

Adolescent Substance-use Treatment: Service Delivery, Research on Effectiveness, and Emerging Treatment Alternatives

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ABSTRACT. Adolescent substance use remains a persistent and serious problem in society despite use patterns showing consistent declines in alcohol and other illicit drug use since 2000. This paper provides an overview of the somewhat confusing landscape of substance-use treatment options available to families and professionals seeking treatment services. A case study is presented illustrating one treatment option, termed *outdoor behavioral healthcare*, to highlight one example of alternative treatment and educational program that has developed in recent years to meet increased demand for services. Conclusions developed from a review of treatment service availability and research conducted on the effectiveness of treatment suggest that alternative treatments for adolescents should continue to be identified, developed and evaluated using suggestions put forth by researchers in the area of substance-abuse treatment research to increase the likelihood that adolescents who need treatment services are getting those services in a timely, effective, and safe manner.

KEYWORDS. Adolescent substance abuse treatment, effectiveness, treatment options

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INTRODUCTION

Adolescent substance use remains a persistent and serious problem in the United States despite use patterns showing consistent declines in alcohol and other illicit drug use since 2000. The Substance Abuse and Mental Health Services Administration (2006) publishes an annual survey of drug use and health, which is considered to be a primary source of information on adult and adolescent use patterns in the United States. In 2005, SAMHSA reported that illicit drug use among adolescents ages 12 to 17 had steadily declined since 2002, when a 12% overall rate of use was reported. In 2005, the rate was reported at just below 10%. Declining use patterns are good news to parents, teachers, youth workers, mental health practitioners, researchers, and agency personnel involved in the prevention and treatment of adolescent substance use in the United States. Similar trends are also noted when examining use reduction in specific substances. For example, marijuana use was 8.2% in 2002 in this same age group and has significantly fallen to 6.8% in 2005. Despite these trends, substance use among American youth continues to remain sufficiently widespread to merit concern. According to the Monitoring for the Future Study (2006), which annually surveys 8th-, 10th-, and 12th-graders, 50% of youth in 12th grade have tried an illicit drug by the time they finished high school. Of particular concern was the finding that nearly a third (30%) of 8th graders had tried inhalant drugs (one of three drugs, along with OxyContin and sedatives that showed signs of increased use in past years). The use of prescription drugs was also noted as a serious concern because they have become more easily available to youth because of their increased prescriptive use in the general population. Another notable trend for youth was reported “past-month” and “binge drinking rates” that have remained unchanged and are still considered alarmingly high. For example, 30% of all youth reported drinking in the past month, and 20% of those (nearly 7.2 million youth) were characterized as binge drinkers. The conclusions generated from both of these reports are not meant to be alarmist, but rather to highlight that, although use trends have slowed in some categories, substance use among adolescents is still a persistent and costly problem in the United States that requires effective prevention and treatment programs that are suitable for adolescents’ developmental needs.

The purpose of this paper is not to focus on prescriptive prevention strategies designed to help adolescents better understand the risks and costs of substance use. These prevention strategies, which are literally being forced to strategically develop drug by drug, and use pattern by use

pattern, address the determinants of drug use and are based on the perceived benefits and risks that adolescents have regarding specific drugs. The development of prevention strategies across cultural and socioeconomic strata are of paramount importance (see Asherey, Robertson, & Kumpfer, 1998; Faggiano et al., 2006; Foxcraft, Ireland, Lowe, & Breen, 2006) but this paper addresses what happens when these strategies do not work and an adolescent requires a treatment intervention. The goal is to provide an overview of the somewhat confusing landscape of substance-use treatment options available to adolescents and to discuss challenges faced when parents, schools, and mental health practitioners try to determine the most suitable treatment model, given the adolescent's use history and likely mental health disposition. A detailed case study of one treatment option, what has been termed "outdoor behavioral healthcare" (Russell, 2003), is then presented to (a) shed light on the private-pay, demand-driven market for services that has developed in recent years due to perceptions that readily available services were not sufficient for adolescent dispositions, (b) illustrate the types of issues with which adolescents who are seeking these types of services present at admission, and (c) present the outcomes from such treatment to highlight transition and aftercare issues that are often overlooked in discussions of treatment outcome. The case study will be presented in the context of synthesized findings from the relatively few studies on adolescent substance-abuse treatment (Williams & Chang, 2000).

NEED FOR AND ACCESS TO ADOLESCENT SUBSTANCE-ABUSE TREATMENT

Currently, demand outweighs the supply of appropriate and effective behavioral healthcare services for adolescents and their families seeking substance-abuse treatment. In a report by McManus (2003) funded by the William T. Grant Foundation, behavioral healthcare services, including substance-abuse treatment, were examined in four major U.S. cities. Significant barriers were identified in each of the four cities, indicating that most adolescents requiring treatment were not being adequately served. The two most significant barriers to behavioral healthcare services were provider shortages and inadequate reimbursement rates. The authors state that "severe shortages of mental health and substance-abuse providers trained to care for adolescents were reported in all four cities" (p. 16). In addition, the authors concluded that few inpatient psychiatric and substance-abuse

beds are available for adolescents and families in need. Adolescents who are deemed to have mental health “crises,” including an immediate need for substance-use treatment, are often hospitalized for extended periods of time awaiting more appropriate services. Those less fortunate typically end up in the criminal justice system where their chances for adequate treatment services are limited, and recidivism becomes a significant and very real possibility (Latessa, 2004). Indeed, the criminal justice system is responsible for the largest percentage of growth in a steady rise of substance-use treatment referrals since 1995. Between 1995 and 1998, the number of substance-abuse treatment admissions for adolescents in the United States rose by 46%, to 138,000 admissions of 12- to 17-year olds (Morral, McCaffrey, & Ridgeway, 2004). According to SAMSHA (2006), 50% of all adolescent substance-use treatment admissions and 55% of all adolescent admissions to long-term residential treatment programs were made by the criminal justice system. Recent alarming estimates suggest that 70.9% of adolescents in the juvenile justice system warrant a mental health diagnosis, and of these, 60.8% also meet the criteria for a substance use diagnosis (Shufelt & Coccozza, 2006).

When families are actively seeking substance-use treatment services, several barriers present themselves that make the goal of finding appropriate interventions difficult, meaning on an annual basis millions of youth requiring services do not receive them. According to the Public Health Services Office, in a report by the Office of the Surgeon General (2000) referencing research conducted on the broader mental health service utilization (of which substance-use treatment services were a part), a high proportion of young people with a diagnosable mental and/or substance use disorder do not receive any mental health services at all (Burns, et al. 1995; Leaf, et al. 1996). These findings follow a report conducted in the 1980s by the Public Health Services Office (1986), which also indicated that approximately 70% of children and adolescents in need of treatment do not receive the services they required. In the 1990s, Burns et al. (1995) concluded that only one in five children with a serious emotional disturbance utilized mental health specialty services, and the majority failed to receive any services at all. The most likely reasons for underutilization of mental health and/or substance-use treatment services are defined as ‘barriers,’ and include: a) perceptions that treatment was not relevant or was too demanding, b) an associated stigma with needing and utilizing mental health services, c) the reluctance of parents and children to seek treatment, d) dissatisfaction with services when they do seek treatment, and e) the prohibitive cost of treatment (Pavuluri, Luk, & McGee, 1996;

Kazdin & Crowley, 1997). These barriers are reinforced in the suggestion that that most adolescent treatment approaches for substance use disorders (SUD) are adaptations of adult models and may not be appropriate for youth (Winters 1999; Winters, Stinchfield, Oplans, Weller, & Latimer, 2000).

In summary, the “continuum of care” talked about by behavioral health-care experts that consists of services in schools, outpatient, inpatient, day treatment, and accessible residential facilities appears to be nebulous and extremely difficult to navigate for most adolescents and their families seeking treatment. The demonstrated historical demands, current lack of services, and barriers to treatment make it highly likely that innovative or alternative programs, and, more important, effective programs, will be increasingly utilized by families in search of help for their children. This increased demand also creates the likelihood that programs with little or no protective oversight could also be utilized by desperate parents and their children seeking treatment. If and when parents and families identify an appropriate treatment alternative, questions remain as to whether the intervention will be effective in helping to alleviate the problems warranting treatment. Research on adolescent substance treatment outcome has increased in the past years, lending insight into treatment models and interventions that are promising; yet convergent interpretations of the literature suggest more research is needed.

RESEARCH ON ADOLESCENT SUBSTANCE-ABUSE TREATMENT OUTCOME

There are comparatively fewer studies on adolescent substance-abuse treatment when compared to the over 1000 studies conducted on adult treatment (Miller et al., 1995). The limited research and, in many cases, poor methodological quality of studies make it difficult to draw distinctive conclusions as to which type of treatment programs are most suitable for adolescents. Despite these shortcomings, most reviews suggest that treatment is better than no treatment, but no conclusions can be made as to which treatment type may be better than others (Catalano, et al., 1990). In a detailed review of over 50 studies on substance-abuse treatment outcome, Williams & Chang (2000) state that “there is no evidence concerning the relative merits of treatment setting, treatment length, treatment intensity, treating homogeneous or heterogeneous populations, or whether certain types of adolescents are best treated by certain programs” (p. 159). More

research is needed to better understand treatment types and models to address these concerns, and Williams and Chang recommend several strategies for researchers to address the shortcomings in the literature, including providing detailed descriptions of the treatment services being researched, using improved and consistent substance use assessment procedures, and using common follow-up periods in research (6 and 12 months posttreatment). Recent research has begun to address the limitations outlined by Williams & Chang through evaluation of existing treatment and aftercare and transition programs using more rigorous research methodologies that shed light on current promising interventions and strategies (Kaminer, Burleson, & Goldberger, 2001, 2002; Godley et al., 2005).

One of the most comprehensive efforts to identify characteristics of adolescents in treatment and to evaluate outcomes across multiple settings is the Drug Abuse Treatment Outcome Studies for Adolescents ((DATOS-A), see www.datos.org). In one of several studies resulting from this project, Hser et al. (2001) found that substance-abuse treatment for adolescents is effective in achieving many important behavioral and psychological improvements, including reductions in marijuana use, heavy drinking, positive adjustment and school performance. When examining treatment outcome for adolescents with comorbid diagnoses, Grella, Hser, Joshi, and Rounds-Bryant (2001) found that comorbid youth (64% of sample) reduced their drug use and other problem behaviors after treatment. However, the study also noted that they were more likely to use marijuana and hallucinogens and to engage in illegal acts in the 12 months after treatment, as compared with the noncomorbid adolescents. The study concluded that integrated treatment protocols need to be implemented within drug treatment programs to improve the outcomes of adolescents with comorbid substance use and mental disorders.

Coupled with the limitations noted above are the conclusions by some researchers that most of the studies on adolescent treatment services have evaluated interventions that are described by Weisz, Weiss, and Donenberg (1992) as being *research therapies*. These therapies are reasoned to be theorized, manual driven, resource intensive, and implemented in research settings that offer intense training, supervision, and monitoring. Many of these treatments have been shown to be efficacious (see Winters, 1999, for discussion of proven strategies), yet few are implemented across the country by treatment centers and other service delivery providers because of diverse client needs, staff background and experience, resources and funding, and because most programs subscribe to a “multimodal model” of delivery, drawing on various treatment approaches and behavioral strategies to

effectuate change (Lamb, Greenlick & McCarty, 1998). Recent research addressing the implementation of research therapies has found mixed results. The Cannabis Youth Treatment study (Dennis et al., 2004) tested treatment conditions across multiple settings (a combination of motivational enhancement and cognitive behavioral treatment compared with a family support network model), found similar results across the three conditions, and concluded that outcomes may have been driven more by general helping factors beyond the specific treatment approaches tested. Godley et al. (2006) examined the critical role that aftercare plays in transitioning adolescents from brief intensive therapeutic settings to home environments in evaluating the effects of the assertive continuing care (ACC) program, and noted that ACC predicted superior early abstinence for adolescents with diagnosed substance use disorders. Despite these results suggesting successful research therapy implementation, challenges to providers still exist, leading to many promising interventions not being used by practitioners.

Treatment approaches that primarily draw on self-help principles based on experiential knowledge implemented by staff and counselors who have a history of drug and alcohol dependence and recovery have been termed 'community-based treatment' approaches (Morrall et al., 2004). These community approaches typically fall into one of two broad types: a) Minnesota model treatment, a residential outpatient or residential approach utilizing recovery steps from Alcoholics Anonymous, and b) therapeutic community treatment, an approach using behavioral consequences inherent in group living and phases to move participants through the program. Very few studies have been conducted on the effectiveness of community-based treatments that use "gold standard criteria" of controlled pretreatment conditions and random assignment of participants to treatment services. The primary reasons for this are ethical issues of randomizing control and treatment groups from consumers in need of treatment services, interruption of on-going service delivery, prohibitive costs of assessment and follow-up, because many private-pay consumers, educational consultants, and probation officers responsible for the care of adolescents are unwilling to agree to randomization because they want to have a say in what is best for the youth. Williams and Chang (2000) found just four studies that examined community-based treatment services and only one that used random assignment. The one randomized study contained only 73 subjects and found no difference in drug-use outcomes at 1 year between a group that received a residential psychoanalytic approach compared with a group that received outpatient probation supervision and basic follow-up services (Amini, Zilberg, Burke, & Salasnek, 1982). More recently, Latimer et al.

(2000) evaluated youth receiving residential, outpatient, or no treatment (not randomly assigned) at a large community-based program and reported no significant differences between pretreatment characteristics and post-treatment outcomes. In a second analysis of this study, the authors conclude that youths who received at least some treatment were less likely to report substance use at 12 months than the no-treatment group (Winters et al., 2000).

In one of the most comprehensive community-based treatment studies to date, Morral et al. (2004) compared outcomes from adolescent probationers who received treatment in the Phoenix Academy (a therapeutic community for adjudicated youth in probationary court-referred substance-use treatment) with those who received treatment in alternative probation dispositions using a case-mix strategy to control for pretreatment characteristics. The average length of stay at the Phoenix Academy was 162 days, while the average length of stay at the alternative dispositions was 169 days. These control groups were represented by six group homes not ascribing to the therapeutic community approach. The authors conclude that the Phoenix Academy “is associated with better outcomes than the average expected outcomes had the same youths received alternative probation dispositions” (p. 265). Reported outcomes included reduced substance use and improved psychological functioning, with the Phoenix Academy youths reporting outcomes that represented small to medium effect sizes. Two findings of particular interest were noted in this study. The first is that the Phoenix Academy participants reported steady reductions in psychological distress, with the authors suggesting that this is due to the development of effective coping strategies and the development of internal resources through the intense group-living model representing the approach. The second was the reported *increase* in tobacco use by the subjects, suggesting that therapeutic communities represent a recovery environment that facilitates tobacco use.

This review of treatment service delivery and the relative effectiveness of such delivery clearly indicate a lack of treatment services for adolescent in the United States, a stigma associated with current treatment options that present formidable barriers to families seeking treatment. “Research therapies,” as they are referred to in the literature, are not being widely implemented in communities in the United States, which are implementing interventions based on experience and resources available. These findings suggest the following regarding treatment services for adolescents in the United States. First, little research using rigorous research designs that include randomized assignment and control groups have been conducted on

community-based approaches, the primary delivery of substance-use abuse treatment in the United States. Several barriers to implementing these research designs were noted, including ethics of no treatment options, cost, difficulty in having parents and other custodial authorities agree to such a process, and the myriad pretreatment factors that can confound results. Moreover, what may be of particular interest to researchers and policy makers is how adolescents find programs and seek out services, which is lost in random assignment and is simply not the way the process works for families. Second, research has shown that there are little or no treatment differences between control and treatment groups in the few studies that did use appropriate designs, making it difficult to ascertain which approaches may be more appropriate for adolescents. Lastly, the study on the Phoenix Academy by Morral et al. (2004) represents potential outcomes from models that employ similar treatment approaches, namely the potential of programs that develop coping strategies and social skills in treatment through a social living milieu that is less restrictive and inherently motivating. Williams and Chang (2001) also suggest in their review of studies six guidelines for treatment providers in providing effective treatment options for families. They include: (a) readily available programs for large numbers of consumers, (b) procedures that minimize treatment drop-out and maximize treatment completion, (c) a concentration on posttreatment aftercare, (d) provision of comprehensive services other than treatment (e.g., school curricula, social skill development, health and wellness, family), (e) a focus on the family system through family based therapeutic approaches, and (f) aftercare plans that include parent and peer support (p. 160).

CASE STUDY: OUTDOOR BEHAVIORAL HEALTHCARE TREATMENT

Using these recommendations, and findings from the Morral et al. (2004) study, a case study is presented that highlights the ways in which private programs are meeting some of these needs and adhering to these recommendations. These programs number in the hundreds and remain largely underevaluated and a mystery to stakeholders in the area of substance-abuse treatment. The case study also highlights pretreatment characteristics of adolescents seeking these services and what likely outcomes may be a result of such treatment.

Outdoor behavioral healthcare (OBH) is an emerging treatment modality in mental health practice for adolescents with emotional, behavioral,

psychological, and substance-use disorders. The term *outdoor behavioral healthcare* refers to programs that subscribe to a multimodal treatment approach within the context of wilderness environments and backcountry travel to facilitate progress toward individualized treatment goals (Russell, 2003). The approach incorporates individual client assessment, individual and group psychotherapy conducted and/or supervised by licensed clinicians, and the development of individual treatment and aftercare plans. While incorporating these core elements of established psychotherapy and substance-abuse treatment, OBH programs apply principles of wilderness therapy, which contain the following key elements that distinguish it from other approaches: (a) extended time in a wilderness setting that provides for removal from cultural influences, immediate and natural consequences, and the promotion of self-efficacy and personal autonomy through task accomplishment; (b) implementation of an individualized treatment plan facilitated by a treatment team utilizing a wilderness context measured by tangible and concrete indicators of success, (c) a restructuring of the therapist-client alliance and development of a unique therapeutic relationship through shared experience between client and staff; and (d) complete immersion in a social/peer group focused on long-term positive change and working toward common goals. OBH programs have become popular because they combine psychotherapy, family work, and traditional drug and alcohol treatment approaches with elements of a wilderness challenge to provide an alternative for resistant adolescents unwilling to commit to traditional treatment. This is especially relevant given current reported demands for behavioral healthcare services.

Depending on definitions, there are over 150 programs currently operating in the United States that fit the description presented above for an OBH program. OBH programs appear to be moving toward professionalization and have begun to form national associations, such as the National Association of Therapeutic Schools and Programs. According to a recent national survey of programs, almost 90% of these programs are licensed by state agencies, and over 60% are nationally accredited by the Joint Commission or the Council on Accreditation (COA) (Russell, 2007). Combined, they treat thousands of adolescents a year, a conservative estimate based on actual adolescent admissions of known programs. Estimates have ranged from 30,000 to 50,000 clients a year (Cooley, 2000). The growth and popularity of these programs underscores the need for such services and highlights the critical need to provide outcome and safety assessment of these private programs to inform parents and consumers of their relative safety and effectiveness. Though some research and evaluation has been

conducted (see Behrens and Satterfield, 2006; Russell, 2002, 2003, 2005) more research is needed to determine which types of adolescents are most suitable for treatment, and to compare the relative effectiveness of the intervention to other traditional treatment types. OBH programs were chosen as an illustrative case study for this paper because the intervention reflects the Phoenix Academy approach in focusing treatment on the development of coping, resiliency and social skills outlined by Morral et al. (2004) through the use of group living in natural and wilderness environments.

An assessment of five OBH treatment programs was launched in 2003 and included a census of all adolescent clients admitted to treatment during one calendar year (2003–2004) in five programs operating in Oregon, Utah, Arizona, and Illinois that averaged 45 days in length. All five programs (Anasazi, Aspen Achievement Academy, Catherine Freer Wilderness Therapy, RedCliff Ascent, and OMNI Youth Services) are licensed by their respective state agencies and accredited by a national accreditation agency. The goal of the assessment was to better understand the pretreatment substance-use characteristics of adolescents entering these programs and to conduct a basic assessment of substance-use frequency outcome at 6 months posttreatment.

Specifically, the assessment focused on: a) the readiness and motivation to change problem behaviors of adolescent clients at admission and discharge, including treatment satisfaction at discharge; and b) clients' substance-use histories and the prevalence of substance-use disorders at admission, discharge, and follow-up. Assessing motivation to change was based on studies that suggest that most adolescents who enter treatment do so through coercion by parents or other authorities (Winters and Stinchfield, 1995) and that coercion into treatment is a significant barrier to change (De Leon et al., 1994; De Leon et al., 1997; Melnick, De Leon, Hawke, Jainhill, & Kressel, 1997). Assessing substance-use prevalence and outcomes was based on a desire to better understand client-use histories seeking these services and to identify OBH treatment outcome on adolescents with diagnosed substance-use disorders (SUD).

PROFILE OF OBH CLIENTS

A total of 872 clients entered treatment in these five programs during the study recruitment period. A total of 774 agreed to participate in the study, yielding an 89% recruitment rate. The median treatment length was

49 days, which was used to describe the typical treatment length because of severe outliers in the sample. The treatment length ranged from 2 days to 300 days, with nine clients spending over 200 days in treatment. No data are available on the 112 subjects who declined participation in the assessment. This was because study protocols dictated that no demographic data would be collected on subjects who did not agree to participate. Of the 774 clients who agreed to participate in the study, 53 did not complete treatment, a 93.2% rate of treatment completion (successfully completing the program based on the individual treatment plan and being discharged to parents and or other custodial authorities).

Results are presented by analyses associated with each specific aim, including (1) client characteristics, (2) motivation to change illustrated by cluster profiles, (3) discharge stages of change illustrated by cluster profiles, (4) psycho-social factors surrounding substance use and substance use frequency characteristics, and (5) 6-month follow-up results.

CLIENT CHARACTERISTICS

The study population was predominantly male (68%), Caucasian (81%), between ages 16 and 17 (67%) and are reasoned to be from middle-class socioeconomic backgrounds (see Russell, 2003), though this study did not collect data on socioeconomic status. The average age of the OBH client was 15.9; only 3.4% were under the age of 14. More than 90% of all OBH clients were either diagnosed or entered treatment with an existing diagnosis (as specified by the DSM-IV). One fifth were diagnosed with only a mental health diagnosis (21%), one quarter with a substance-use diagnosis (25%) and one half were concurrently diagnosed with both a substance-use and a mental health diagnosis (50%).

Most clients in OBH treatment have tried prior treatment services before making the decision to enter OBH treatment. This is an important finding and suggests that most adolescents had tried other forms of treatment that were not successful. Three-quarters of all clients in this sample had tried at least some form of outpatient counseling, defined as a periodic visit to a mental health professional to help address problems the adolescent was experiencing while still residing in a home environment. A much smaller percentage (23%) had tried inpatient treatment services, defined as some type of clinical residential setting to address any problems the adolescent was experiencing. A total of 160 clients had tried both types of services before OBH treatment (21%).

CLIENT MOTIVATION: STAGES OF CHANGE

It is reasoned that most adolescent clients in OBH treatment have been at least partially coerced into entering treatment by external influences, such as parents, mental health professionals, or school officials, which likely impacts their likelihood of treatment success (Pompi, 1994; Pompei & Resnick, 1987; Winters, 1999a). This study assessed the adolescent's motivation to change using the University of Rhode Island Change Assessment Scales developed by Prochaska and Di Clemente (1983). The URICA assesses readiness to implement major lifestyle changes across four well-supported factors that are defined as (1) precontemplative, (2) contemplative, (3) action, and (4) maintenance (Belding & Iguchi, 1996; Pantaloni & Nich, 2002). Clients do not fall into one discrete category on the URICA (e.g., precontemplative) indicative of a specific stage. Rather, Prochaska and DiClemente (1983) developed "profiles" based on their scores in each of the stages were used as templates in this study to create similar profiles. This study assessed participating clients' willingness to change as they entered OBH treatment and again at discharge and then "clustered" these into profiles using an analytic strategy that consisted of two types of cluster analysis. After data cleaning, omitting partial responses, and screening for outliers, a total of 665 of the 774 URICA assessments was analyzed (85.9%) at admission, and a total of 624 (81%) at discharge.

Hierarchical cluster analysis produced three distinctive cluster profiles *that were evident at admission*, defined using supporting characteristics and terminology from McConaughy and Prochaska (1983) as (1) *Uninvolved*, (2) *Reluctant*, and (3) *Participating*. At discharge, three clusters were again identified and defined as (1) *Reluctant*, (2) *Participating*, and (3) *Maintenance*. After clusters were developed, k-means cluster analysis was performed to categorize each client into one of the clusters based on his or her standardized scores on each of the four subscales.

The profile with the highest frequency ($N = 293$ or 44%) was the *Uninvolved* profile, that is characterized by average scores across all four URICA subscales (see Table 1). Clients are theorized to demonstrate a lack of action on addressing any of their problems and are not actively thinking about their problems. They are merely going through the motions and maintaining the status quo. The second most represented profile was the *Reluctant* cluster, which consisted of 29% of the sample with higher than average scores on the Precontemplation subscale, and lower than average scores in Contemplation, Action and Maintenance. This group is characterized as being reluctant to take action on a problem, although

TABLE 1. Cluster Names, Definitions, and Number of Clients Classified Based on Hierarchical and K-means Cluster Analysis Techniques for a Sample of OBH Participants at Admission

Cluster Name	Definition	Frequency	Percent
Uninvolved	Not contemplating change Not engaging behaviors to change Maintaining the status quo	293	44.1%
Reluctant	Reluctant to take action on a problem A sense they might be thinking about it No commitment to change	191	28.7%
Participating	Not ignoring the presence of a problem Engaged in thinking about the problem Taking some action in changing the problem Maintaining some of these actions	181	27.2%
	Total	665	100%

they have begun to think about it to some degree. However, there is no commitment on the part of the client to want, or need, to change any behavior.

The third cluster, represented by 27% of the population, was termed the *Participating* cluster and is comprised of clients that have higher than average scores on Contemplation, Action, and Maintenance and lower than average scores on Precontemplation. This group consists of clients who are directly engaged in addressing a known and understood problem and have begun to take action to change and to help them maintain that change. These clients are considered to be highly motivated to want to change. In summary, at admission time, almost three quarters (73%) of all OBH clients were not participating in treatment and either were ignoring that a problem might be present and not thinking about change or had just begun to think that a problem exists. Only one quarter of this sample was actively participating in the process and would be considered motivated, suggesting that significant barriers were in place at the initial stages of treatment.

DISCHARGE STAGES OF CHANGE CLUSTER PROFILES

Clients' readiness to change was also assessed at discharge to test the hypothesis that the majority would have moved to a *Participating* or *Maintenance* profile. This hypothesis was largely supported, with over 90% of

all clients being in the *Participating* or *Maintenance* profiles, the absence of the *Uninvolved* cluster completely, and small percentage remaining in the *Reluctant* profile (9%). Thus, though these clients were very unmotivated at admission to treatment, the majority had shifted to an awareness of problem issues in their lives and had begun to actively work on these problems.

ASSESSING SUBSTANCE USE FACTORS AND FREQUENCY

The Personal Experience Inventory (Winters & Henley, 1989). was utilized to create a comprehensive and standardized self-report inventory of substance-use history. The PEI consists of two primary sections, as well as several validity indices. The first section is called the Chemical Involvement Problem Severity section and is the focus of this case study; it consists of 153 questions that are organized into five basic scales and five clinical scales. A follow-up assessment used a shorter version of the instrument to assess specific aspects of substance use posttreatment and certain psychosocial issues surrounding use. As with any self-report assessment involving adolescents, there is a risk of over- or underreporting of behaviors given the nature of the questions and the respondent issues. The PEI has been shown to be an excellent instrument to assess substance use and associated psychosocial factors (see Winters & Henley, 1989, for detailed overview of the development and psychometric qualities of the PEI).

Results will be presented based on these three classifications of clients: (1) those who were diagnosed with only a substance-use diagnosis (reasoned to be more frequent users), (2) those who were concurrently diagnosed with at least a substance-use diagnosis, and (3) those who were not diagnosed with a substance-use diagnosis (those who had no diagnosis are included in this group for simplicity).

RESULTS FOR CHEMICAL INVOLVEMENT PROBLEM SEVERITY

The Basic Scales in the PEI contain five subscales that assess (a) Personal Involvement with Chemicals (PICS), (b) Effects from Drug Use (Effects), (c) Social Benefits of Drug Use (Social Benefits), (d) Personal Consequences of Drug Use (Consequences), and (e) Polydrug Use (Polydrug). The normalized scores used in this descriptive analysis are from a

TABLE 2. Key Scales of the Personal Experience Inventory (PEI)

Chemical Involvement Problem Severity Section
<i>Basic Scales</i>
Personal Involvement with Chemicals
Effects from Drug Use
Social Benefits of Drug Use
Personal Consequences of Drug Use
Polydrug Use
<i>Clinical Scales</i>
Social Recreational Drug Use
Psychological Benefits of Drug Use
Transituational Drug Use
Preoccupation with Drugs
Loss of Control
<i>Drug Use Frequency, Duration and Age of Onset</i>
Alcohol beverages, Marijuana or hashish, LSD and Psych, Cocaine, Amphetamines, Quaaludes, Barbiturates, Tranquilizers, Heroin, Opiods, Glue, Age of Onset

sample of adolescents developed by Winters and Henley (1989) to detect differences in PEI scores for a variety of adolescents in different settings and serve as benchmarks with which to compare OBH client scores. The *Residential Treatment Sample* (RT) ($N = 141$) resembles adolescents referred to residential drug clinic treatment, and the *No Treatment Sample* (NT) ($N = 47$ respectively) reflects adolescents from “normal” school settings. OBH scores on each subscale are presented based on diagnosis at admission to treatment for comparison purposes.

Table 2 shows that for each subscale the three diagnosis groups used to categorize subjects in this study (Substance, Mental Health, and Concurrent) differed significantly ($F[2, 654] = 27.58, p < 0.001$). Post hoc analyses showed that the Substance and Concurrent groups reported significantly higher scores (and thus have more serious issues in these domains) on these subscales than the Mental Health group. Finally, the Mental Health group was not shown to be statistically different from the RT sample noted above on all five scales. The OBH Substance group scored significantly higher than the normed RT group ($t = 4.34, p < 0.001$), indicating that the OBH sample may be more psychologically and behaviorally involved in drug-use than this sample. These results suggest that OBH clients have significant use histories with substances and present to treatment with

TABLE 3. Scores on PEI Subscales for a Sample of OBH Participants Compared to Samples of Typical Adolescents and those Referred to Residential Treatment using ANOVA

Scale	Group ¹	Frequency	M	SD	F	P	M No Treatment ²	M Residential Treatment ²
PICS	Substance	152	73.92	20.23	27.58	<.001	53.47	78.54
	Concurrent	270	72.78	21.35				
	Mental	127	49.91	24.13				
Effects	Substance	152	19.95	7.24	12.20	<.001	15.70	21.54
	Concurrent	270	20.53	7.24				
	Mental	127	15.30	6.65				
Social benefits	Substance	152	15.59	5.67	1.91	<.001	12.84	17.42
	Concurrent	270	16.12	5.94				
	Mental	127	11.87	4.98				
Consequences	Substance	152	18.97	5.98	14.90	<.001	14.32	19.68
	Concurrent	270	18.76	6.28				
	Mental	127	14.20	4.99				
Poly Drug	Substance	152	17.63	5.98	12.99	<.001	11.20	15.52
	Concurrent	270	16.00	6.25				
	Mental	127	12.72	5.51				

¹These groups are based on whether the client was diagnosed with a substance use diagnosis, a concurrent diagnosis of substance and mental health, or just a mental health diagnosis.

²The no primary treatment and residential treatment samples were used by Winters and Henley (1989) to discriminate PEI scores for adolescents found in different settings.

symptoms that are similar to adolescents being referred to residential drug treatment.

CLINICAL SCALE RESULTS

The Clinical Scales contain five subscales that assess (a) Social Recreational Use (Social Use), (b) Psychological Benefits of Drug Use (Psych Benefits), (c) Transituational Drug Use (Trans), (d) Preoccupation with Drugs (Preoccupation), and (e) Loss of Control (Loss of Control). Similar normalized scores were used to compare OBH clients to those of Winters and Henley (1989). Table 3 shows that for each subscale the three groups also differed significantly as evidenced by high F values and significant

statistical differences between groups ($p < 0.001$). Post hoc analyses showed that the Substance and Concurrent groups also scored significantly higher than the Mental Health group on the Clinical Scales. The Mental Health group reflected the NT referral group on all five of the clinical scales. An illustration of these findings compares high and low scorers on the Psych Benefits scale, which pertains to the use of chemicals to reduce negative emotional states, such as loneliness, depression, boredom, anxiety, and use related to promoting positive emotional states, such as happiness or tranquility. The OBH group scored consistently higher on this scale, suggesting frequent use to manage undesirable emotional states and/or to enhance or bring about pleasurable states. Lower scorers do not report use to influence their emotional states. (For further descriptions of the PEI and its subscales, see Winters and Henley, 1989).

DRUG USE FREQUENCY

The PEI scale also measures the use of a variety of drugs in the adolescent's lifetime, in the last year, and in the last 3 months prior to enrollment in treatment. Results showed that on average alcohol, marijuana, and to a lesser degree cocaine and amphetamines were the most-used substances presented by the three diagnosis types in the previous 3 months prior to entering treatment. Consistent with diagnosis, Concurrent and Substance groups reported significantly higher rates of substance use in the previous year than the Mental Health diagnosis group. When asked a specific question about alcohol (*On the occasion that you drink alcoholic beverages, how often do you drink enough to feel pretty high?*) three quarters of substance and concurrent diagnosis OBH clients' responded "most of the time," and "nearly all the time." Half the Mental Health group responded that they drink alcohol to feel high half the time or more. On average the substance and concurrent diagnosis group began using alcohol regularly in Grade 7 and marijuana regularly in Grade 10.

SIX-MONTH FOLLOW-UP RESULTS

A 6-month follow-up assessment was conducted on a random sample of clients who agreed to participate in the study upon admission into OBH treatment. A sample size of 257 was required to test the equality of mean treatment scores across relevant outcome domains that could yield a power of 0.90 at a 0.01 significance level (Cohen, 1988). A total of 260 parents and

youth were randomly selected from the initial database of clients, contacted across the participating programs, and asked to participate in the follow-up assessment. This was done using therapists who were responsible for the client while in treatment and also responsible for making follow-up contacts with clients and families posttreatment. Parents were first contacted and asked if they would participate and then provided the therapists with adolescent contact information. The clients were then contacted and asked if they would participate. After receiving permission, identifying participation, data cleaning and management, including screening for outliers, a final sample of 243 clients was obtained across the five participating programs.

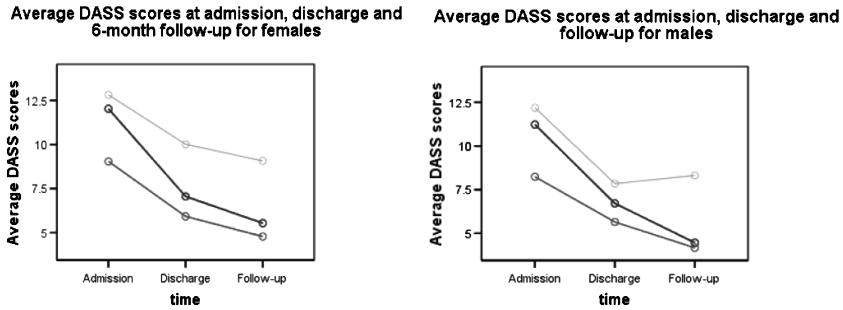
OUTCOMES AT 6 MONTHS

Specific outcome variables were analyzed at 6 months: (1) URICA stages of change scores cluster analyzed into sample profiles at 6 months; (2) depression, anxiety, and stress scores at 6 months compared with discharge scores; (3) substance use frequencies scores at 6 months; and (4) psychosocial indicators of substance use (assessed through a modified and significantly abbreviated Personal Experience Inventory measure).

URICA T-scores were again cluster-analyzed using the same methodology reported in the previous sections. Two clusters emerged from the analysis indicating two distinct profiles of the 229 clients for whom complete URICA assessments were useable after data cleaning and screening. Two profiles were developed and defined as (1) Participating ($n = 182$) and (2) Reluctant ($n = 47$). Both profiles reflected earlier profiles developed at admission and discharge. The Participating cluster is defined as those clients who scored higher than average on contemplation, action, and maintenance and lower than average on the precontemplation subscale. The Reluctant profile illustrates those who scored higher in precontemplation and lower in the other three scales. This analysis suggests that most clients were in the participating stage, actively addressing problem issues identified in the initial treatment process and acting on them in their aftercare environments, whether home or residential.

To examine changes in depression, anxiety and stress scores, a two-way within-subjects ANOVA was conducted on the three subscales across three time periods (see Figure 1). The time main effect and gender-by-time interaction effect were tested using the multivariate criterion for Wilks's lambda (λ). The time main effect was significant at $\lambda = 0.799$, $F(2, 207) = 25.98$,

FIGURE 1. Average DASS Scores at Admission, Discharge, and Six-month Follow-up for Males and Females.



$p < 0.001$. Post hoc pairwise comparisons showed significant differences between pre- and posttreatment for all three subscales for males and females ($p < 0.01$). From post to the follow-up period, females showed significant differences on the stress subscales, with depression and anxiety not showing significant change (although Figure 1 illustrates a real reduction in scores, which also reflect continued improvement in these areas; however, they were not statistically significant). Males showed a significant increase in stress from post to follow-up, coupled with significant reduction in depressive symptoms. No significant differences were found between post and the follow-up in anxiety for males. Gender by time was not significant, meaning that score changes across the three subscales were similar for males and females. Analysis of real changes in scores shows that Stress increased slightly for males and did not continue to improve at the same rate for females but remained in the mild categories for both genders. All three subscale scores remained in the mild category for both genders at 6 months, suggesting maintenance or continued improvement in these domains after treatment. No significant differences were found between those who utilized inpatient or outpatient services for aftercare across these three domains.

Seven of the original subscales were utilized in the 6-month follow-up to assess related psychosocial indicators and effects of substance use, as well as the actual use frequencies across a wide range of substances. Table 4 shows scores for the five basic subscales at admission and at the 6-month follow-up from treatment for the three diagnosis groups, and those not diagnosed, used in the initial analysis of PEI scores. For the PICS scale, which measures an individual's psychological involvement with chemicals,

TABLE 4. Scores on the Basic Scales of the PEI for a Sample of OBH clients, Including Results from a Pairwise Comparison of Pretreatment to Posttreatment Scores Presented by the Three Diagnosis Groups

Scale	Group ¹	Frequency	M_1	M_2	t	P
PICS	Substance	56	75.64	52.57	-4.66	<.000*
	Concurrent	98	70.94	54.86	-4.73	<.000*
	Mental	43	55.49	57.40	.401	.690
	None	21	56.09	51.95	-.504	.620
	Total	218				
Total Effects	Substance	56	21.48	16.55	-3.43	<.001*
	Concurrent	98	20.49	17.07	-3.07	<.003*
	Mental	43	17.09	17.56	.308	.759
	None	21	16.71	16.95	.092	.927
	Total	218				
Social Benefits	Substance	56	16.13	12.09	-3.56	.001*
	Concurrent	98	14.86	12.78	-2.36	.020
	Mental	43	13.86	14.33	.342	.734
	None	21	12.57	11.86	-.359	.723
	Total	218				
Consequences	Substance	56	19.19	15.64	-2.89	.005*
	Concurrent	98	16.95	14.86	-.471	.638
	Mental	43	15.02	17.37	1.70	.096
	None	21	15.19	17.10	.795	.436
	Total	218				
Poly Drug	Substance	56	19.36	12.52	-5.27	<.001*
	Concurrent	98	16.54	13.53	-3.14	.002*
	Mental	43	14.37	13.77	-.418	.678
	None	21	16.09	13.29	-1.34	.194
	Total	218				

* Significant differences between pre-treatment and 6-month follow-up scores at $p < .01$. Groups refer to categorized diagnoses classes at admission, being either substance only, mental only, or a concurrent diagnosis with each.

both the Substance and Concurrent diagnoses group showed significant changes in scores from pre- to posttreatment. The Mental Health and No Diagnosis groups showed no significant differences in scores from admission to follow-up and also showed a real increase in scores across all five scales. This increase in real scores, though in each case not statistically different from admission scores, was evident in each of the five subscales for the Mental Health and No Diagnosis groups. The Substance group showed

TABLE 5. Results from a Pairwise Comparison of Pretreatment to Posttreatment PEI Scores according to Three Diagnosis Groups for OBH Participants

	Diagnosis Group	Frequency	Percent Never		Percent Once or Twice		Percent More than Three Times	
			Pre	Post	Pre	Post	Pre	Post
Alcohol								
	Substance	56	9.1	43.5	21.8	14.5	69.1	39.4
	Concurrent	98	15.1	47.2	25.6	14.2	59.3	38.7
	Mental	43	35.0	34.0	12.5	21.3	52.5	44.7
	None	21	30.0	38.1	20.0	14.3	50.0	47.6
	Total	218						
Marijuana								
	Substance	56	24.1	41.9	13.0	22.6	63.0	35.5
	Concurrent	98	19.3	53.8	12.5	19.8	68.2	26.4
	Menial	43	55.0	46.8	7.5	25.5	37.5	27.6
	None	21	38.1	52.4	4.8	9.5	57.1	38.1
	Total	218						

significant reductions in each of the five subscales, while the Concurrent diagnosis group showed significant reductions in the PICS, Effects, and POLYDRUG subscales, which measure the immediate psychological, physiological, and behavioral effects of chemical use, most of which refer to negative or aversive states and feelings. Once data were cleaned and screened for outliers, 218 of the 243 follow-up clients provided assessments (89.7%).

The abbreviated PEI used to assess substance-use frequency at the 6-month follow-up period contained items that asked respondents to rate the frequency in which they utilized a variety of substances. Table 5 shows the percentage of respondents, classified by diagnosis type, who stated that they had not used alcohol or marijuana in the past 3 months, had used once or twice, or had used more than three times. (The percentage of respondents who reported use in the more severe drug categories was very small, with the majority reporting no use). An ANOVA comparing the average use between the three groups at the 6-month follow-up period showed no differences in alcohol or marijuana use frequency. The percentages also illustrate: (a) the percentage of respondents who reported not using increased significantly for the Substance and Concurrent groups for both alcohol and marijuana use and decreased slightly for the Mental group;

(b) the percentage of those who used more than three times in the previous 3 months decreased as a result of treatment for the Substance and Concurrent groups, but not necessarily for the Mental group; (c) lower marijuana use by all groups was a trend at the 6-month follow-up period; (d) approximately one third of all respondents at the six-month follow-up period reported no use during the previous 3 months; (e) over 50% of all groups reported using alcohol three or more times in the previous 3 months at follow-up, (f) all groups (Substance 54%; Concurrent 53%; Mental 66%, and No Diagnosis 62%) report between 53% and 66% had used alcohol at least once in the previous 3 months; (g) Almost 60% of all Substance and 55% of the Concurrent group respondents had used marijuana at least once. Pairwise comparisons of average responses for all respondents showed a significant reduction in the use of both alcohol ($t = 3.42$, $p < 0.001$) and marijuana ($t = 8.63$, $p < 0.001$), which was consistent for all groups as evidenced by no differences found in a three-way ANOVA of average responses to these two items.

LIMITATIONS

There are several limitations to this study presented as a case study of adolescent treatment. First, no random assignment was used and there was no control group identified. To help address this issue, a large sample size was drawn and standardized instruments were used to compare treatment outcome. Some clients did not agree to participate in the study ($N = 98$ of the 872 clients), potentially biasing the results, though this group only represents 11.2% of the total study population. No further data was available on the clients who did not agree to participate in the study. There also were clients who entered treatment and did not complete all the assessments. These small samples (percentages of noncomplete data sets varied from time to time) were checked against complete data sets for significantly distinguishing characteristics. Any significant findings will be reported along with other results from the study. It has also been suggested that the majority of the study sample may have been coerced into treatment. Though this was not directly asked (e.g., were you coerced into coming to treatment?), the URICA assessment did allow a check of this factor to determine its relationship to outcome. In essence, this dynamic has been integrated into the study to explore its potential effect. It is therefore possible that study participants may have minimized their self reports of alcohol and other drug use history at admission assessment (Hesselbrock, Babor, Hesselbrock,

Meyer, & Workman, 1983). To address this issue, the assessment asking adolescents to describe their previous drug use prior to entering treatment was taken at the midpoint in treatment and was used as a therapeutic tool by each program to help them focus treatment goals and aftercare plans. Program staff reported that clients used the assessment and it was a valuable treatment tool to assess historical use of substances. Some concerns about self-report are alleviated by a growing body of literature that suggests drug use self-report is a valid assessment strategy (Stinchfield, 1997; Winters, Stinchfield, Henley, & Schwartz, 1991), despite findings that not all individuals will validly self-report (Johnson et al., 1986; Winters et al., 1991).

DISCUSSION

This paper presents an overview of challenges facing adolescent substance-abuse treatment delivery in the United States. The good news is that adolescent substance use continues to decline, which will likely put less stress on a seemingly overburdened delivery system. The challenges are that most adolescents requiring treatment are not receiving treatment, and that more easily identifiable direct services in home communities are needed. Also needed are new and innovative treatment strategies to address hard-to-reach adolescents who are not successful in more traditional community-based interventions. The challenge comes in developing efficacious interventions and making them readily available to families and communities consistent with the recommendations put forth by Williams and Chang (2001). To accomplish this, large-scale evaluations of treatment models will need to be conducted following assessment strategies outlined by Morral et al. (2004) that seek to control and adjust for outcome differences based on assessed pretreatment characteristics that are known to affect outcome differentials.

The detailed case study assessing five outdoor behavioral healthcare programs showed that alternative treatment programs are being developed by the private sector to meet the demands of private-pay consumers looking for alternatives. Though some positive outcomes were identified, including a shift in motivation and a significant reduction in substance-use frequency posttreatment, the study had several limitations and generated several interesting questions that highlight the need for research into these types of innovative treatment options for adolescents. Several interesting conclusions were generated from the case study that would seem to warrant further investigation. First, OBH treatment showed a 93% completion rate

of treatment for adolescents who were shown to be extremely unmotivated at admission but had shifted to a more pronounced desire to change depreciative behaviors at discharge. This completion percentage is significantly higher than other treatment options and may be appropriate for adolescents unwilling to commit to more structured treatment. Second, most adolescent clients were unmotivated and most had been coerced into treatment by parents or other adult figures in their lives. This is supported by the findings developed through analysis of the stages of change profiles that indicated that the majority of clients were in the reluctant and unmotivated profiles at admission. Third, many clients had shifted their willingness to change at the end of treatment and had begun actively working on their issues. Further supporting this finding is the data that show that 75% of all clients were engaged in some type of aftercare treatment after completion of the program. Fourth is the finding that adolescents seeking these alternative treatment options have significant substance-use issues evidenced by PEI scores; and, moreover, the majority of these adolescents had tried other forms of treatment that are reasoned not to have worked for them. They simply needed something different than traditional residential or outpatient talk therapy could provide. This finding is critical and one that should be looked into with further research. Finally, some positive outcomes were noted but should be treated with caution due to the limitations inherent in the study, namely, that there was no comparable control group used and that the only data available was self-reported by adolescents. Together, these findings suggest that alternative treatments for adolescents should continue to be evaluated, developed, and identified, making the suggestions put forth by Williams and Chang and other researchers in the area of substance-abuse treatment research a reality for parents and adolescents seeking these services.

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