8	1.5	
	1995 - Self Designated (T1)	F _{Participation} = 0.9	.20	No VR	1.5	1.5	1.5
		F _{AOD Disab.} = 0.1	.05	Still VR	1.5	1.4	1.4
F _{Interaction} = 0.0		.06	Not Now	1.5	1.5	1.5	
				1.5	1.5		
Level of Occupation at which Currently Employed	1995 - VR Designated	F _{Participation} = 3.3	.62	No VR	4.0	2.5	3.2
		F _{AOD Disab.} = 3.3	.44	Still VR	2.3	2.2	2.2
		F _{Interaction} = 2.0	.41	Not Now	3.6	2.3	3.0
					3.3	2.3	
	1995 - Self Designated (T1)	F _{Participation} = 1.7	.36	No VR	3.3	2.5	2.9
		F _{AOD Disab.} = 2.7	.37	Still VR	2.4	2.1	2.3
F _{Interaction} = 0.3		.09	Not Now	2.8	2.3	2.6	
				2.8	2.3		
Student vs. Not Student (Dichotomous Variable)	1995 - VR Designated	F _{Participation} = 1.0	.22	No VR	1.0	1.1	1.0
		F _{AOD Disab.} = 0.6	.14	Still VR	1.1	1.2	1.2
		F _{Interaction} = 0.0	.06	Not Now	1.0	1.1	1.0
					1.0	1.1	
	1995 - Self Designated (T1)	F _{Participation} = 4.0	.71	No VR	1.0	1.1	1.0
		F _{AOD Disab.} = 0.5	.09	Still VR	1.2	1.2	1.2
F _{Interaction} = 0.2		.08	Not Now	1.0	1.1	1.0	
				1.1	1.1		
Hours Working Per Week?	1995 - VR Designated	F _{Participation} = 3.7	.68	No VR	40.0	20.9	30.4
		F _{AOD Disab.} = 5.2	.64	Still VR	19.2	13.9	16.6
		F _{Interaction} = 2.4	.48	Not Now	37.0	15.2	26.1
					32.1	16.7	
	1995 - Self Designated (T1)	F _{Participation} = 2.6	.52	No VR	31.3	20.8	26.0
		F _{AOD Disab.} = 2.8	.39	Still VR	17.0	13.7	15.4
F _{Interaction} = 0.3		.10	Not Now	20.9	16.0	18.4	
				23.0	16.8		
How Helpful VR Services - in General	1995 - VR Designated	F _{Participation} = 0.7	.17	No VR	1.0	3.1	2.1
		F _{AOD Disab.} = 7.8*	.79	Still VR	1.7	1.5	1.6
		F _{Interaction} = 5.1*	.82	Not Now	1.4	2.1	1.8
					1.4	2.3	
	1995 - Self Designated (T1)	F _{Participation} = 12.5*	.99	No VR	2.3	3.1	2.7
		F _{AOD Disab.} = 4.1	.52	Still VR	1.6	1.5	1.6
F _{Interaction} = 2.5		.50	Not Now	1.7	2.2	2.0	
				1.9	2.3		
Satisfaction with Life	1995 - VR Designated	F _{Participation} = 0.8	.18	No VR	1.0	2.6	1.8
		F _{AOD Disab.} = 2.1	.31	Still VR	2.5	2.4	2.4
		F _{Interaction} = 1.4	.30	Not Now	1.9	2.5	2.2
					1.8	2.5	
	1995 - Self Designated (T1)	F _{Participation} = 0.2	.08	No VR	2.0	2.6	2.3
		F _{AOD Disab.} = 0.6	.15	Still VR	2.3	2.4	2.4
F _{Interaction} = 0.4		.12	Not Now	2.5	2.4	2.5	
				2.3	2.5		

Table 20 - Continued

DEPENDENT VARIABLE	SAMPLE & SOURCE AOD DISABILITY DESIGNATION	EFFECT & F-VALUE	POWER ESTIMATE	Level Participation	ASSOCIATED MEANS:		
					AOD Disability	No AOD Disability	
Adequacy of Contacts with VR Counselor in Last 12 Months?	1995 - VR Designated	F _{Participation} = 2.3	.46	No VR	1.0	3.5	2.2
		F _{AOD Disab.} = 5.0	.60	Still VR	2.0	1.9	1.9
		F _{Interaction} = 2.6	.52	Not Now	2.1	2.9	2.5
	1995 - Self Designated (T1)	F _{Participation} = 13.6*	.99	No VR	2.7	3.5	3.1
		F _{AOD Disab.} = 0.9	.17	Still VR	1.9	1.9	1.9
		F _{Interaction} = 0.6	.14	Not Now	2.8	2.9	2.8
Was VR Helpful in Getting a Job and/or Getting into School	1995 - VR Designated	F _{Participation} = 5.5*	.85	No VR	2.0	1.9	1.9
		F _{AOD Disab.} = 0.3	.04	Still VR	1.5	1.2	1.4
		F _{Interaction} = 3.0	.58	Not Now	1.5	1.7	1.6
	1995 - Self Designated (T1)	F _{Participation} = 21.5*	.99	No VR	2.0	1.8	1.9
		F _{AOD Disab.} = 0.0	.03	Still VR	1.3	1.2	1.3
		F _{Interaction} = 2.1	.44	Not Now	1.5	1.7	1.6
Finished Training Sponsored By VR	1995 - VR Designated	F _{Participation} = 0.9	.21	No VR	---	1.4	1.4
		F _{AOD Disab.} = 1.6	.24	Still VR	1.3	1.6	1.4
		F _{Interaction} = 0.2	.05	Not Now	1.0	1.4	1.2
	1995 - Self Designated (T1)	F _{Participation} = 0.7	.18	No VR	2.0	1.5	1.6
		F _{AOD Disab.} = 1.8	.26	Still VR	1.6	1.3	1.5
		F _{Interaction} = 0.7	.18	Not Now	1.4	1.5	1.4
Working in Area for which Training Was Received? (For Those Trained Only.)	1995 - VR Designated	F _{Participation} = 0.6	.15	No VR	---	1.0	1.0
		F _{AOD Disab.} = 0.5	.13	Still VR	1.7	1.6	1.6
		F _{Interaction} = 6.4	.70	Not Now	1.0	1.9	1.5
	1995 - Self Designated (T1)	F _{Participation} = 0.5	.13	No VR	---	1.0	1.0
		F _{AOD Disab.} = 0.7	.17	Still VR	1.7	1.6	1.6
		F _{Interaction} = 2.3	.32	Not Now	1.5	1.9	1.7
					1.6	1.5	

* Significant at $\alpha = .01$ level, and Not Significant otherwise.

pervasive as originally thought. For example, for the “1995” sample of consumers consistent, significant relationships were observed between “having an AOD disability or problem” and only three of the 32 “utilization” variables considered. Furthermore, in the instances where notable relationships were found each of the “utilization” variables appeared to deal directly with consumers’ AOD problem (e.g., they were more likely to “work with a substance abuse treatment counselor” than other consumers, but not more or less likely to “work with a job coach/trainer”). Similar results were observed for the “2000” sample of consumers and related “utilization” variables, where only one of the 23 relationships explored was deemed “significant” given the specified statistical and consistency criteria. In addition, the situation dealing with the

numerous analyses of relationships between the array of “outcome” variables and “having a co-existing AOD disability” was comparable - only two consistent, significant relationships were observed. Those relationships dealt with consumers “having an AOD problem” and (1) “total family income” and (2) perceived “helpfulness of VR services in re. to AOD issues”. This sparsity of notable relationships between “having an AOD problem” and the various “outcomes” considered was observed both in terms of main effect tests as well as interaction tests wherein the nature, duration, etc. of consumers’ involvement in VR services was “controlled” somewhat.

Though not directly related to Hypothesis 2, the results presented in Tables 15 through 20 do ---

- provide some very interesting descriptive information regarding the kinds of VR services in which all (not just those with “a co-existing AOD disability”) consumers tend to participate
- suggest ways in which participation in VR may benefit all consumers, e.g., increase their schooling/education levels and improve both their chances of securing employment as well as the level of jobs in which they find work
- clearly indicate the need to improve the conceptualization and operationalization of the “outcome” criteria used in future such studies.

While the premise of a consistent, strong relationship between “having an AOD problem” and the “utilization” patterns followed and “outcomes” realized by consumers based on their participation in VR which underlies Hypothesis 2, was generally not well supported by the results presented in Tables 15 through 20, in several cases the sub-hypotheses posited under that same general supposition tend to deal with more specific issues and subgroups of survey respondents. Therefore, the descriptions of the results found in relation to those sub-hypotheses, which follow, contain descriptions of other, more focused analyses dealing with the specific “sub-issues” raised.

2.1 Consumers with co-existing AOD disabilities are less likely, compared to those without AOD disabilities, to show positive employment outcomes. Outcomes directly related to employment represented one of the “clusters” of outcomes addressed in Tables 17 through 20. Included among that set of employment “outcomes” were (1) Employed vs. Not Employed (at the time of the survey), (2) Level of Occupation at Which Currently Employed, (3) Length of Unemployment, (4) Helpfulness of VR Services re. Employment Issues, (5) How Much Money

Do You Make? (per hour), and (6) Hours Working Per Week. A review of the results summarized in those four tables indicates that none of the relationships posited via this sub-hypothesis met the required statistical significance and consistency criteria established. Thus, given the data available, the sub-hypothesis was not supported.

2.2 Consumers who have AOD-related disabilities are more likely to benefit from VR services if their substance abuse problems are identified and addressed by their counselors. This particular sub-hypothesis incorporates a second independent variable, in addition to “having an AOD-related disability”. That “complex” or multifaceted variable is “substance abuse problems are *identified* and *addressed* by their counselors”. Data from the 1995 epidemiological study directly related to that variable yielded the following results (if one assumes that counselors will know consumers are involved in substance abuse treatment while they are enrolled in VR - indicated by the arrow below) ---

DATA SUMMARY				*RESULTS:
		AOD Problem Addressed While in VR?		
		NO	YES	
VR Counselor Knew About Consumer's AOD Problem?	NO	37	5 ↓	(1) AOD Use Not Asked About by Counselor & No AOD Treatment Services Received n = 37
	YES	35	27	(2) AOD Use Asked About by Counselor But No AOD Treatment Services Received n = 35
				(3) AOD Use Asked About by Counselor & AOD Treatment Services Received n = 32

* The n's listed are only consumers with a self-reported "AOD Disability" (indicated via "1995 - Self" in Table 21).

The situation with the data for the 2000 Study is not quite as straightforward. First, two questions on the Time 1 survey - “Has your VR counselor ever asked you questions about your use of AOD?” (*identified*) and “How helpful have the VR services been for you with regard to AOD issues?” (*addressed*) - appear to relate directly to the variable in question. Second, the initial question from the Time 1 survey noted above (*identified*), along with several questions from the Time 2 survey (i.e., “How helpful have the VR services been for you with your alcohol or drug issues?”, “Did your VR counselor require you to attend a CD treatment program in order to assist you?”, and “Did your state VR counselor require you to have urine or toxicological testing while you were enrolled as a client?” (*addressed*)), could be used to generate an operational definition for the indicated variable. The utilization of those two sets of items

yielded the following results for the 2000 Study (again, assuming that counselors will know consumers are involved in substance abuse treatment while they are enrolled in VR) ---

RESULTS (Time 1 Items Only)*		RESULTS (Combination of Time 1 and Time 2 Items)*	
(1) Counselor did not ask about AOD, AOD related Services not received	n ₁₁ = 16 n ₁₂ = 67	(1) Counselor did not ask about AOD, AOD related Services not received	n ₁₁ = 15 n ₁₂ = 38 n ₁₃ = 22
(2) Counselor asked about AOD, but AOD related services not received	n ₁₁ = 19 n ₁₂ = 50	(2) Counselor asked about AOD, but AOD related services not received	n ₁₁ = 7 n ₁₂ = 30 n ₁₃ = 24
(3) Counselor asked about AOD, and AOD related services received	n ₁₁ = 88 n ₁₂ = 138	(3) Counselor asked about AOD, and AOD related services received	n ₁₁ = 32 n ₁₂ = 46 n ₁₃ = 36

* The different n's noted are related to the alternative definitions for consumers with "an AOD disability" described in earlier analyses (e.g., Tables 15 - 20) - VR denoted and self reported. More specifically, the n₁₁ estimates refer to cases with a VR designated "AOD disability" (noted as "VR(T1)" and "VR(T12)", respectively, in Table 21), the n₁₂ estimates refer to cases with a self-designated "AOD disability" (noted as "Self(T1)" and "Self(T2)" in Table 21), and the n₁₃ estimates refer to cases with a self-designated "AOD disability" plus Time 2 data related to whether or not that disability was *addressed* during VR (noted as "Self(T12)" in Table 21). These are the maximum n's available for the Hypotheses 2.2 analyses - actual n's may be smaller due to missing data on the different dependent variables.

In addition to the preceding complexities, when dealing with the 2000 Survey the identification of those consumers with "an OOD disability" was not as straightforward either. As a result, the same operational definitions as those used in Tables 15 through 20 (i.e., "VR Designated" and "Self Designated") were invoked. During the conduct of the Sub-hypothesis 2.2 analyses that follow, only those consumers classified as "having an AOD disability" were considered. Those analyses are summarized in Table 21 and each test reported was run at an α -level of .01.

A review of the 56 test statistics summarized in Table 21 reveals that none of these tests reached statistical significance at $\alpha = .01$ level. Thus, the data do not appear to support Sub-hypothesis 2.2. That is, VR consumers with "an AOD disability" whose problem is *identified* and *addressed* by their VR counselors did not necessarily show greater benefits from the VR services they received than did VR consumers with "an AOD disability" whose problem was not explicitly identified and addressed by their counselors.

2.3 Employment outcomes for consumers coded with a primary disability of chemical dependency will be positively correlated with the total number and specific nature of rehabilitation services received. As stated, the independent variable, "an AOD disability", identified in this sub-hypothesis is "coded with a primary disability of chemical

Table 21
Relationships of Selected Outcomes to “Substance Abuse Problems Identified and Addressed by VR Counselors” for Consumers with “an AOD Disability”

DEPENDENT VARIABLE	SAMPLE & SOURCE AOD DISABILITY DESIGNATION	EFFECT & F-VALUE	POWER ESTIMATE	*ASSOCIATED MEANS:			
				Not Know No Treat	Know No Treat	Know Treat	
Years of Education	2000 - VR(T1)	$F_{\text{Know/Treat}} = 1.2$	.26	12.50	13.58	12.86	12.93
	2000 - Self (T1)	$F_{\text{Know/Treat}} = 3.0$	.57	13.00	13.50	12.62	12.89
Total Family Income	2000 - VR(T1)	$F_{\text{Know/Treat}} = 4.5$	.76	1.57	4.06	3.29	3.20
	2000 - Self (T1)	$F_{\text{Know/Treat}} = 1.0$	.22	2.76	3.37	3.01	3.02
	2000 - VR(T12)	$F_{\text{Know/Treat}} = 2.4$	.45	2.00	3.83	3.19	2.96
	2000 - Self (T2)	$F_{\text{Know/Treat}} = 0.3$	.10	3.00	3.31	3.39	3.25
	2000 - Self (T12)	$F_{\text{Know/Treat}} = 0.2$	.08	3.16	3.61	3.44	3.42
	1995 - Self	$F_{\text{Know/Treat}} = 0.7$	.16	1.35	1.47	1.47	1.43
Employed vs. Not Employed (Dichotomous Variable)	2000 - VR(T1)	$F_{\text{Know/Treat}} = 0.3$	.09	1.44	1.42	1.50	1.48
	2000 - Self (T1)	$F_{\text{Know/Treat}} = 4.1$	.72	1.28	1.32	1.47	1.39
	2000 - VR(T12)	$F_{\text{Know/Treat}} = 0.9$	.20	1.60	1.29	1.48	1.49
	2000 - Self (T2)	$F_{\text{Know/Treat}} = 2.1$	.43	1.42	1.33	1.56	1.46
	2000 - Self (T12)	$F_{\text{Know/Treat}} = 0.3$	.10	1.45	1.38	1.47	1.44
	1995 - Self	$F_{\text{Know/Treat}} = 0.2$	.08	2.35	2.46	2.56	2.45
Level of Occupation at Which Currently Employed	2000 - VR(T1)	$F_{\text{Know/Treat}} = 1.8$	.36	1.63	2.47	2.32	2.25
	2000 - Self (T1)	$F_{\text{Know/Treat}} = 1.4$	.29	1.82	2.06	2.17	2.06
	2000 - VR(T12)	$F_{\text{Know/Treat}} = 0.8$	.17	2.53	1.71	2.45	2.38
	2000 - Self (T2)	$F_{\text{Know/Treat}} = 0.7$	.17	2.21	2.03	2.04	2.26
	2000 - Self (T12)	$F_{\text{Know/Treat}} = 0.1$	.06	2.36	2.21	2.28	2.28
	1995 - Self	$F_{\text{Know/Treat}} = 0.2$	.08	2.35	2.46	2.56	2.45
Length of Unemployment (in Months)	2000 - VR(T1)	$F_{\text{Know/Treat}} = 0.0$	.06	38.38	43.89	42.21	41.95
	2000 - Self (T1)	$F_{\text{Know/Treat}} = 2.2$	.44	35.28	57.34	48.77	46.68
	2000 - VR(T12)	$F_{\text{Know/Treat}} = 1.3$	.25	48.00	81.80	42.47	51.00
	2000 - Self(T2)	$F_{\text{Know/Treat}} = 1.4$	.28	48.40	69.20	44.60	53.49
	2000 - Self (T12)	$F_{\text{Know/Treat}} = 0.7$	.16	55.42	71.93	30.42	58.74
	1995 - Self	$F_{\text{Know/Treat}} = 0.1$	.07	1.11	1.09	1.13	1.11
Student vs. Not Student (Dichotomous Variable)	2000 - VR(T1)	$F_{\text{Know/Treat}} = 1.5$	.32	1.06	1.26	1.14	1.15
	2000 - Self (T1)	$F_{\text{Know/Treat}} = 2.6$	.52	1.15	1.26	1.12	1.16
	2000 - VR(T12)	$F_{\text{Know/Treat}} = ---$	---	---	---	---	---
	2000 - Self (T2)	$F_{\text{Know/Treat}} = 0.7$	.16	1.13	1.13	1.07	1.11
	2000 - Self (T12)	$F_{\text{Know/Treat}} = 0.2$	.09	1.14	1.13	1.08	1.11
	1995 - Self	$F_{\text{Know/Treat}} = 0.1$	.07	1.11	1.09	1.13	1.11

Table 21 - Continued

DEPENDENT VARIABLE	SAMPLE & SOURCE AOD DISABILITY DESIGNATION	EFFECT & F-VALUE	POWER ESTIMATE	*ASSOCIATED MEANS:			
				Not Know No Treat	Know No Treat	Know Treat	
How Much Money Do You Make? (per hour)	2000 - VR(T1)	$F_{\text{Know/Treat}} = 0.3$	.0	8.18	7.78	13.00	10.96
	2000 - Self (T1)	$F_{\text{Know/Treat}} = 0.3$	.10	7.76	11.18	10.11	9.60
	2000 - Self (T12)	$F_{\text{Know/Treat}} = 0.2$	.07	8.61	11.40	11.40	10.64
Hours Working per Week	1995 - Self	$F_{\text{Know/Treat}} = 1.0$	.21	13.89	18.15	20.38	17.37
	2000 - VR(T1)	$F_{\text{Know/Treat}} = 3.1$	.58	16.38	11.44	23.03	20.08
	2000 - Self (T1)	$F_{\text{Know/Treat}} = 3.2$	.61	14.64	9.85	17.91	15.24
	2000 - VR(T12)	$F_{\text{Know/Treat}} = 0.8$	.19	16.79	7.86	17.53	16.06
	2000 - Self (T2)	$F_{\text{Know/Treat}} = 1.9$	.39	14.60	11.97	20.39	16.29
	2000 - Self (T12)	$F_{\text{Know/Treat}} = 0.4$	.12	12.90	13.29	16.86	14.80
	1995 - Self	$F_{\text{Know/Treat}} = 2.9$	.55	1.91	1.81	1.38	1.72
Estimated Helpfulness of VR Services Received	2000 - VR(T1)	$F_{\text{Know/Treat}} = 0.3$	.10	1.86	1.56	1.69	1.68
	2000 - Self (T1)	$F_{\text{Know/Treat}} = 0.1$	.06	1.72	1.65	1.70	1.69
	2000 - VR(T12)	$F_{\text{Know/Treat}} = 0.3$	.09	1.64	2.00	1.81	1.79
	2000 - Self (T2)	$F_{\text{Know/Treat}} = 0.1$	.07	1.94	1.82	1.89	1.89
	2000 - Self (T12)	$F_{\text{Know/Treat}} = 0.5$	.13	1.55	1.75	1.83	1.73
General Helpfulness VR Services Received	2000 - VR(T1)	$F_{\text{Know/Treat}} = 0.1$	.06	2.17	2.29	2.32	2.31
	2000 - Self (T1)	$F_{\text{Know/Treat}} = 0.2$	.09	2.38	2.22	2.31	2.31
	2000 - VR(T12)	$F_{\text{Know/Treat}} = 1.7$	.33	2.15	2.67	2.90	2.67
	2000 - Self (T2)	$F_{\text{Know/Treat}} = 0.4$	.12	2.53	2.77	2.74	2.68
	2000 - Self (T12)	$F_{\text{Know/Treat}} = 2.0$	.41	2.22	2.77	2.94	2.71
Helpfulness of VR Services re. Employment Issues	2000 - Self	$F_{\text{Know/Treat}} = 2.5$	.48	1.42	1.50	1.22	1.39
VR Helped with Securing Work/Schooling	2000 - Self	$F_{\text{Know/Treat}} = 0.6$	.16	2.61	2.40	2.22	2.42
	2000 - VR(T1)	$F_{\text{Know/Treat}} = 0.1$	.07	2.75	2.95	2.85	2.85
	2000 - Self (T1)	$F_{\text{Know/Treat}} = 0.5$	.13	2.78	3.00	2.82	2.85
	2000 - VR(T12)	$F_{\text{Know/Treat}} = 0.9$	.19	2.87	3.29	2.59	2.76
	2000 - Self (T2)	$F_{\text{Know/Treat}} = 1.4$	.29	2.81	3.20	2.74	2.89
	2000 - Self (T12)	$F_{\text{Know/Treat}} = 2.2$	.44	2.55	3.25	2.72	2.83

* The three levels of the independent variable associated with these means are (a) "Not Know - No Treat" = Counselor did not ask about AOD use and AOD related services not received, (b) "Know - No Treat" = Counselor asked about AOD use, but AOD related services not received, and (c) "Know - Treat" = Counselor asked about AOD use and AOD related services received.

** Significant at $\alpha = .01$ level, and Not Significant otherwise.

dependency.” This variable is operationally equivalent to the “VR designated” definition of “an AOD disability” used in Tables 15 through 20, except for the fact that the earlier definition includes consumers with either a primary or secondary disability coding of chemical dependency. That definition results in the classification of roughly 10% of each total sample (i.e., the 1995 and 2000 samples) of consumers being classified as individuals with “an AOD disability.” (NOTE: The operational definition specified in the sub-hypothesis was not used since the resulting n’s would be much less than 10% of the total samples.)

The other independent variables noted are “total number of rehabilitation services received” and “the specific rehabilitation services received”. For the purposes of this sub-hypothesis the specific services considered were limited to a subset of the “utilization” variables listed in Table 15 (1995 Study) and Table 16 (2000 Study), respectively. More specifically, 19 services were denoted for the 1995 Study (based primarily on “Types of VR Services Arranged by Counselor” - see Table 15) and 18 services denoted for the 2000 Study (based on “What VR Services Have You Received in the Past 18 Months?” - see Table 16). At the same time, the variable “total number of rehabilitation services received” was based upon composite scores derived from these sets of specific service indicators.

The dependent variables, “employment outcomes”, included a subset of the “outcome” variables studied in Tables 17 through 21. These include “Employed vs. Not Employed”, “Level of Occupation at Which Currently Employed”, “Length of Unemployment”, “How Much Money Do You Make? (per hour)”, “Hours Working per Week”, and “Helpfulness of VR Services” (2000 Study) “... in Securing Work/Schooling” (1995 Study). Each correlation was evaluated at a α -level of .020, which means that the overall α -level across all correlations for each type of VR service considered should be no greater than .10. The results of these analyses are summarized in Tables 22 and 23.

The results in Table 22 indicate quite clearly that for the “1995” sample of consumers Sub-hypothesis 2.3 is not confirmed. The total number and nature of VR services received is not necessarily positively (nor significantly) correlated with the employment outcomes realized by consumers who are coded as having “an AOD disability”. Only one of the 75 correlations calculated reached the specified significance level and it was negative in nature.

Similar results to those found for the 1995 Study were also found for the “2000” sample. Only in this instance, none of the 114 correlations calculated reached the specified

Table 22
Correlations of Selected “Employment Outcomes” with “VR Services Received” for the
“1995” Sample of Consumers Coded with a Chemical Dependency Disability

TYPES OF VR SERVICES ARRANGED BY COUNSELOR	CORRELATIONS WITH SELECTED EMPLOYMENT OUTCOMES:					
	Employed? (Yes/No)	Level of Occupation	Length of Unemployment	Money Made Per Hour	Hrs. Working Per Week	Helpfulness VR Services (in Securing Work/School)
Counseling	-.42*	-.29	---	---	-.32	-.08
Independent Living	---	---	---	---	---	---
Job Coaching	.21	-.06	---	---	.06	-.20
Job Placement	.28	.14	---	---	.16	.00
Job referral	.28	.14	---	---	.25	.00
Life Skills Training	-.20	-.18	---	---	-.21	.19
Testing	-.22	-.25	---	---	-.34	-.17
Training/Basic Education	-.05	-.03	---	---	-.07	.12
Supported Employment	-.20	-.18	---	---	-.21	-.19
Personal Care Assistance	.16	.15	---	---	.07	---
Vocational Evaluation	-.09	-.33	---	---	-.32	-.08
Medical Eval./Services	-.22	-.35	---	---	-.33	-.20
College Tuition	-.14	.12	---	---	.12	.25
Work Supplies	.16	.15	---	---	.20	.19
Transportation	.01	-.07	---	---	-.00	-.17
Other VR Services	.16	.15	---	---	.15	.19
Total Number VR Services Arranged by Counselor	-.13	-.25	---	---	-.23	-.08
Number Times Met with VR Counselor Past Yr.	-.30	-.31	---	---	-.38	.04
Number Phone Contacts With VR Counselor Past Yr.	-.27	-.02	---	---	-.02	.16
Involved in Rehabilitation Training Past Yr. ?	-.19	-.22	---	---	-.18	.04

* Significant at $\alpha = .025$ level, and Not Significant otherwise.

NOTE: Given the nature of this sub-hypothesis, the maximum n for any correlation reported is 34 since only 8% of the “1995” Time 2 sample would be classified as “having an AOD disability” using the specified definition.

Table 23
Correlations of Selected “Employment Outcomes” with “VR Services Received” for the
“2000” Sample of Consumers Coded with a Chemical Dependency Disability

TYPES OF VR SERVICES RECEIVED IN PAST 18 MONTHS	CORRELATIONS WITH SELECTED EMPLOYMENT OUTCOMES:					
	Employed? (Yes/No)	Level of Occupation	Length of Unemployment	Money Made Per Hour	Hrs. Working Per Week	Helpfulness VR Services (in Securing Work/School)
On-the-Job Training	-.04	.10	-.18	-.00	.03	-.09
Job Placement	-.06	.09	-.17	.00	.04	-.08
Training - Job Seeking Skills	-.07	.09	-.20	-.01	-.00	-.15
Vocational/Business School Training	-.07	.07	-.13	.01	-.01	-.06
College/University Training	-.03	.12	-.04	-.01	.03	-.11
Personal Adjustment Training	-.08	.07	-.15	.02	-.01	-.12
Physical Therapy	-.08	.07	-.14	.02	-.01	-.14
Occupational Therapy	-.07	.08	-.16	.02	-.00	-.12
Counseling	-.02	.11	-.20	-.01	.04	-.14
Job Coaching	-.06	.07	-.16	.01	.00	-.10
Equipment/Work Supplies	-.06	.09	-.14	.02	.01	-.13
Other Medical Treatment	-.09	.06	-.08	.02	-.02	-.15
Special Aids/Technology	-.09	.07	-.12	.02	.00	-.12
Training in Homemaking or Self-care	-.06	.08	-.14	.02	.00	-.13
Sheltered Workshop	-.06	.09	-.14	.02	.01	-.13
Supported Employment	-.06	.08	-.14	.02	.00	-.13
Driver Training	-.06	.09	-.14	.02	.01	-.14
Other Rehabilitation Services	-.02	.15	-.14	.10	.05	-.09
Total Number VR Services Received Last 18 Months	-.12	-.06	-.05	-.05	-.05	-.23

* Significant at $\alpha = .017$ level, and Not Significant Otherwise.

NOTE: Given the nature of this sub-hypothesis, the maximum n for any correlation reported is 60 since only 8.4% of the “2000” Time 2 sample would be classified as “having an AOD disability” using the specified definition.

significance level. Thus, these results, like those shown in Table 22, do not support the supposition underlying Sub-hypothesis 2.3.

2.4 State VR consumers with AOD-related disabilities are more likely to be beneficiaries of public welfare including SSI and SSDI. Embedded within this sub-hypothesis is the basic assumption that VR consumers with an AOD-related disability are more likely to be beneficiaries of different types of public welfare than are VR consumers who do not have a co-existing AOD disability. Thus, those consumers without an AOD disability represent the “baseline” to be used for evaluating the sub-hypothesis. The dependent variables inherent in this hypothesis, “receipt of various types of public welfare benefits”, were secured from the respondents to the 1995 Study during the initial survey and from the 2000 Study’s respondents both during the Time 1 and Time 2 surveys. The related items ask about receipt of a number of different types of benefits and the specific benefits asked about are similar, but not equivalent across the two studies and times. Therefore, separate analyses had to be undertaken relative to these different items. Furthermore, in the analyses that follow an additional composite dependent variable, number of different benefits received, is calculated and used in evaluating the sub- hypothesis as well.

During the following analyses, in order to help control somewhat for the overall α -level for the two samples and “AOD disability” designations, the α -level employed per test was set at .01. The results of the related analyses are summarized in Table 24.

The information presented in Table 24 indicates the following:

- while several of the statistical tests for different benefits reached the specified significance level for one of the samples (e.g., “receive food stamps” and “number of public welfare benefits reported” for the “original” sample), for none of the benefits listed were the test results consistently significant across both samples and operational definitions for the independent variable “AOD disability”
- while not directly related to Sub-hypothesis 2.4, it appears that the three most frequently received benefits reported by all VR consumers were SSI (27.5%), SSDI (22.0%), and food stamps (21.0%), with three of the least frequently received benefits being SSI DA/A (1.1%), Workers’ Comp (2.1%), and VA benefits (1.7%) - and both sets were fairly consistent across the two samples of consumers studied.

Table 24
Relationships Between VR Consumers' Receipt of Public Welfare Benefits and
Their Having "an AOD Disability"

BENEFITS RECEIVED		VR DESIGNATION		SELF DESIGNATION		OVERALL SAMPLE
		AOD Disability	No AOD Disability	AOD Disability	No AOD Disability	
PARTICIPANTS IN THE 1995 STUDY (Initial Survey)						
Receive SSI?	% Yes	31.0 ($X^2 = 0.5$; $w = .01$)	32.1	30.0 ($X^2 = 1.2$; $w = .03$)	32.8	32.1
Receive SSDI?	% Yes	14.7 ($X^2 = 1.0$; $w = .03$)	18.5	18.4 ($X^2 = 0.1$; $w = .01$)	17.8	18.0
Receive SSI DA/A?	% Yes	2.6 ($X^2 = 1.6$; $w = .03$)	1.2	1.4 ($X^2 = 0.2$; $w = .01$)	1.2	1.3
Receive Workers' Comp?	% Yes	0.0 ($X^2 = 1.9$; $w = .04$)	1.6	1.4 ($X^2 = 1.0$; $w = .02$)	2.2	1.8
Receive VA Benefits?	% Yes	1.7 ($X^2 = 0.1$; $w = .01$)	1.4	2.2 ($X^2 = 1.8$; $w = .03$)	1.3	1.4
Public Assistance/Welfare?	% Yes	17.2 ($X^2 = 5.4$; $w = .06$)	10.2	19.8 ($X^2 = 24.1^*$; $w = .11$)	10.7	11.8
Receive Food Stamps?	% Yes	44.0 ($X^2 = 22.9^*$; $w = .14$)	23.7	36.0 ($X^2 = 36.7^*$; $w = .14$)	21.4	25.1
Receive Other Benefits?	% Yes	13.8 ($X^2 = 0.2$; $w = .01$)	12.4	12.6 ($X^2 = 0.0$; $w = .00$)	12.2	12.4
Number of Public Welfare Benefits Reported as Being Received	Mean St. Dev.	1.25 0.89 ($t = 2.8^*$; $d = .35$)	1.01 0.88	1.21 0.90 ($t = 4.5^*$; $d = .30$)	1.00 0.87	1.04
PARTICIPANTS IN THE 2000 STUDY (Initial Survey)						
Receive SSI?	% Yes	22.3 ($X^2 = 0.8$; $w = .02$)	25.8	23.2 ($X^2 = 1.0$; $w = .03$)	26.1	25.5
Receive SSDI?	% Yes	17.7 ($X^2 = 0.9$; $w = .03$)	21.2	23.5 ($X^2 = 1.5$; $w = .03$)	20.2	20.9
Receive SSI DA/A?	% Yes	0.0 ($X^2 = 0.7$; $w = .02$)	0.5	0.0 ($X^2 = 1.6$; $w = .04$)	0.6	0.5
Receive Workers' Comp?	% Yes	0.8 ($X^2 = 2.3$; $w = .04$)	3.1	1.8 ($X^2 = 1.3$; $w = .03$)	3.1	2.9
Receive VA Benefits?	% Yes	2.3 ($X^2 = 0.1$; $w = .01$)	2.0	1.8 ($X^2 = 0.1$; $w = .01$)	2.1	2.0
Public Assistance/Welfare?	% Yes	6.9 ($X^2 = 1.3$; $w = .03$)	4.7	6.3 ($X^2 = 1.4$; $w = .03$)	4.5	4.9
Receive Food Stamps?	% Yes	24.6 ($X^2 = 1.1$; $w = .03$)	20.7	26.8 ($X^2 = 6.8^*$; $w = .07$)	19.6	21.1

Table 24 - Continued

BENEFITS RECEIVED		VR DESIGNATION		SELF DESIGNATION		OVERALL SAMPLE
		AOD Disability	No AOD Disability	AOD Disability	No AOD Disability	
AFDC/Temp Assistance?	% Yes	5.4 (X ² = 1.1; w = .03)	3.5	6.3 (X ² = 6.1; w = .07)	3.1	3.7
Receive Other Benefits?	% Yes	6.2 (X ² = 2.1; w = .04)	10.1	8.5 (X ² = 0.6; w = .02)	10.0	9.7
Number of Public Welfare Benefits Reported as Being Received	Mean St. Dev.	0.86 0.82	0.92 0.91	0.98 0.93	0.89 0.89	0.91
		(t = 0.7; d = .11)		(t = 1.5; d = .15)		
PARTICIPANTS IN THE 2000 STUDY (Follow-up Survey)						
Receive No Benefits?	% Yes	33.9 (X ² = 0.2; w = .02)	36.5	29.9 (X ² = 2.7; w = .06)	37.7	36.3
Receive SSI?	% Yes	30.5 (X ² = 0.9; w = .04)	24.8	25.2 (X ² = 0.0; w = .01)	25.3	25.3
Receive SSDI?	% Yes	33.9 (X ² = 1.8; w = .05)	25.9	33.9 (X ² = 4.2; w = .08)	25.0	26.6
Receive SSI DA/A?	% Yes	0.0 (X ² = 0.9; w = .04)	1.6	0.8 (X ² = 0.5; w = .03)	1.6	1.4
Receive Workers' Comp?	% Yes	0.0 (X ² = 1.1; w = .04)	1.9	0.8 (X ² = 0.8; w = .03)	1.9	1.7
Receive VA Benefits?	% Yes	5.1 (X ² = 1.4; w = .04)	2.5	3.9 (X ² = 0.8; w = .04)	2.4	2.7
Public Assistance/Welfare?	% Yes	1.7 (X ² = 0.1; w = .01)	2.5	2.4 (X ² = 0.0; w = .00)	2.4	2.4
Receive Food Stamps?	% Yes	11.9 (X ² = 1.2; w = .04)	17.5	18.1 (X ² = 0.1; w = .01)	16.8	17.0
AFDC/Temp. Assistance?	% Yes	1.7 (X ² = 0.1; w = .01)	2.3	3.1 (X ² = 0.5; w = .03)	2.1	2.3
Receive Other Benefits?	% Yes	5.1 (X ² = 2.3; w = .06)	11.5	8.7 (X ² = 0.9; w = .04)	11.5	11.0
Number of Public Welfare Benefits Reported as Being Received	Mean St. Dev.	0.90 0.76	0.91 0.90	0.97 0.83	0.89 0.91	0.90
		(t = 0.0; d = .03)		(t = 0.9; d = .12)		

* Significant at $\alpha = .01$, and Not Significant otherwise; w = .10 reflects a *small* "effect size", w = .30 reflects a *medium* "effect size", and w = .50 reflects a *large* "effect size"; d = .20 reflects a *small* "effect size", d = .50 reflects a *medium* "effect size", and d = .80 reflects a *large* "effect size" (Cohen, 1988).

Overall, the results summarized in Table 24 do not support the underlying supposition for Sub-hypothesis 2.4. That is, the available data do not support the contention that VR consumers

with “an AOD disability” are more likely than VR consumers without “an AOD disability” to be beneficiaries of public welfare programs.

Hypothesis 3: Successful VR Outcomes for Consumers with AOD Abuse as a Co-existing Disability Will be Positively Correlated with Substance Abuse Identification and Treatment.

Basically, this particular hypothesis is quite similar to, if not equivalent to - except for slight wording changes - Sub-hypothesis 2.3 evaluated earlier. Given that similarity, no additional, overall evaluation of Hypothesis 3, per se, was undertaken. The results obtained earlier in relation to the designated sub-hypothesis clearly did not support the supposition posed. Across 56 statistical tests completed at the time (see Table 21), none reached statistical significance.

While Hypothesis 3 was not re-evaluated, overall, because of the indicated findings, each of its four associated sub-hypotheses also raised perplexing issues in their own right and as a result they also had to be left un-addressed. In general, the issues that surfaced dealt with shortcomings in the survey instrumentation relative to the design constraints associated with conducting survey research, a point raised earlier in regard to Hypothesis 2 (see the discussion surrounding Figure 1). Several of the more specific concerns were as follows:

- **3.1 VR consumers with active AOD use problems will be less likely to have successful case closures.** While exactly how the independent variable, “active AOD use problems,” can be operationally defined based on the available survey data raises some concern relative to this sub-hypothesis, the more perplexing issue deals with what is cast as a dependent variable, “successful case closures.” Data related directly to this “outcome” were not explicitly collected as part of either the 1995 or the 2000 surveys. Although some data are available in the follow-up phase of the 2000 Study that would allow one to identify subsamples of consumers who left or were “closed out” since the initial survey vs. those who are still receiving services, those data do not provide any insights into the “successfulness” of those cases where consumers leave or are no longer receiving VR services. Thus, it was not possible to directly address this sub-hypothesis using the data available from the two RRTC-sponsored epidemiological studies.
- **3.2 Repeated and less favorable utilization of services will be more likely to occur for consumers who have substance abuse as a co-existing disability.** The key

dependent or criterion variable in this sub-hypothesis, “repeated and less favorable utilization of services,” was not collected as part of either of the reported surveys. The only related data collected were, “Did you receive service “X”? - Yes or No,” which “says” virtually nothing about either the “frequency” or “quality” of the services in which consumers participated. (A number of related analyses completed using the “service participation” data collected during the two epidemiological studies are summarized in Tables 22 and 23.)

- **3.3 Consumers with active or recent AOD problems and a co-existing disability will be more likely to have either no or unsuccessful work histories.** Two variables included in this sub-hypothesis are of concern and resulted in its not being evaluated further. First, how does one operationally define “active or recent AOD problems” and how does the resulting variable differ from “an AOD disability” used in evaluating the previous hypothesis? It would appear that the two should differ conceptually and thus, operationally as well. Based on a review of the available instrumentation and study designs, however, it would not appear possible to use the available data to generate this particular variable.

The second variable of concern relative to this sub-hypothesis is “no or unsuccessful work history.” The survey instrumentation and thus, the available data, do not address the “successfulness” of respondents’ work histories. The items raised regarding employment (or unemployment) are much more general and only deal with whether or not respondents are employed at or near the time when they complete a survey.

- **3.4 Chemical dependency assessment and related treatment contacts are more highly correlated with successful VR outcomes than other types of services provided.** A major problem surrounding this sub-hypothesis concerns the variable “chemical dependency assessment and related treatment contacts.” For one thing, “chemical dependency assessment” and the closely related ability to identify a consumer as “having an AOD disability or problem,” is one of the major concerns underlying all of the analyses completed in relation to Hypothesis 2. In those analyses two types of “chemical dependency assessments” were employed - those used by the cooperating state VR systems and one defined by consumers themselves (i.e. self-reporting as to

whether or not they are alcoholics or addicts). Also, the available data are very limited, particularly with regard to “accounting” for the number and/or intensity of each consumer’s “chemical dependency treatment contacts.” At the same time, this variable appears to be a reworded version of the independent variable considered earlier in Sub-hypothesis 2.2 (i.e., “if their substance abuse problems are *identified* and *addressed* by their counselors”). The analyses completed at that point provided little if any support for the supposition that “the *identifying* and *addressing* of VR consumers’ substance abuse problems by their counselors” is significantly correlated with “successful VR outcomes,” at least within the context afforded by data from the RRTC’s two epidemiological studies.

SUMMARY

Generally speaking, the materials reported in the preceding sections clearly indicate (a) that we have made considerable progress in furthering the available data base and what is known about VR consumers, particularly those with a co-existing AOD disability, and (b) that there is still a lot of work to be done as we endeavor to better define and understand the emerging field of “Drugs and Disability” and those individuals it serves.

What would appear to represent some of the more interesting results/findings from the epidemiology studies undertaken in 1995 and 2000 include the following:

- AOD usage rates among VR consumers have remained relatively stable over the half decade covered by the two studies, i.e., it is an enduring problem or issue.
- Illicit drug use is significantly higher among VR consumers than is illicit drug use among members of the general population of 18⁺ year olds, while alcohol use, especially for the Past Year and Past Month, is lower than that reported for the general population, although still a major concern.
- While VR consumers may drink a little less than do members of the general population, they appear to start drinking at an earlier age (and they also appear to smoke significantly more).
- Lifetime use of AOD (but not Past Year nor Past Month AOD use) is significantly related to the “nature” of VR consumers’ disabilities, to the time of onset of their disabilities, to whether or not they report experiencing chronic pain, and to whether or not they had a head

injury. Furthermore, of the 12 indicators of the nature/severity of disability considered, “time of onset of disability”, “had a head injury”, and “disability category” were the three most highly related to illicit drug use, while “time of onset of disability”, “experiencing chronic pain”, and “disability category” were the indicators most highly correlated with alcohol use/abuse.

- Seven of 9 psychological factors studied (Perceived Restrictiveness of Disability, Attitude re. Entitlement Due to Disability, Risk-Taking Behavior, Self Concept, Personal Anger/Temper, Use Justified Due to Disability, and Satisfaction with Life) were significantly related to illicit drug use (Lifetime, Past Year, Past Month), but with regard to alcohol use only 3 such consistent overall relationships were observed (i.e., for Attitude re. Entitlement Due to Disability, Risk-Taking Behavior, and AOD Use justified Due to Disability). Thus, the nine psychological factors considered are not as consistently nor highly correlated with alcohol use as they are with illicit drug use.
- Of 12 “background” characteristics studied (e.g., age and marital status), three dichotomous variables (“Best friend drinks?”, “Does family have AOD problems?”, and “Best friend uses drugs?”) were consistently shown to be significantly related to illicit drug use, while two of those “background” characteristics (“Best friend drinks?” and “Best friend uses drugs?”) were consistently shown to have a significant correlation with alcohol use. As occurred with the psychological factors noted above, the observed linkages between the various background variables and illicit drug use were stronger and more consistent than were the linkages between those same variables and alcohol use.
- Limited multivariate analyses of the joint relationships between the 9 psychological factors and the 12 “background” variables indicate that Attitude Toward Entitlement and “Best friend uses drugs?” are the two best, most consistent predictors of illicit drug use, while “Best friend uses drugs?” and Risk-Taking are the best, most consistent predictors of alcohol use.
- Generally speaking, the observed relationships between AOD use and membership in different racial/ethnic groups were relatively weak and the AOD usage rates reported by African American VR consumers were not found to be significantly and consistently higher than the rates reported by other racial/ethnic groups of VR consumers. At the same time, however, the illicit drug use rates for African American VR consumers were generally found

to be significantly higher than those of their African American peers in the general population, while their alcohol use rates were comparable to or slightly lower than the rates observed in the general population of African Americans.

- Typically, female VR consumers are less likely than their male peers to be involved in “trouble” (e.g., gotten arrested for DUI/DWI, or caused or been injured due to drinking), are significantly more likely to be a victim of AOD-related physical violence, and are significantly less likely than males to have received treatment or other services related to an AOD problem.
- Although limited to only the 2000 epidemiology study, available data shows that illicit drug use is significantly correlated with engaging in HIV/AIDS-related risk behaviors. While alcohol use is also correlated with engaging in those same types of behaviors the associated relationships are not as consistent for all three risk behaviors addressed as are the relationships observed for illicit drug use.
- When the services utilized while in VR were compared for those consumers with an AOD problem and those without such a problem, the two groups differed on only four of the total of 55 services considered. It was observed that consumers with an AOD problem were more likely to have worked with a substance abuse counselor, were more likely to have worked with a VR counselor who knew about their AOD problem, were more likely to have told their counselor about their AOD problem, and were more likely to have been asked about their AOD problem by their counselor.
- Results of numerous analyses (i.e., 119 different statistical tests) dealing with possible relationships between “having an AOD disability” and the realization of positive VR-related outcomes, suggest that those relationships are very weak, even nonexistent. In other words it does not appear that the outcomes achieved by VR consumers are degraded significantly by their “having an AOD disability”, at least given the data available from the two studies reported.
- Results from 56 different statistical tests involving VR consumers with “an AOD disability” indicate that none of 13 outcome criteria are significantly related to whether or not those consumers’ VR counselors had *identified* and/or *addressed* their AOD problem.
- Given available data based on the two reported epidemiology studies, it appears that neither the nature nor total number of VR services received by consumers with “an AOD problem”

are significantly correlated with any of the selected types of VR outcomes (e.g., being employed, level of occupation, length of unemployment, hours worked per week, and amount earned per hour).

- It would seem, at least based on the data available, that VR consumers with “an AOD disability” are not any more likely than other VR consumers to be beneficiaries of public welfare programs.

With regard to the various hypotheses and related sub-hypotheses originally posed for this aspect of the RRTC’s research agenda, these results/findings would lead to the following:

Hypothesis 1.0 The prevalence, patterns, risk factors for alcohol and other drug (AOD) abuse found in other regions of the country will be comparable to those found in the three Midwest states studied earlier.

Basically, this overall hypothesis could not be addressed due to limitations inherent in the sampling of states that occurred during conduct of the two epidemiology studies.

Sub-Hypothesis 1.1 VR consumers have higher percentages of AOD abuse than the general population

This hypothesis was confirmed for illicit drug use, but was not supported with regard to alcohol use. For that matter, it appears that the prevalence of alcohol use among VR consumers is generally comparable, if not less than that of their peers in the general population.

Sub-Hypothesis 1.2 AOD use patterns vary among people with disabilities by nature and severity of disability

Lifetime use of AOD (but not Past Year nor Past Month use) was shown to be significantly related three of six indicators of “nature and severity of disability” (i.e., to “nature” of a VR consumer’s disability, to the time of onset of their disability, and to whether or not they had a head injury), which did lend partial support for the hypothesis

Sub-Hypothesis 1.3 AOD abuse related risk factors such as acceptance of disability, attitude of entitlement, self-esteem, risk taking, and age will be significantly associated with illicit drug use

Seven of 9 psychological variables considered (including Acceptance of Disability, Attitude of Entitlement, Self Concept, and Risk Taking) were shown to be significantly related to illicit drug use - Lifetime, Past Year, and Past Month - which suggests that the hypothesis would be rejected for those factors. With regard to the 12 background characteristics considered, three dichotomous variables - “Best friend drinks?”, “Does

family have alcohol/drug problems?”, and “Best friend uses drugs?” - were consistently and significantly related to illicit drug use, while age, total family income, and marital status were significantly related to illicit drug use, Lifetime but not Past Year nor Past Month. Associated regression analyses involving both the psychological and background characteristics suggest that the relationships between the two sets of predictor variables and illicit drug use can be parsimoniously described by at most four of those 21 predictor variables, with “Attitude Toward Entitlement” and “Best friend uses drugs?” being the two “best” predictors.

Although not part of Sub-Hypothesis 1.3, analyses showed that the relationships between the selected set of psychological and background characteristics and alcohol use were neither as consistent nor as strong as they were for illicit drug use. Typically, more variables from each set of predictors were significantly related to Lifetime alcohol use than to either Past Year or Past Month alcohol use. Across all 21 predictor variables, “Best friend drinks?” and Risk Taking appeared to be the two variables most strongly and consistently related to alcohol use.

Sub-Hypothesis 1.4 African Americans utilizing VR services will demonstrate higher AOD usage patterns than consumers of other racial backgrounds

Related analyses suggest that this hypothesis would be partially rejected - that is, African American VR consumers exhibited higher Lifetime (but not higher Past Year nor Past Month) illicit drug use than did Caucasian or “Other Minority” VR consumers, but the prevalence of their use of alcohol appeared to be comparable, if not lower, than that of the two comparison groups. These analyses also suggest that African Americans use certain drugs (e.g., Cocaine, Crack < Heroin) more frequently than the other groups, while they use some other drugs less frequently (e.g., stimulants).

When compared to the general population of African Americans, the illicit drug use reported by African American VR consumers was shown to be significantly greater (Lifetime, Past Year, and Past Month). At the same time, African American VR consumers used alcohol at about the same rate or at an even lower rate than did the general population of African Americans.

Sub-Hypothesis 1.5 Women who utilize state VR services will be more likely to report substance abuse related violence and will be less likely to receive treatment for substance abuse problems than their male counterparts

The results related to “substance abuse related violence” and other problems clearly support the hypothesis - female consumers of VR

services reported being less likely to be involved in “trouble/problems” than their male counterparts as a consequence of their drinking, but were more likely to be a victim of physical violence as a consequence of (theirs’ or someone else’s) alcohol or drug use. With regard to receipt of AOD-related treatment, the results also support the hypothesis. That is, females appear to be less likely to receive AOD-related treatment services than their male counterparts.

Sub-Hypothesis 1.6 For VR consumers, heavy AOD use will be positively correlated with HIV risk behavior

The empirical results generally support this hypothesis. However, the relationships between illicit drug use and HIV/AIDS-related risk behaviors tended to be more consistent and stronger than those observed for alcohol use.

Hypothesis 2 Utilization and outcomes of state VR services are different between clients with AOD-related disabilities and those without such disabilities

With regard to the VR services received/utilized (operationally defined via a total of 55 dependent variables), it appears that consumers with AOD problems differ from other VR consumers only in regard to the services they received that can be tracked directly to 3 or 4 services related to their AOD use, while they do not appear to differ in regard to their utilization of the other 51 services considered. The results related to the outcomes realized by VR consumers with AOD problems as contrasted with those consumers who do not report having such problems, do not support the hypothesis. Of roughly 139 statistical tests dealing with this aspect of the hypothesis (i.e., where reported participation in VR was operationally defined in four different ways) only 4 yielded significant findings in terms of relationships between “reported participation in VR” and “having vs. not having an AOD-related disability”. While “having vs. not having an AOD-related disability” was shown to be related to several outcome-related variables (e.g., family income and perceived helpfulness of services received) across 21 of the 139 statistical tests completed, the available data do not allow one to conclude that participation in VR was related to any of those observed differences, which is the supposition posed in the hypothesis.

Sub-Hypothesis 2.1 Consumers with co-existing AOD disabilities are less likely, compared to those without AOD disabilities, to show positive employment outcomes

This sub-hypothesis is basically equivalent to the second part of Hypothesis 2 – the part dealing with “outcomes”. Thus, given the available data, this sub-hypothesis would not be supported.

Sub-Hypothesis 2.2 Consumers with AOD related disabilities will benefit more from VR services if their substance abuse problems are identified and addressed by their counselors

The available data did not support this sub-hypothesis. Across the 56 statistical tests completed none showed that VR consumers with “an AOD disability” whose problem were *identified* and *addressed* by their VR counselors exhibited greater benefits from the VR services they received than did VR consumers with “an AOD disability” whose problem was not explicitly identified and addressed by their counselors.

Sub-Hypothesis 2.3 Employment outcomes for consumers with chemical dependency as a primary disability will be positively correlated with number and specific nature of VR services received.

Given the available data, this sub-hypothesis was not supported, i.e., only one of a total of 189 correlations reflecting the types of relationships posed via the hypothesis reached the specified level of statistical significance.

Sub-Hypothesis 2.4 State VR consumers with AOD related disabilities are more likely to be beneficiaries of public welfare including SSI and SSDI.

Overall, the available data do not support this hypothesis and show that VR consumers with “an AOD disability” are more likely to be beneficiaries of public welfare programs than are VR consumers without “an AOD disability.”

Hypothesis 3 Successful VR outcomes for consumers with AOD abuse as a co-existing disability will be positively correlated with substance abuse identification and treatment.

This hypothesis was operationally deemed to be basically the same as Sub-Hypothesis 2.3 (except for slight wording differences). Given that similarity and the results observed for that earlier hypothesis, it was concluded that the available data do not support Hypothesis 3.

Sub-Hypothesis 3.1 VR consumers with active AOD use problems will be less likely to have successful case closures.

Using the epidemiology data available from the two surveys it was not possible to directly address this sub-hypothesis. Of particular concern was the lack of “successful case closure” data (the key dependent variable) in the available databases.

Sub-Hypothesis 3.2 Repeated and less favorable utilization of services will be more likely to occur for consumers who have substance abuse as a co-existing disability.

This sub-hypothesis could not be evaluated using the available databases due primarily to the fact the principal dependent variable or criterion, “repeated and less favorable utilization of services” was not collected as part of either of the reported surveys.

Sub-Hypothesis 3.3 Consumers with active or recent AOD problems and a co-existing disability will be more likely to have either no or unsuccessful work histories.

This hypothesis could not be evaluated given the data available from the two reported epidemiology surveys.

Sub-Hypothesis 3.4 Chemical Dependency assessment and related treatment contacts are more highly correlated with successful VR outcomes than other types of services provided.

Generally, this hypothesis appears to be somewhat of a rewording of Sub-Hypothesis 2.2. That being the case, the results observed relative to that earlier hypothesis would not provide support for the basic contention raised in this particular hypothesis.

Of the work yet to be done, the efforts described in this report illuminated several methodological concerns that need to be accommodated if we are to continue to progress in the appropriate direction in a consistent manner. Included among those concerns are the following:

- More attention needs to be given to designing future epidemiological studies that will yield what can be claimed to be “representative” samples of VR consumers across the country. Although the studies described here-in have been “ground breaking” in some respects, when all is said and done, their inherent sampling limitations make it impossible to establish a rigorous, defensible estimate of the “number of VR consumers who have an AOD problem” (along with an attendant confidence interval for that estimate).
- Key independent variables need to be better defined, both conceptually and operationally. For example, the description of the samples resulting from the initial and follow-up surveys employed in the two studies (see Figure 1) need to be used to help formulate key survey items that serve to assess where in the “Begin VR Closure” cycle specific consumers are each time they are surveyed. Once that information is available, we will be in a much better position to describe the “dosages” of VR services and experiences received by different consumers. Such information is most valuable in

helping to establish causative inferences involving receipt of different VR services and different VR-related outcome indicators.

Such definitional shortcomings exist with regard to several other critical independent variables as well. One of those variables deals with the definition(s) used to identify which consumers “have a co-existing AOD-related disability” and which consumers do not. In the two studies reported the classification of individuals into one or the other of these two categories is addressed either by a code number assigned by the respective state VR agencies (which classifies roughly about 10% of the samples as having an AOD problem) or personal designation by the consumers themselves, i.e., “Do you consider yourself to be an alcoholic or addict in recovery?” (which classifies just over 20 % of the samples as having an AOD problem). Although these definitions would appear to be adequate for most purposes, neither their reliability nor their validity has been documented. In addition, they generally are “lifetime” or “long term” indicators of “an AOD problem” and fail to address the concern raised in Sub-hypothesis 3.3 - the identification of consumers with “an active or recent AOD problem.” The available data suggests that more conceptual and background research needs to be undertaken in this area.

- Another methodological concern identified in the two epidemiological studies dealt with the conceptual and operational definitions of the various VR-related “outcomes” or criterion indicators/variables. Most of the variables used were not “metric”, normally distributed types of variables like those typically employed as criteria or dependent variables in research studies. For that matter, a number were dichotomous variables, while the others were multichotomous (e.g., 4 or 5 categories), rather than being “continuous” in nature. These kinds of criteria shortcomings can have a negative, limiting effect on one’s ability to establish “significant” relationships such as those posited via Hypotheses 1 through 3. Furthermore, they, like many of the key independent variables alluded to above, are based upon responses to single questionnaire items, a strategy that typically yields variables that have low reliabilities. At the same time, potentially useful criteria with better “psychometric properties”, such as several of the “psychological variables” described in relation to Sub-hypothesis 1.3, are not used as criteria but rather are used as independent variables, nor are they

collected in a consistent manner across surveys. Finally, one of the fundamental goals of VR is to improve consumers' actual "employment" as well as their potential to become employed, yet only one or two items were consistently used in the two epidemiological studies to define this variable. Clearly, more needs to be done to strengthen and increase the number of such variables incorporated into the instrumentation developed for future research studies.

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