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Working It Out: Development and Testing of a Multimedia, Vocational Education Program

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ABSTRACT

A self-administered, CD-ROM-based, interactive multimedia psychoeducational intervention, called *Working It Out*, was developed to improve employment functioning for clients in substance dependency treatment. The computer-based program's effectiveness was tested in comparison with printed material. During 2000–2001 194 clients with employment concerns in six treatment programs were randomly assigned to a CD-ROM or print material condition and evaluated at baseline and 6 months later. A main effect for improvement was observed on employment indices, but there was no condition-by-time interaction. Results suggest that clients are willing and able to use vocational rehabilitation information presented in any format, although the CD-ROM-based program received significantly better satisfaction ratings than did the print material.

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INTRODUCTION

Increasingly, interventions directed toward chronic medical conditions are expected to go beyond symptom relief to achieving changes in patients' functional outcomes (cf. Ware, 1993) and improving the quality of life of individuals limited by chronic disorders (Becker and Drake, 1993). Substance dependency, diagnosed as a chronic, relapsing disorder, has long been known to be associated with a variety of functional problems. While alcohol and drug user treatment services tend to be provided in chemical dependency programs, few services are provided for other "addiction related" problems (McLellan et al., 1992b). Yet, addressing such problems may be important. McLellan et al. (1997) were able to substantially impact outcome by matching interventions to substance dependency clients' specific ancillary problem(s).

Foremost among the problems associated with substance misuse disorders is work or employment functioning. A comprehensive review of studies investigating the role of client characteristics and the impact of treatment (McLellan, 1983) found a significant, positive correlation between employment and retention in treatment. Successful and long-term work adjustment assumes a number of roles in addiction treatment, including improving self-esteem, inducements to refrain from criminal activity, and possibly serving as a means of resocialization, allowing for integration into the "straight world" (Platt, 1995). Adequate work functioning is conceptualized not only as a positive outcome of treatment, but also as a condition supportive of treatment and sobriety (Kerrigan et al., 2000; Platt, 1995; Room, 1998).

Despite empirical demonstrations of the value of addressing employment issues in treatment (e.g., Kerrigan et al., 2000; McLellan et al., 1997; Room, 1998), the evidence points to decreasing attention to employment concerns by service delivery systems (Platt, 1995). In their examination of data from the Treatment Outcome Perspective Study (TOPS) and the Drug Abuse Treatment Outcome Study (DATOS, see Simpson, 1993), Hubbard et al. (Etheridge et al., 1995) identified two trends over the intervening decade: (1) that clients in treatment were experiencing more severe drug use and co-occurring problems, including

employment problems, and (2) cost-containment efforts and declines in funding have shortened treatment stays and restricted levels of service. These cuts appear to have been made mainly for economic reasons without regard for clinical or quality concerns [for a fuller discussion of quality issues in substance dependency treatment see Magura (2000)]. These data dramatically demonstrate that as the need for services grew in this time period, especially services addressing employment problems, the availability of services targeted to these needs declined. The result is that, in 1993, 97.7% of expressed vocational needs went unmet in methadone treatment centers, while 86.8% were unmet in residential programs (Room, 1998).

Welfare reform,[a] in the late 1990s, increased pressures on substance-user beneficiaries to obtain employment, and the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 stipulated that substance misuse related problems no longer qualify an individual for Supplemental Security Income (SSI) (Widman et al., 2000). Taken together, the societal forces of managed care and cost-containment pressures, welfare reform, and the elimination of SSI payments to substance-dependent clients have resulted in a clinical imperative to improve clients' work functioning, albeit in the context of less funding and shorter treatment stays. Yet, the shorter stays and limited funding, not surprisingly, have forced many treatment facilities to focus their primary resources on clients' substance use, at the expense of ancillary areas of functioning like employment and work problems.

This state of affairs gave rise to an idea to use the multimedia, interactive computer technology to develop a cost-effective intervention for employment problems. The result is a CD-ROM-based computer program, called Working It Out. The program addresses job choosing, job getting, job keeping, and relapse prevention as related to employment (e.g., coping with work-related stress or working in a recovery-supportive environment). The psychoeducational material is directed toward the needs of substance dependency clients in treatment.

Initially, we expected Working It Out to be directed only toward unemployed clients in treatment. Many articles about the vocational concerns of clients in substance dependency treatment are concerned primarily with the long-term, chronically unemployed. Much of this

[a]For further information on Welfare reform in the U.S., see www. welfar-einfo.org. For information about the impact of welfare reform on those dealing with problems associated with substance misuse, see Anderson et al. (2002) or Pollack et al. (2002).

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focus is on opiate addicts in methadone clinics with little or no work experience (e.g., Platt, 1995). From this perspective, one assumes that the typical substance misuse client has little or no work experience, and little or no motivation for work. As a result, much of the vocational rehabilitation literature regarding chemically dependent individuals is directed at obtaining a job. However, interviews at outpatient and residential programs in the Northeast, conducted during preparation for this project, revealed a broader spectrum of employment problems than simply those of the chronically unemployed. While we encountered many individuals who were chronically unemployed, we also interviewed individuals who definitely had employment problems, but had no problem getting a job. Many were laborers or had a skill, such as carpentry, mechanic, painter, or domestic worker, and a number were individuals who had extensive experience in white collar positions. These individuals presented themselves as being quite able to get a job. They described their problems in terms of keeping the job or regarding the jobs they were able to get as unsuitable to them or unsupportive of sobriety. Several authors have noted that addicted individuals have interpersonal problems on the job (e.g., Foy, 1979), and there are job-related high-risk situations that can be particularly destructive to sobriety (Newton et al., 1988). We decided, therefore, to expand the target population to include individuals with employment problems other than chronic unemployment.

Such a change in focus of an intervention implies a shift in conceptualization of the outcome the intervention is expected to impact. Rather than focusing only on clients' movement from "unemployed" to "employed," the typical goal of vocational rehabilitation, more emphasis is placed on the level of employment problems (which may or may not include obtaining a job). Such an outcome emphasis is suitable for chronically unemployed clients in publically funded treatment settings as well as the impaired employee, whose substance misuse occurs in the context of unsatisfying, albeit consistent or intermittent employment.

Following development of a prototype of the Working It Out CD-ROM, a randomized study was conducted to test client satisfaction with and effectiveness of the program. Specifically, we hypothesized that the Working It Out program would show high client satisfaction and significantly reduce employment problem severity. Furthermore, satisfaction and improvement in employment problems should be superior to that obtained by a group exposed to a 12-page printed booklet and 12-page workbook on returning to work after treatment.

METHOD

Participants

One-hundred and ninety-four (194) adult consumers of residential and outpatient services for substance misuse were recruited in 2000 and 2001 from six treatment facilities in Massachusetts, New Hampshire, Vermont, Rhode Island, and New Mexico. Participants were staff referred to the project for "employment problems." Clients were asked if they wished to participate in a study on helping clients in treatment, like themselves, deal more effectively with their employment problems. Almost all (94%) of those approached to participate agreed to do so.

Participant characteristics are presented in Table 1. As can be seen, the average age of the sample was 36.9 years and 36% were women. About 43% minority (including African-American, Hispanic, Native American, and Asian/Pacific Islander) and 1.5% did not answer this question. Most participants were never married or divorced/separated with only 15.5% married or living as married. Just more than half reported income less than $20,000 per year and only 2.6% reported income between $40,000 and $50,000. No one reported making more than $50,000, although 32% of the sample did not answer this question. A substantial proportion, nearly 30%, had less than a high school education, and only about a quarter of the people had more than a high school education. Finally, more than 70% of the sample report their last employment as skilled, semiskilled, or unskilled manual labor.

Measures

A summary of the measures and their characteristics is presented in Table 2.

Addiction Severity Index (ASI) and the ASI–MV

The Addiction Severity Index (ASI) was used as the primary measure. This interview was designed by McLellan et al. (1985, 1992b) and assesses current and lifetime problem severity in seven areas: alcohol use, drug use, employment, medical disorders, psychiatric disturbances, family/social relations, and legal problems. Previous research suggests that the ASI is the single best instrument for assessing behavioral problems related to

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Table 1. Demographic characteristics of the sample.

Characteristic	Sample $N = 194$	Characteristic	Sample $N = 194$
Age (in years)		Income	
Mean (SD)	36.9 (9.8)	$10,000–$19,999	50.5%
Range	19–80	$20,000–$29,999	12.4%
		$30,000–$39,999	2.6%
		$40,000–$49,999	2.6%
		Missing	32.0%
Gender		Longest period employed	
Male	64.4%	(in years)	
Female	35.6%	Mean (SD)	5.7 (7.7)
		Range	0–49.9
Race		Last employment type	
White	55.7%	(Hollingshead category)	
African-American	15.5%	Executive/professional	2.1%
Hispanic	18.1%	Lesser professional/	
Native-American	4.1%	Manager	4.6%
Asian/Pacific		Administrative/	
Islander	0.5%	Technical	6.2%
Other	4.6%	Clerical/sales	5.2%
Missing	1.5%	Skilled manual	30.4%
		Semi-skilled	19.1%
Marital status		Unskilled/laborer/	
Married/live with SO	15.5%	did not work	21.1%
Single	57.7%	Homemaker	4.1%
Divorced	20.1%	Student	6.2%
Separated	5.2%	Missing	1.0%
Widowed	1.5%		
Education (in years)			
Mean (SD)	11.9 (2.2)		
Range	6–20		
% <9th grade	6.2%		
% < high school	29.9%		
% high school			
Diploma	43.3%		
% college or higher	5.7%		

substance misuse. The ASI has documented reliability and validity (Hendricks et al., 1989; Kosten et al., 1985; McLellan et al., 1985).

The primary variable was determined, a priori, to be the employment composite score from ASI data (McLellan et al., 1992b). The employment

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Table 2. Summary of measures.

	Type	# Items	Areas covered	Time required to complete	Advantages of measure	Limitations of measure
Addiction severity index-multimedia version (ASI–MV)	Computerized self-administered	149	Problem severity in following areas: • Medical • Employment • Alcohol/drug • Legal • Family/social • Psychiatric	Average 45 min	Well known and understood in substance abuse field. Reliable and valid	Does not directly assess respondents' current employment status
Social adjustment scale-self report (SAS–SR)	Self-report pencil and paper[a]	54 with skip-outs	Subscale scores for: • Work role • Social and leisure • Primary relationship • Parental role • Family unit	20 min	Well known measure of social adjustment. Reliable and valid	Social (i.e., work role) adjustment based only on self-report
Employment questionnaire	Self-report pencil and paper[a]	1	Employment status in the last 30 days (Not asked in the ASI)	<5 min	Addresses current employment status	Developed for this project

(*continued*)

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Table 2. Continued.

	Type	# Items	Areas covered	Time required to complete	Advantages of measure	Limitations of measure
Treatment services review	Self-report pencil and paper[a]	49	Total service and discussions in each problem area: • Medical • Employment • Alcohol/drug • Legal • Family/social • Psychiatric	5–10 min	Well known and understood in substance abuse field. Reliable and valid	Does not address the quality of services, only amount
Satisfaction questionnaire	Self-report pencil and paper[a]	3	• Usefulness of information • Information relevant to personal situation • Overall satisfaction	<5 min	Provides estimate of satisfaction	Developed for this project. Not well known

[a]Pencil and paper questionnaires were read to clients with limited reading skills.

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composite score is calculated from the answers to four questions on the ASI. These are: Do you have a valid driver's license? Do you have an automobile for your use? How many days were you paid for working in the past 30 days? And, How much did you receive from employment (new income) in the past 30 days? The content of these questions does not directly tap many of the issues addressed in the Working It Out CD-ROM. The composite score was selected because it would likely be recognized by researchers and clinicians in the addictions field as a measure of clients' employment problems, and it is used widely in studies of clients' response to treatment. It has been used, for instance, to evaluate employment and work-related problems with heroin-addicted clients (Meulenbeek, 2000), homeless substance misusers (Argeriou et al., 1994), women addicted to alcohol (Dritschel and Pettinati, 1989), and clients in social model programs (Room, 1998). Its usefulness with mentally ill substance misusers is debated (e.g., Carey et al., 1997; Hodgins and El-Guebaly, 1992); however, the employment composite score has repeatedly demonstrated good predictive validity for later employment status (Alterman et al., 2001; Bovasso et al., 2001).

Baseline ASI data were collected using a computer-administered version of the ASI called the ASI–MV (Butler et al., 2001). The ASI–MV interview is ''conducted'' by on-screen interviewers who present the questions much as an interviewer might in both text and audio for those who can not read. The program is suitable for illiterate individuals, as well as those with no prior computer experience. The ASI–MV has been found to be reliable and valid, and to have a high level of user acceptance (Butler et al., 2001). Follow-up data were collected via telephone by trained interviewers, using the ASI follow-up version (McLellan et al., 1990).

Social Adjustment Scale–Self Report (SAS–SR)

As an adjunct to the ASI composite score, we examined work functioning using the Social Adjustment Scale (SAS–SR), a 54-item self-report scale for measuring instrumental or expressive role performance in six major areas of functioning: work role, social and leisure activities, relationships with extended family, primary relationship, parental role, and functioning within the family unit. The assessment of ''work role'' includes an assessment of the respondent's functioning in employment, as a student, or as a homemaker, as appropriate. The questions in this section are: How many days did you miss work in the last two weeks? Have you been able to do your work in the last two weeks? Have you

been ashamed of how you do your work in the last two weeks? Have you had any arguments with people at work in the last two weeks? Have you felt upset, worried, or uncomfortable while doing your work in the last two weeks? Have you found your work interesting in the last two weeks? Corresponding wording is used for homemakers and students.

The SAS–SR has demonstrated adequate reliability (coefficient alpha for the overall scale = 0.78; Edwards et al., 1978) and validity (correlations between SR (self-report) and interview for the overall scale was 0.72) as well as sensitivity to change (Weissman and Bothwell, 1976; Weissman et al., 1999). The SAS–SR work subscale was used as a secondary measure of role functioning in the area of work.

Employment Questionnaire

Since the ASI does not ask about current employment status, these data were collected using a questionnaire adapted from the Employment Questionnaire (EQ) used by Platt et al. (1993) and the ASI question about "usual employment pattern over the last three years." The EQ obtains information about the client's current employment status, including full-time employment, part-time employment (regular and irregular), volunteer, student, retired, disabled, in a controlled environment, or unemployed. For the determination of employed vs. unemployed, we combined the categories reflecting "productive" activity, including any employment, volunteering, and student status (cf. Becker and Drake, 1993). The unemployed category included people who were disabled, unemployed, or in a controlled environment (jail, hospital, etc.). Patients indicating a retired status ($N = 7$) were excluded from these analyses.

Treatment Services Review (TSR)

In order to get an idea of the level of employment services available to participants within and outside of their treatment programs, the TSR (McLellan et al., 1992a) was used to track client's exposure to these services at baseline. The TSR is a structured interview designed to record the type, amount, and frequency of treatment services received by respondents during the preceding week. The treatment services are divided into seven problem areas that correspond to the problem areas assessed by the ASI; alcohol use, drug use, employment, medical disorders, psychiatric disturbances, family/social relations, and legal problems.

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The questions for the employment section include the number of times in the past 7 days the respondent had a: ''Meeting focused on helping you get housing, food, clothing, or shelter?'' ''Meeting focused on helping you get SSI, welfare, disability/other benefits?'' ''Reading class, literacy testing, or GED testing?'' ''Meeting focused on helping you get schooling or training?'' Or, ''meeting focused on helping you get employment?'' In addition, respondents are asked the number of times, in the past 7 days, the respondent had a group or individual counseling session or ''significant discussion'' regarding ''food, clothing or shelter problems,'' or ''schooling, training, or unemployment problems.'' Both in- and out-of-program services are collected. The TSR is reliable (test-retest reliability between 88 and 94%) and valid (the TSR reports of services agreed with or were greater than clinic records). This measure has been useful in evaluating and comparing substance dependency treatment programs (McLellan et al., 1992a). For present purposes, only the employment section of the TSR was administered.

Satisfaction Questionnaire

A Satisfaction Questionnaire was administered to participants in both conditions. The general format of the questionnaire was three items rated on a Likert-like scale from 1 (strongly disagree or very dissatisfied) to 5 (strongly agree or very satisfied, depending on the context of the question). The three items were: ''I found the information presented to be useful.'' ''I found the information presented to be relevant to my situation.'' And ''How satisfied were you overall with the program/print material?'' For the CD-ROM condition, participants completed these questions after each section of the program that they completed. Participants in the print material condition answered these questions after reading the materials.

Interventions

Looking for Work Printed Package

As a contrast intervention, the *Looking for Work: Living Skills* printed package (Hazelden, 1993) was selected. It should be noted that this is more than simply a brochure. The package is a mini-course for self-study by individuals in recovery to develop skills to find and keep a job. The package contains a 12-page booklet along with a 12-page workbook

with information on: facing fears, why work?, coping with job-related stress, job-finding skills (writing a résumé, networking, interviewing, etc.), caring for one's self and the job, and what to say about one's recovery. The accompanying workbook offers 12 exercises designed to foster work finding and keeping skills, including looking for work, making good decisions, maintaining recovery, and managing money.

Working It Out CD-ROM

The CD-ROM is a multi-session, computer based, self-administered, vocational education and intervention program for clients in substance dependency treatment programs. Developmental work with clients in substance dependency treatment revealed a wide array of vocational related needs in this population. These needs ranged from very basic concerns of the chronically unemployed (e.g., why should one work at all or how to interview or write a résumé) to concerns of those who are able to get jobs, but need to find more satisfying work or learn to deal with pressures to use substances that arise from their job. To address these varied needs, Working It Out was designed as a multimedia, skill-development program based on knowledge of vocational intervention with chemically dependent individuals (e.g., Metzger et al., 1992; Platt et al., 1993; Zackon et al., 1994), and recent thinking about tailoring psychoeducation to the needs of individuals. Evidence has grown over the last decade or so, supporting the efficacy of imparting health-related information that is tailored to the needs (Strecher et al., 1994) and motivation (Prochaska and DiClemente, 1982; Prochaska et al., 1992, 1994) of the recipient.

Developmental versions of Working It Out were nonlinear, in that the user could jump around to different sections at will. This flexibility was not well accepted by clients, who tended to become confused by the many options. Thus, the program was redesigned to be an essentially linear experience, where, within a module, one screen follows another into in a predetermined way. Tailoring of the material occurs when clients answer some simple questions regarding their current vocational status and their motivation to work.

Based on these answers, client users are directed toward one of five vocational education "sessions" or modules. The content of the modules is based on an adaptation of the work of Becker and Drake's (1993) work on vocational programs for mentally ill and dually diagnosed clients. These authors identify the vocational skills that clients need to acquire as job choosing, job getting, and job keeping. Motivation to work was

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integrated into this structure based on the Stages of Change approach by Prochaska et al. (1992, 1994). Some clients may be directed to all five modules, while others might do only a single session, depending on their needs and motivation.

The first module is Job Choosing I, which is designed for those lacking motivation to find work and to do work, and is really about choosing to work. For clients lacking motivation to work, the Stages of Change model considers such people as being in ''precontemplation'' (Prochaska et al., 1992, 1994). When a client is in precontemplation, the ''pros'' of changing should be emphasized. Thus, the client might experience a segment on ''Why is working desirable?'' Or ''What makes work a positive alternative to not working?'' Another section also presents Maslow's Hierarchy of Needs (1954) in an interactive, easily understood format, to demonstrate how work fits into one's overall adjustment to life.

Job Choosing II focuses on steps to help clients, motivated to find work, to decide on the type of job they might seek. For example, the client might take a ''Job Sampler'' Quiz to learn about different types of jobs and careers. The user selects from a list of job characteristics, the types of activities that he or she likes to do (e.g., work alone or with people, work inside or outside, etc.). Based on their answers, relevant kinds of jobs are presented that fit the users' preferences.

Clients interested in working or who have already been through the Job Choosing modules are directed to Job Getting. Interactive audio/video presentations teach about such skills as making a good impression, cold calling companies, completing an application, preparing for an in-person interview, writing thank you letters, and preparing one's self for acceptance or rejection. Overcoming barriers to work getting (e.g., Metzger et al., 1992) is emphasized in this module.

The Job Keeping module addresses issues around keeping a job once you have one. This module is especially useful for client users who have had difficulty on the job due to interpersonal and/or substance misuse problems (a common issue for those in substance dependency treatment). This module offers interactive strategies that help the employed client develop people skills, time management skills, money management skills, emotional management skills, and work management skills. Strategies about picking up on signs that a job may be in danger, or warnings of ''burnout'' or stress, are also included in this module.

The final module, Relapse Prevention, focuses on longer-term employment issues for the client users. Maintaining recovery, financial management, long-term adjustment to work, and balancing work and recovery are the issues addressed in this final module. Regardless where a user begins the Working It Out program, the Relapse Prevention module

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is recommended. Once the program is completed, clients may return to any of the other modules whether previously visited or not, so they may view and/or print out any relevant information they wish.

In addition to the CD-ROM, client users are provided with the Working It Out Guidebook. The printed guidebook follows the program step by step. Once users finish a module, they receive a printout telling them which pages of the guidebook they should look at. The Guidebook contains worksheets, skill sheets, and information sheets.

Procedure

All participants met with a research assistant (R.A.). Five individuals served as R.A.s. All R.A.s had a minimum of a bachelor's degree, four were women, four were white, and one woman was African-American. The R.A.s underwent a 2-day training experience, which included training in study procedures, human subjects protection, and role playing.

After a participant signed informed consent documents, a baseline assessment was conducted in which the ASI–MV, SAS–SR, and the Employment Questionnaire were administered. Participants were randomly assigned to either the print material or CD-ROM condition. Clients in the print material condition received a copy of Looking for Work. Participants were told to read the materials and complete three of the worksheets in the workbook over the following 2 weeks. Participants were recontacted at 2 weeks and asked whether they had read the materials (booklet/workbook) and/or spoken with anyone about it. At that point, they completed the satisfaction questionnaire.

Participants in the CD-ROM condition were directed to a computer, where a research assistant helped the client establish a PIN number to permit the client to return to his or her place in the program. Once oriented to the program, clients proceeded on their own. Since the program was tailored to clients' needs and interests, they were told the computer would take them to the section most relevant to their employment situation. Participants who began with job choosing would logically complete all four sections, while those whose job issues were related primarily to staying sober completed just the relapse section. All participants were asked to complete at least the relapse section. Thus, 18.9% completed just the one relapse section, 5.6% completed one other session (two sessions total), 22.2% completed three sessions, and 53.3% completed all four sessions. Thus, 75.5% completed three or more sessions. Participants in this condition completed a satisfaction questionnaire after

each session they finished and after completing all their sessions, rated overall satisfaction with the entire program.

Follow-up assessments were scheduled for 6 months following the baseline assessment. Participants were mailed the SAS–SR and the Employment Questionnaire. They were also contacted by telephone and administered the follow-up version of the ASI over the phone. Participants were paid a total of $85 for completing baseline and follow-up assessments.

ANALYSES AND RESULTS

Employment Statistics of the Sample at Baseline

At baseline, 33.9% of the sample described themselves as having been unemployed in the past 30 days, and the entire sample obtained an average employment composite score of 0.77 (SD = 0.29). But, how does this compare with clients in treatment around the country? To answer that question, we compared ASI data from the current sample with a continually updated database of intake ASI data from nine cities around the country maintained by the Treatment Research Institute (TRI, May 2002). This database can be downloaded from the Internet (www.densonline.org) and is updated approximately quarterly. The database contains over 30,000 ASI administrations, of which about 7542 are from outpatients. Quick comparisons revealed that the baseline data obtained in the present sample are quite comparable with these national data. Specifically, the mean employment composite score for the TRI outpatients was 0.75 (SD = 0.30) and is not significantly different from our sample. Average years of education also was not different (11.9 years for the present sample, 11.7 for the TRI database), and the percentage primarily "unskilled/unemployed" over the last 3 years in this sample was 21.3 and 20.8% for the TRI data. Thus, it is reasonable to assume that our sample may be reflective of clients in outpatient treatment.

Existing Employment Services at the Clinical Sites

Before analyzing outcome data, an initial question was the extent to which participating clients were already receiving substantial employment-focused interventions as part of their treatment program. Although most authors have bemoaned the lack of such services (e.g., Platt, 1995), it was important for this study to document the extent of such services. Using the Treatment Services Review (TSR), clients were interviewed at

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Table 3. Report of employment-focused services for all participating clients.

TSR Item	Mean	SD	Median	Range	% of clients reporting no service
In program					
Number of meetings focused on helping you get employment	0.7	1.24	0	0–12	66.0%
Out of program					
Number of meetings focused on helping you get employment	0.3	1.6	0	0–20	90.7%
In or out of program					
Number of meetings focused on helping you get employment	0.98	2.1	0	0–22	59.8%
Number of significant discussions about schooling, training or unemployment problems	1.96	2.9	0	0–28	61.9%

baseline regarding their experience of services or employment-focused discussions over the month prior to the interview. It is possible, of course, that the TSR data may underestimate somewhat access to employment-focused interventions. Nevertheless, examining the TSR data permits at least a rough estimate of the amount of services at these centers. These data are presented in Table 3 and show that more than half of the clients in this group (all of whom were referred for employment problems) reported no meetings or discussions focused on their employment problems. Of the 40% who reported at least one in-program and/or out-of-program meeting, most (35% of the total) reported one or two meetings about their employment concerns. Receipt of services was not related to the degree of employment problem severity at baseline ($r = 0.04$). However, employment services received, as measured by the TSR, were associated with the clinical treatment site for both in-program employment services ($F_{(5,192)} = 24.2$, $p < 0.001$) and out-of-program employment services ($F_{(5,192)} = 10.0$, $p < 0.001$). Posthoc analyses revealed that the vast majority of this between-site difference was due to substantially more service offered at one of the six sites. Thus, it appears that the level of employment-focused service is currently more

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dependent on the clinical facility that one attends rather than employment problem severity.

Follow-Up Rates

Attempts were made to contact all participants for follow-up assessments 6 months following the baseline assessment. Of the 194 clients evaluated at baseline, we were able to locate 154, or 79.4%, leaving 20.6% that could not be located. Not all of those located, however, could be interviewed. One individual withdrew from the study at this point and 13 were in jail or prison and not permitted to participate in the follow-up. Thus, 140 clients (72.2%) were successfully contacted and evaluated. McLellan and Durell (1996) note that a follow-up rate of at least 70% is required to ensure reliability of results.

Analyses were conducted to identify any systematic differences between those successfully followed (completers) and noncompleters. Examined were age; gender; ethnicity (white vs. minority); employment status (employed vs. unemployed); severity of problems as measured by the ASI composite scores for medical, employment, alcohol, drug, legal, family and social, and psychiatric problems; education (less than high school vs. high school or greater); and marital status. Completers and noncompleters did not differ significantly on any of these variables. Thus, it is reasonable to assume that the follow-up sample is reasonably representative of the recruited sample.

Employment Problems

The primary analysis was a repeated measures MANOVA with two repeated measures (baseline and 6-month follow-up) with one factor at two levels (Working It Out CD-ROM vs. the Looking for Work print material). The primary dependent variable was the employment composite score (reflecting employment problems) from the ASI. This analysis yielded a significant decrease in employment problems (baseline $M = 0.75$, follow-up $M = 0.67$; $F_{(1,126)} = 10.28$, $p = 0.002$). However, no condition effect or condition-by-time interaction was obtained. Thus, while the sample as a whole improved on the employment composite score, there was no evidence of a differential effect of the CD-ROM over the print material. This basic pattern of results was maintained despite several further examinations. For instance, since the baseline distribution was skewed for employment score, the analyses were rerun after making

an arcsin transformation of the data. The pattern of results was not altered (i.e., strong effect of time $F_{(1,126)} = 11.63$, $p = 0.001$, but no condition or interaction effect).

Moderator variables were examined as well. An a priori list of variables (age, gender, ethnicity, addiction severity, employment at baseline, education, and marital status) were examined for a main effect or interaction with change on the employment composite score variable at a conservative Type I error rate of 0.10. Age and prior employment rate emerged as significantly associated with the dependent variable. A dichotomous age variable (young/old) was created with a median split (at 38 years of age). This variable yielded a significant interaction of time and age category at $F_{(1,127)} = 4.1$, $p = 0.045$, suggesting that younger clients showed a greater reduction in employment problems than older ones. A main effect of race category (i.e., white vs. minority category) was observed ($F_{(1,128)} = 3.6$, $p = 0.061$). Employment status at baseline also yielded a significant main effect, $F_{(1,122)} = 69.9$, $p < 0.001$ as well as education (<HS vs. HS or more), which had a main effect $F_{(1,127)} = 4.8$, $p = 0.03$. These categories were then entered into the main MANOVA analysis to determine any moderating effect of condition. These subsequent analyses did not yield any change in the original overall pattern of results. That is, in no case did the introduction of a potential moderator variable modify the effects of condition or condition-by-time, nor were any second-order interactions observed. Thus, the original finding of a significant decrease in employment problems from baseline to 6-month follow-up was retained, and no main effect of condition or interaction was observed.

Finally, we examined whether the in- or out-of-program employment-focused services were responsible for the observed improvement in employment problems. This was examined in two ways. First, the total number of in- and out-of-program contacts was entered into the repeated measures MANOVA as a covariate. This revealed no effect of the covariate on the basic pattern of results (i.e., significant change over time, no main effect of condition or interaction). Furthermore, the covariate was not significant in these analyses. Next, clients were classified as either no service or some service, and this dichotomous variable was entered as an additional independent variable into the MANOVA. While the basic pattern of results did not change (e.g., main effect of time, no effect of condition or interactions), a main effect of the TSR classification was significant ($F_{(1,124)} = 4.3$, $p = 0.039$). This suggested that those receiving no employment services ($N = 81$) tended to have lower employment problems means at both baseline and follow-up (M employment composite score $= 0.67$) than those with at least some

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employment services ($N = 47$; M employment composite score $= 0.78$). While this may seem contradictory with the earlier assertion of an almost zero correlation between TSR employment-focused services received and employment problems at baseline, the obtained difference only emerges when considering the means of the combined baseline and follow-up employment composite scores.

Work Role Performance

An adjunctive analysis was conducted to investigate any effect on role performance. As stated above, the SAS–SR work subscale intends to measure the respondent's role functioning in employment, as a student, or as a homemaker. The work subscale revealed a similar pattern of results, with change over time on the work subscale almost reaching significance ($p = 0.056$) and no main effect of condition or interaction. Since the work subscale includes those whose primary role functioning is as student or homemaker (categories of productive activity that the interventions did not address), we also calculated the effect on clients' score for work outside the home only. This analysis revealed a significant improvement in the scores for work outside the home ($F_{(1,95)} = 8.0$, $p = 0.006$) with no main effect for condition or interaction.

Change in Employment Status

As a secondary analysis, we examined changes in employment status from baseline to follow-up. While one might think that actually getting a job should be the primary outcome of interest for an employment-focused program, the use of such a dependent variable is problematic. As stated above, the Working It Out program was not targeted only at unemployed clients. Rather, the various modules of the program assume that the client user might be employed but wanting to explore other jobs, perhaps ones that are more conducive to sobriety. Or, an employed client might want to address interpersonal or other issues that tend to adversely effect his or her current work functioning. Finally, as Platt (1995) has noted, employment is influenced by numerous external, societal factors that can overwhelm the effects of intervention programs, resulting in an underestimation or overestimation of the effectiveness of an intervention program. Factors such as regional and/or national economic downturns or upturns can exert powerful effects on employment. Over the 6-month follow-up period, more clients (21%) moved from the unemployed to the

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employed category than those who moved from the employed to unemployed category (9%). However, these differences did not reach significance. McNemar tests, a nonparametric test for detecting changes due to experimental intervention in "before-and-after" designs, were not significant for either condition.[b]

Change in Outcome for Substance Use and Other ASI Problem Domains

Given the general positive and significant change on the employment variables from baseline to follow-up, it was important to examine this change within the context of change in other problem areas assessed. A repeated measures MANOVA was conducted for each of the ASI domains. These analyses revealed that all ASI domains had a significant main effect of time except for the medical domain, suggesting significant improvement in the areas of alcohol and drug use severity, legal problems, family and social problems, and psychiatric problems, as well as the improvement in employment problems already discussed. No between condition effects were observed, except for the drug domain, which did not reach significance at a Bonferroni-corrected p level, and no interactions were obtained. Thus, the same pattern was observed for these ASI variables as for the primary dependent variable. Table 4 presents the baseline and follow-up means and standard deviations for each condition, as well as the significance levels for all the ASI domains. As can be seen, the change in these domains is quite significant and suggests that those clients who volunteered for this study reported a generalized improvement. Indeed, it may be that the observed improvement in employment problems is part of this generalized improvement across all the psychosocial domains.

This is not to say that the obtained improvement on the psychosocial dimensions are simply the result of clients reducing their substance use. Raw alcohol and drug use change scores do not correlate with change in employment problems ($r = -0.10$ and -0.05, respectively).

[b]Note that change in employment status correlates moderately ($r = 0.40$) with change on the ASI composite score. It stands to reason that these values, while positively related, probably measure different things. For example, it is possible that a client who is employed at baseline and remains employed at follow-up (no change) improves greatly on the ASI composite score.

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Table 4. Main effect of time (change from baseline to follow-up) for composite scores[a] for all ASI domains.

	Working it out condition			Print material condition				
ASI Domain	*N*	Baseline *M* (SD)	Follow-up *M* (SD)	*N*	Baseline *M* (SD)	Follow-up *M* (SD)	*F* value	p[b] value
Medical	65	0.24 (0.25)	0.23 (0.30)	60	0.32 (0.32)	0.30 (0.31)	$F_{(1,123)} = 0.7$	NS
Employment	67	0.74 (0.31)	0.69 (0.34)	61	0.76 (0.30)	0.65 (0.33)	$F_{(1,126)} = 10.3$	0.002
Alcohol	54	00.19 (0.17)	0.12 (0.14)	54	0.16 (0.18)	0.13 (0.16)	$F_{(1,106)} = 10.8$	0.001
Drug[c]	56	0.10 (0.08)	0.05 (0.06)	53	0.13 (0.08)	0.07 (0.06)	$F_{(1,107)} = 35.5$	<0.001
Legal	64	0.26 (0.19)	0.09 (0.14)	60	0.23 (0.20)	0.11 (0.15)	$F_{(1,122)} = 63.3$	<0.001
Family/Social	67	0.23 (0.19)	0.12 (0.16)	60	0.27 (0.17)	0.14 (0.19)	$F_{(1,125)} = 43.3$	<0.001
Psychiatric	64	0.32 (0.25)	0.19 (0.20)	61	0.31 (0.22)	0.27 (0.22)	$F_{(1,123)} = 51.1$	<0.001

[a]ASI Composite scores have a possible range from 0 to 1.0, with higher scores meaning greater problem severity.
[b]The Bonferroni correction for multiple tests sets the Type I error at $p < 0.007$. All significant main effects were significant at the Bonferroni-corrected p value.
[c]For the Drug category only, a main effect for condition was obtained, albeit not at the Bonferroni-corrected p value. The mean Drug Composite Score for the Working It Out Condition (0.11) was significantly greater than the Print Material Condition (0.06) at $F_{(1,107)} = 5.2$, $p = 0.025$.

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Satisfaction with the Psychoeductional Programs

A final set of analyses was conducted on the ratings clients made on the Satisfaction Questionnaire regarding their respective intervention materials. Recall that in both conditions, respondents were asked to rate the usefulness of the information they received, the relevance of the information to their situation, and their overall satisfaction with the materials. We anticipated that both conditions would have high ratings, since it is well established that consumer satisfaction distributions tend to be negatively skewed, such that most consumers report satisfaction with health services or materials (e.g., Lebow, 1983a,b).

Mean satisfaction ratings for both conditions are presented in Table 5. Eighty-eight percent of those exposed to the conditions made satisfaction ratings. As can be seen and as was expected, the mean and median ratings were generally high for both the CD-ROM and the print material. The Working It Out program was rated significantly higher than the print material for relevance of the information and overall satisfaction (Although the ratings of the usefulness of the materials were different, this difference did not reach significance at the Bonferroni-corrected Type I error rate.). These data suggest that while participants in both conditions found the information they were given useful, the CD-ROM program was associated with higher ratings of relevance of the material. This indication that the material presented was more relevant to the individual concerns of the user may reflect the tailoring capacity of the CD-ROM program. The higher overall satisfaction ratings appeared

Table 5. Satisfaction ratings for Working It Out and print materials.

Satisfaction question	Working it out condition		Print material condition			
	M (SD)	Median	*M* (SD)	Median	*t*-value	p^a value
Information useful	4.3 (0.6)	4	4.1 (0.7)	4	2.3	0.022
Information relevant	4.2 (0.7)	4	3.7 (0.9)	4	3.4	0.001
Overall satisfaction	4.5 (0.5)	5	4.2 (0.6)	4	3.9	<0.001

Note: Ratings are from 1 (strongly disagree or very dissatisfied) to 5 (strongly agree or very satisfied, depending on the context of the question).

[a]The Bonferroni correction for multiple tests sets the Type I error at $p < 0.02$. Thus, the difference in ratings for useful information is not significant at the Bonferroni-corrected p value.

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to reflect a general enthusiasm of the clients about using the multimedia program.

DISCUSSION

Outcome: Change in Employment Problem Severity

The primary hypothesis of this study, that an interactive and tailored, multimedia presentation of vocational rehabilitation information would be more effective than a general, printed package of information and workbook in reducing the severity of employment problems was not supported. Employment problems improved (i.e., were significantly reduced) over the 6-month follow-up period for all participants, regardless of condition. That is, there was a main effect for time, but no condition effect or interaction. This pattern of results was also obtained for the subscale of the Social Adjustment Scale that measures functioning in work outside the home (although not for the subscale that combines work, student, and homemaker functioning). While employment problems diminished and work functioning improved for the clients in this study, change in employment status (unemployed to employed) was not significant for either the computer condition or the print material condition. Taken together, these data did not support a differential benefit of the interactive and tailored, multimedia computer intervention.

In light of the large main effect of time, the lack of a condition effect or interaction for the employment domain is perhaps not surprising. One would expect an untreated or ineffective, ''control'' intervention to produce little or no change across time, so that an effective, experimental intervention would result in a significant interaction. However, if all participants show a large effect for improvement over the follow-up period, the likely result is a ceiling effect, making it difficult to show differential effectiveness of an intervention. It is possible, furthermore, that the individuals who volunteered for this study were generally motivated to improve their employment situation. As such, these clients may have been primed to use to maximal effect any materials they were given. Finally, it cannot be ignored that during the years data collection occurred (2000–2001), the country was experiencing nearly unprecedented prosperity and very low levels of unemployment. As Platt (1995) has noted, such societal trends are rarely overcome, one way or the other, by psychosocial/psychoeductional interventions.

Efforts to account for the improvement observed in the print material condition were not particularly successful. There was no evidence for an

effect of the possible moderator variables examined, including age, gender, ethnicity, addiction severity, employment at baseline, education, or marital status. It remained possible, however, that the observed improvement in participants employment problems may have resulted from some individuals receiving employment-focused services as part of their substance dependency treatment. There was little evidence that those clients with employment problems were provided employment-focused services, which seemed more strongly associated with availability at one site in particular, rather than associated with client needs for employment services. Furthermore, despite a main effect of client-reported employment-focused services (no service vs. some service), there was no support for the hypothesis that such services accounted for the observed improvement in employment problems, as measured by the ASI.

Another possible explanation for the overall improvement in employment problems is the general improvement in all the ASI psychosocial domains. Alcohol and drug use, legal problems, family and social problems, and psychiatric problems all improved significantly for the sample as a whole. Only the ASI composite score for medical problems did not show a significant change from baseline to follow-up. This result suggests a generalized improvement experienced by the clients in this study. Such generalized improvement may have eclipsed the chances of finding differential effectiveness of the multimedia intervention.

Usefulness, Relevance, and Satisfaction

High levels of usefulness, relevance, and satisfaction were obtained for both interventions. Both interventions were rated as having useful content. Although the Working It Out program had higher ratings than the print material, the significance was not maintained when the Type I error rate was adjusted for multiple tests. On the other hand, content presented by the tailored, interactive multimedia program was rated significantly more relevant than the print material. Tailoring of psychoeducational information is thought to be important in increasing the effectiveness of communications (e.g., Prochaska and DiClemente, 1982; Prochaska et al., 1992, 1994; Strecher et al., 1994). While we were not able to demonstrate differential effectiveness, it seems clear that the clients detected and appreciated the tailoring inherent in the Working It Out CD-ROM.

Clients rated greater satisfaction overall with the computer program than the print material. It is certainly possible that at least some of this reflects demand characteristics. However, the pattern of ratings, especially the smaller mean difference for ratings of usefulness of the

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material, suggests that the satisfaction ratings may be tapping more than a generalized demand characteristic. Indeed, the higher overall satisfaction ascribed to the multimedia program is consistent with spontaneous comments by the client participants to study personnel. Several participants noted that the program was interesting and fun to use, and others expressed pleasure at having successfully used a computer program. Such satisfaction expressed by the clients may reflect an appeal of the computer-based materials that could translate into a greater tendency for clients to choose such resources over static, printed material.

Implications of the Findings

Probably the most relevant implication of the present study is that a multimedia vocational rehabilitation program that is self-administered, interactive, and tailored to clients' employment status and motivation is feasible for use as part of substance dependency treatment. While it is true that the study did not find significant differences over the use of printed materials, there is evidence that clients enjoyed using the computer program and found the experience more relevant to their particular concerns. Such a reaction may facilitate clients' spontaneous, independent use of the program. Clearly, Working It Out was designed to be self-contained, and suitable for any client with employment problems, even those who are not presently interested in making changes in their employment status. The program was also designed to be usable by individuals with limited education and/or reading ability. No staff training is required to use the program, although the program contains printouts that clients could discuss with their counselors. Of course, the treatment setting would have to have a computer available for use by clients.

Indeed, it is likely that access to computers may be relatively limited at substance dependency treatment facilities for staff, let alone computers available for use by clients. There is, however, pressure to increase the availability of computers in treatment centers. For example, the Addiction Technology Transfer Centers (ATTC), funded by the Center for Substance Abuse Treatment (CSAT), has an initiative called, "Online/Ontime 2001," to encourage treatment agencies across the nation to acquire and use computers (Johnson, 1999). The ATTC maintains a website, www.online2001.org, that provides practical information on how programs can select and find funding for computers. Indeed, there is reason to believe that in the last few years, computers are increasingly present in treatment settings, for use by both counselors and clients (Villapiano, *in press*).

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Limitations

One limitation of the present study was the choice of outcome measures. The choice of the ASI employment composite score reflected the use of this measure in previous studies of vocational functioning in substance misusing populations. However, it is possible that this measure of outcome may not have tapped the kinds of behavioral and attitude changes fostered by the Working It Out program. A large part of the program's emphasis is on finding satisfying, recovery-supportive work (whether for pay or as a volunteer), performing well enough to keep such jobs, and learning to deal with the pressures to relapse that can arise from some work environments. The ASI employment composite score (or the SAS–SR and employment status) may have not been a subtle enough measure to capture the kinds of changes produced by the Working It Out program.

Another limitation is that the multimedia program was not compared with traditional vocational counseling. A well-designed process study could highlight aspects of multimedia that can enhance the effects of traditional vocational counseling. Finally, the follow-up period of 6 months is a relatively short time for studying vocational adjustment. Longer-term adjustment is obviously the goal, and the impact of multimedia materials on this adjustment is an important question that remains for future research.

Multimedia Vocational Rehabilitation in Substance Dependency Treatment: Unresolved Critical Issues

While this study demonstrated that the multimedia Working It Out program can be effectively used in a population of clients in substance dependency treatment, there was no evidence that the CD-ROM program was associated with better employment functioning than use of the booklet and workbook. Our inability to find differential effectiveness of the CD-ROM may be a byproduct of methodology rather than the type of medium used. Technology studies using a traditional study design (i.e., comparing an experimental condition receiving a technology-based intervention against a control condition receiving an intervention in a different medium) often produce no significant findings (Joy and Garcia, 2000). Indeed, instructional technology researchers have begun questioning the validity of this strategy, because most available measures do not adequately assess the skills and outcomes most affected by technology (Jones et al., 1995; Kosakowski, 1998; Schacter, 1999; Spencer, 1999). Joy and Garcia (2000) recommend that media comparison studies should

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be avoided altogether, and that the focus should be on a more specific question—"What combination of instructional strategies and delivery media will best produce the desired outcome for the intended audience?" This question is reminiscent of conclusions drawn from psychotherapy research. It is not what works, but under what conditions and for whom (cf. Luborsky et al., 1975).

What technology outcomes are most readily measured? Research on computer-aided instruction shows that positive learning outcomes are achieved on "drill and practice" applications, such as those used in military training (Kosakowski, 1998). Higher-order thinking abilities (such as problem-solving, independent thinking, and taking multiple perspectives) can be affected by computer-based applications, but are more difficult to measure (Jones et al., 1995; Schacter, 1999). In addition, when the desired outcomes become more diffuse, measurement becomes more challenging (Schacter, 1999). In a program such as Working It Out, the goals are quite diffuse and require higher order thinking due to the needs of the user population. When providing education about employment, one must address motivation, interests, interviewing skills, writing skills, and communication abilities. This skills package is less easily measured than, say, one's responses to mathematics questions. As a result, the measurements used may not have tapped possible higher order thinking changes related to skill-building.

Given our finding that computer-assisted interventions are feasible for clients in substance dependency treatment who seem satisfied with their multimedia experience, future evaluations of computer applications such as Working It Out should be targeted to basic investigations of how to optimize computer-assisted interventions. Such research would focus on questions like (Jones et al., 1995):

(1) How can technology help users collaborate with each other and communicate with treatment staff in more diverse ways?
(2) How can the system maximize user input?
(3) How can the technology offer access to real world problem-solving?
(4) How easily can users access important educational and skill-building tools?
(5) How can technology spur users to build knowledge together in a learning community (e.g., therapeutic milieu)?

By building upon the experience and findings of this study, such questions will allow future technology-based efforts to move beyond feasibility to improving outcomes in a meaningful way.

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CONCLUSION

The present investigation is one of the first to examine feasibility of using a completely self-administered, computerized and interactive, multimedia program to impart basic principles of job choosing, job getting, and job keeping. The primary findings were as follows: clients exposed to the Working It Out program did show improvement with respect to employment problems. On the other hand, the CD-ROM program did not produce superior outcomes to a print material control condition. Indeed, clients in both conditions achieved quite good outcomes. On yet another hand, clients responded quite favorably to the CD-ROM experience and produced satisfaction ratings that were significantly superior to the printed booklet and workbook on relevance of the information and overall satisfaction. Further work is warranted to determine how to optimize the use of psychoeducational CD-ROM programs in addressing the psychosocial problems of clients in treatment for substance misuse.

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