

# Recruitment and Retention of Adolescent Women in Drug Treatment Research

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## INTRODUCTION

Although randomized clinical trials (RCTs) are universally regarded as the standard for establishing treatment efficacy (Shapiro and Louis 1983), relatively few RCTs have been attempted in the field of outpatient drug abuse treatment. Of those that have been attempted, most have reported subject recruitment and retention to be among the most pervasive problems encountered. Considerable attention has been devoted to the issue of subject retention (Carroll et al. 1991; Howard et al. 1990, pp. 66-79; Gainey et al. 1993; Kleinman et al. 1990, pp. 24-38). However, relatively little is known of the specific problems associated with recruiting and retaining adolescents in drug treatment studies. Given that most drug abuse problems begin in adolescence (Kandel and Logan 1984; O'Malley et al. 1984), a better understanding is required of the needs of these potential clients and the methodological issues involved in recruiting and keeping them in drug treatment studies.

This chapter examines the issues of recruitment and retention of adolescents in drug treatment studies, with a particular emphasis on the experience of one of the Perinatal-20 studies that deals exclusively with adolescent women between ages 14 and 19.

## RECRUITMENT

### Subject Recruitment in Drug Treatment Clinical Trials

Subject recruitment depends on natural constraints on the pool of available subjects and on decisions made by both the investigator and prospective clients. Only a minority of persons with drug abuse problems participate in drug treatment programs, experimental or otherwise, and those who do so are not representative of the entire population of drug abusers (Carroll and Rounsaville 1992; Howard et al. 1990, pp. 66-79). Moreover, failure to recruit a sufficient number of subjects within the specified timeframe has several consequences, including disruption of established timetables; reallocation of scarce personnel and other resources to increase recruitment

efforts; a weakening of the intervention's therapeutic power, especially in interventions requiring group participation, if the groups are chronically undersized; a reduction in the study's sample size and power to detect statistically significant differences; and a reduction in staff morale (Ashery and McAuliffe 1992).

Three factors have been identified as contributing to problems in subject recruitment in drug treatment studies. The first pertains to the motivation and willingness of individuals with drug abuse problems to participate in such studies. Howard and colleagues (1990, pp. 66-79) note that prospective clients with drug abuse problems usually make their own assessments of the probable costs and benefits arising from study participation and agree or decline to participate for their own reasons. "For example, they may not think that the kind of treatment offered is relevant to their condition or consistent with their values. Further, their motivation to volunteer for research may be related to their motivation to recover (Cox and Klinger 1988) and hence interacts with the treatment condition to which they are assigned" (Howard et al. 1990, p. 69). Clients may be reluctant to volunteer for treatments that are unfamiliar to them or to engage in the role of a "guinea pig" by virtue of participating in an experimental form of treatment (Ashery and McAuliffe 1992). This is especially true with behavioral interventions. "Relatively unmotivated clients seem to find chemotherapies (such as methadone detoxification and maintenance) and short-term residential treatments more attractive than outpatient drug-free, psychosocial treatments" (Ashery and McAuliffe 1992, pp. 312-313).

A second factor contributing to difficulties in recruiting subjects for drug treatment RCTs lies in the selection (inclusion and exclusion) criteria established by the investigators. Subjects often are selected on the basis of age, sex, diagnosis, history and severity of condition, presence or absence of psychiatric comorbidity, or suitability (either for reasons of relevance to the problem under study, ethical reasons, or the sake of convenience) (Ashery and McAuliffe 1992; Howard et al. 1990, pp. 66-79; Carroll and Rounsaville 1990, pp. 91-104). Selection criteria often have the practical consequence that more individuals are excluded than included, making it difficult to obtain large samples for sufficient statistical power to detect significant differences generalizable across a larger population.

A third factor is that drug treatment studies are frequently hampered by institutional constraints in selecting and recruiting potential participants. These constraints include fewer abusers than anticipated in an area, difficulties reaching abusers, slowness of developing referral networks, caution by referring counselors in accepting a new treatment form, and

problems in collaborating with treatment agencies (Ashery and McAuliffe 1992).

Drug treatment studies for adolescents face additional recruitment problems. Adolescents are more likely to be gateway drug abusers (alcohol, marijuana, tobacco) than regular users of opiates, cocaine, hallucinogens, and other “heavy” drugs (Dusenbury et al. 1992, pp. 832-842). Consequently, the problem of finding sufficient numbers of “abusers,” as reported in other RCTs, becomes magnified in recruitment of adolescents.

The pattern of drug use among adolescents also has implications for willingness to participate in drug treatment programs. A study by McAuliffe and colleagues (1991) found that only 4 percent of adults who met clinical criteria for marijuana abuse in a survey of drug abuse in Rhode Island had ever sought treatment. In contrast, 65 percent of opiate abusers had sought treatment at some point. Because most adolescents are gateway drug abusers, they may be reluctant to seek treatment for what they do not perceive to be a serious drug problem, a perception reinforced by the fact that a large percentage of their peers are also gateway drug abusers.

Another problem faced by RCTs of drug treatment interventions is that unless legally emancipated, most adolescents are considered “minors” and require parental approval before participating in an RCT. When drug-using adolescents are dealt with, this approval can be difficult to secure for several reasons, including the absence of a parent or legal guardian, reluctance of parents to admit that their children are abusing drugs, lack of information, inability to communicate with parents and guardians regarding the objectives of the study, unclear requirements for participation, and anticipated risks and benefits.

Finally, as has been the case with treatment programs for women in general, most drug treatment programs have difficulty recruiting adolescents because these programs are not structured to meet the specific needs of this client population. With respect to teenagers, these needs include continuing education, child care services, job training, social skills training, and so on.

On the other hand, family ties and social networks can facilitate recruitment of adolescent subjects. Parents can be a powerful influence in motivating an adolescent to participate in a drug treatment study. Social networks also can help in this regard, especially when adolescents who have already participated in a study communicate their experience to peers, encouraging them to participate also.

## Recruitment of Adolescents in Project PALS

The purpose of Positive Adolescent Life Skills (PALS) is to evaluate the effectiveness of social skills development and social network restructuring and case management for two groups of adolescents: (1) pregnant adolescent females who are using drugs or who are at risk for using drugs and (2) nonpregnant adolescent females who are either using drugs or at risk for using drugs and who are at risk for pregnancy.

After screening, teens are randomly assigned to one of two skills training conditions: (1) PALS skills training or (2) no skills training. These groups meet for 90 minutes once each week for 16 weeks. Teens in each of these skills training conditions also are randomly assigned to one of two case management conditions: (1) casework (case management by master's-level social workers) or (2) no case management. All teens participate in an educational course called the "Facts of Life," which covers the consequences of drug use, child and adolescent development, and sexual responsibility. Thus, teens assigned to the PALS skills training condition also attend the 90-minute Facts of Life class once each week for 16 weeks. Each session is taught by a nurse practitioner or clinical social worker.

Based on a model developed by Catalano and Hawkins (1985, pp. 157-181), the PALS skills training program is a combination of cognitive and behavioral training to improve social skills and restructure the teen's social network. Social skills include (1) saying no to alcohol, other drugs, and unsafe sex; (2) handling criticism; (3) providing positive support to family and friends; (4) being assertive; and (5) making healthy decisions based on problemsolving procedures and good information. Network restructuring includes skills to improve the quantity and quality of the teen's social network through (1) network definition, (2) positive and negative support identification, and (3) planning for network restructuring.

The case management model, traditionally called casework, has been operationally defined and is "delivered" by a master's-level social worker. Case management consists of 16 weekly sessions with a teen. Sessions are normally 1 hour long, although the case manager has the freedom to transport a teen to other services (e.g., immigration lawyer, food bank, free baby clothes provider). During the first 4 weeks of case management, an extensive needs assessment and a psychosocial assessment are completed. Based on this information, the teen participant and the case manager develop a treatment plan, begin counseling, and make appropriate referrals.

PALS recruits teens from a variety of sources, including the Adolescent Medicine and Teen Obstetric Clinics of the University of California, San Diego (UCSD) Medical Center; UCSD Family Practice Clinics;

the Options for Recovery Program of San Diego County Drug Abuse Services; San Diego Adolescent Pregnant and Parenting Project (SANDAPP) and alternative school programs of San Diego public schools; and San Diego County's juvenile probation program. In the existing PALS program, 38 percent of referrals have come from UCSD Adolescent Medicine and Teen Obstetric Clinics, 11 percent from SANDAPP and alternative school programs of the San Diego public schools (pregnancy and parenting programs, school nurses, counselors), 7 percent from staff outreach efforts (advertisements, nonagency referrals), 6 percent from other professionals (probation officers, community health clinic staff members, public health nurses, therapists), and 38 percent from parents, PALS graduates, self-referrals, and other sources.

Basic guidelines for referrals to PALS are as follows:

- Participants must be females between ages 14 years and 18 years, 11 months.
- Participants must reside within or near the borders of the city of San Diego.
- Participants must not reside in juvenile hall, a residential treatment facility, or a group home.
- Teens must not be involved with a similar research project or agency during the course of the program.
- Teens who have developmental or mental health issues may be prohibited from fully participating in the treatment group sessions.
- Participation must be strictly voluntary (i.e., not a condition of probation).
- A legal minor must have a signed parental consent.
- Participants must be at risk for drug use based on study screening criteria.

A clinical screening is conducted on entry to assess a teen's risk factors for drug use as well as background and demographic information. Referrals for standard medical care (including prenatal care for pregnant teens) are made to UCSD Family Practice Clinics or the UCSD Adolescent Medicine and Teen Obstetric Clinics. Screening also includes the use of two assessment tools. The Adolescent History Interview Schedule (Hawkins et al. 1987) provides descriptive data on the teen and her family

in the following areas: demographic characteristics, including age, ethnicity, education, and language spoken with friends and family members; sexual history; her and her family's alcohol and other drug history and use; her school involvement and attitudes; delinquency; and social network characteristics (e.g., the extent, domain, and duration of acquaintances; whether members use alcohol and other drugs; and whether the teen's drug use has caused the network members any problems). The Problem Oriented Screening Instrument for Teens (POSIT) (Rahdert 1991) is used to identify problematic functioning in 10 critical areas of adolescent development: substance use/abuse, physical health, mental health, family relations, peer relations, educational status, vocational status, social skills, leisure and recreation, and aggressive behavior and delinquency. Endorsement of a "red flag" item or a critical number of items within a functional area item-set indicates that further indepth evaluation is required.

To date, 1,097 adolescent women have been evaluated for participation in PALS. Of this number, 802 (73.1 percent) did not participate, and 295 (26.9 percent) were found to be eligible and were willing and able to participate. Participants were recruited in 7 separate waves of approximately 40 to 50 students per wave.

A comparison of the social and demographic characteristics of these two groups of potential and actual participants is provided in table 1 below. The two groups were similar with respect to number of years of schooling, marital status, and pregnancy status (pregnant). PALS participants were significantly younger ( $t=3.89, p<0.001$ ), more likely to be Latina and less likely to be white or "other" (Asians and Pacific Islanders, Native Americans, others) ( $\chi^2=28.3, \text{degrees of freedom } [df]=3, p<0.0001$ ) than nonparticipants. Nonparticipants were more likely to live in residential treatment facilities, group homes, and foster homes or on the street than participants ( $\chi^2=58.3, df=1, p<0.0001$ ). Nonparticipants were also more likely to drop out of school than participants ( $\chi^2=7.1, df=1, p<0.01$ ).

Table 2 provides a comparison of the psychosocial characteristics of PALS participants and nonparticipants. PALS participants scored higher in the mental health, peer relations, educational status, vocational status, and aggressive behavior or delinquency domains than nonparticipants.

Referral sources of participants and nonparticipants are indicated in table 3. Participants were more likely to be referred by noninstitutional sources (current or former PALS participants, self-referral, parent or guardian) than nonparticipants ( $\chi^2=29.8, df=1, p<0.0001$ ). However, it was only after the project was well under way that noninstitutional referrals became an increasingly greater percentage of total referrals,

TABLE 1. *Social and demographic characteristics of potential adolescent women drug treatment clients, by eligibility and participation status*

Characteristic	PALS Participants (N=295)	Nonparticipants (N=802)
Mean (SD) age	16.6 (1.3)	17.0 (1.9)*
Mean (SD) highest grade level enrolled	10.2 (1.8)	10.1 (2.0)
School dropouts (percent)	9.7	16.7†
Ethnicity (percent)		
African-American	38.0	34.2*
Latina	45.4	33.2
White	10.8	19.7
Other	5.8	12.9
Marital status (percent)		
Single	92.2	92.2
Married or living with boyfriend	7.8	7.8
Pregnancy status (percent)		
Pregnant	18.0	16.8
Parenting	10.8	17.4
Neither	71.2	65.8
Residence (percent)		
With family‡	98.2	77.3*
Without family§	1.8	22.7

\*  $p < 0.001$

†  $p < 0.01$

‡ In single-family dwelling, apartment, duplex, other

§ In residential treatment, group home, or foster home or on street

KEY: PALS=Positive Adolescent Life Skills; SD=standard deviation

a point illustrated by comparison of the percentage of referrals from former or current PALS participants with the percentage of referrals from the UCSD Adolescent Medicine and Teen Obstetric Clinics by wave (table 4).

Reason for nonparticipation was available for 640 (79.8 percent) of the 802 nonparticipating teens referred to PALS. Almost two-thirds (63.6 percent) were disqualified because of inability to meet program eligibility requirements; slightly more than one-third (36.3 percent) did

TABLE 2. *Psychosocial characteristics of potential adolescent women drug treatment clients, by eligibility and participation status*

POSIT Domain	PALS Participants (N=295)	Nonparticipants (N=485)	Significance
	Mean (SD)	Mean (SD)	
Substance use/abuse	1.18 (2.29)	1.12 (2.18)	NS
Physical health	2.93 (1.87)	3.00 (1.99)	NS
Mental health	8.03 (4.78)	6.82 (4.72)	$p<0.001$
Family relations	5.56 (3.33)	5.39 (3.43)	NS
Peer relations	3.72 (2.35)	2.83 (2.29)	$p<0.001$
Educational status	9.31 (3.97)	8.18 (4.29)	$p<0.001$
Vocational status	6.46 (2.92)	5.67 (3.22)	$p<0.001$
Social skills	3.26 (1.89)	3.19 (2.07)	NS
Leisure and recreation	5.02 (2.25)	4.73 (2.53)	NS
Aggressive behavior or delinquency	5.36 (3.67)	4.61 (3.45)	$p<0.01$

KEY: POSIT=Problem Oriented Screening Instrument for Teens; PALS=Positive Adolescent Life Skills; SD=standard deviation; NS=not significant

not participate for personal reasons, citing a lack of interest, failure to meet the recruitment deadline for application into the program, or a schedule conflict. Specific reasons for nonparticipation are given in table 5.

These data indicate that there are substantial differences between drug-using adolescents who enter drug treatment and those who do not. In the case of PALS, participants were younger, included more Latinas and fewer whites and other ethnic groups, were less likely to drop out of school, and were less likely to live in residential treatment facilities, foster homes, and group homes because these teens were considered to be currently undergoing treatment in another program, one of the project's exclusion criteria. Approximately 1 of 10 nonparticipants was excluded because she was 19 years or older and thus ineligible to participate, accounting in part for the older mean age of the nonparticipant group. School dropouts were less likely to participate because project staff members made a special effort to encourage dropouts to reenroll in school; those not interested in doing so were less willing to participate.

It is uncertain why the program recruited greater-than-expected numbers of Latinas and fewer-than-expected numbers of whites and other ethnic groups. Further analysis of the characteristics of participants and nonparticipants



TABLE 3. *Referral sources of potential adolescent women drug treatment clients, by participation status*

Referral Sources	PALS Participants (N=295)		Nonparticipants (N=802)	
	N	%	N	%
<b>Institutional referrals</b>				
Project PALS representative	14	4.7	50	6.2
UCSD Adolescent Medicine and Teen Obstetric Clinics	99	33.6	427	53.2
County probation office	2	0.6	5	0.6
SANDAPP	17	5.8	56	7.0
Community-based agencies	10	3.4	10	1.2
Child protective services	4	1.4	5	0.6
County health department	3	1.0	16	2.0
City schools	14	4.7	15	1.9
<b>Noninstitutional referrals</b>				
Current or former PALS participants	108	36.6	191	23.8
Self-referral	15	5.1	22	2.7
Parent or guardian	9	3.1	5	0.6
Total institutional referrals	163	55.2	584	72.7*
Total noninstitutional referrals	132	44.8	218	27.1

\*Percentages add to only 72.7 because of rounding.

KEY: PALS=Positive Adolescent Life Skills; UCSD=University of California, San Diego; SANDAPP=San Diego Adolescent Pregnant and Parenting Project

TABLE 4. *Comparison of percentage of referrals from UCSD Adolescent Medicine and Teen Obstetric Clinics with percentage of referrals from current or former PALS participants, by wave*

Referral Source	Wave						
	1	2	3	4	5	6	7
UCSD Adolescent Medicine and Teen Obstetric Clinics	96.9	64.7	63.2	54.2	41.3	19.9	22.6
Current or former PALS participants	0.0	8.7	14.8	18.8	28.8	44.7	51.1
Other sources	3.1	26.6	22.0	27.0	29.9	35.4	26.3

KEY: UCSD=University of California, San Diego; PALS=Positive Adolescent Life Skills

TABLE 5. *Reasons of potential adolescent women drug treatment clients for not participating in PALS*

Reasons	Nonparticipants (N=640)	
	N	%
Program-based reasons		
Too old or young	78	12.2
Not living at home	69	10.8
No POSIT risk factors	32	5.0
No parental consent	46	7.2
Out of catchment area	125	19.5
In another program	10	1.6
Poor communication skills	21	3.3
No preassessment	9	1.4
Change in eligibility	5	0.8
Sibling in same program	4	0.7
Other institutional reasons	8	1.2
Participant-based reasons		
Time conflict	26	4.0
Not interested	93	14.5
Missed deadline	114	17.8
Total program-based reasons	407	63.7
Total participant-based reasons	233	36.3

KEY: PALS=Positive Adolescent Life Skills; POSIT=Problem Oriented Screening Instrument for Teens

found no ethnic differences with respect to referral source or reasons for nonparticipation. However, Latinas were less likely to be living outside the home at time of referral than other ethnic groups ( $\chi^2=13.4$ ,  $df=1$ ,  $p=0.0002$ ). Moreover, most PALS staff members were either Latinas or bilingual whites and African-Americans, whose ability to speak Spanish was reassuring to both potential participants—even if these participants used English as their primary language—and their parents, many of whom were Spanish speaking only.

Differences in the POSIT domain scores of PALS participants and nonparticipants were to be expected because these psychosocial characteristics were an important determinant of program eligibility. Individuals were identified as being at risk for drug use if they scored 1 or higher on the substance use/abuse questions and 1 or higher on two of four other domains: mental health, family relations, peer relations,

and aggressive behavior or delinquency. Participants were significantly different from nonparticipants in three of these domains: mental health, peer relations, and aggressive behavior or delinquency. Thus, if participants were recruited on the basis of self-reported drug use alone, those recruited would have been viewed as representative of the population of referred adolescent women.

The PALS experience also illustrates the importance of informal or noninstitutional sources of referrals, an experience also found in other RCTs of experimental drug treatment interventions (Ashery and McAuliffe 1992). The percentage of referrals from former and current graduates increased over the course of the project as more teens came into contact with the program and derived positive benefits from participation. Participants also included larger percentages of self-referrals and referrals from parents, both of whom recognized a need for some form of behavioral intervention to treat an existing or potential drug problem. In contrast, teens who were recruited at random from institutional sources, such as the UCSD Adolescent Medicine Clinic, were less likely to participate because they were less likely to have a reason for attending, either because they were not at risk for drug use, not previously identified by the health or social services system as having a drug problem even if such a problem existed, or not having a friend who had previously been through the program to encourage them to participate.

Previous research has found that different types of programs attract different types of clients for different reasons (Deykin et al. 1992; Moise et al. 1981). A study by Carroll and Rounsaville (1992) found that untreated cocaine abusers were more likely to lack social support and pressure to enter treatment than treated abusers. In the case of PALS, the emphasis on social skills development and social network restructuring, combined with the possibility of individual case management and a bilingual staff, had greater appeal to Latinas from more stable and secure living environments, adolescents who already had been identified by the system as having an existing drug problem, adolescents or their parents who recognized the need for program participation, and adolescents who were part of the social networks of current or former PALS participants.

## RETENTION

Drug abuse treatment usually requires a long-term commitment on the part of clients. For these programs to demonstrate success, they must maintain high rates of *attendance* and low rates of *attrition*. Although both attendance and attrition determine the level of participant retention, it is important to distinguish between the two. Attrition typically refers

to actual dropout from the study, whereas attendance typically serves as a measure of exposure to treatment. Both attrition and low attendance introduce biases that can have a substantial impact on internal validity and generalizability of the research findings (Howard et al. 1990, pp. 66-79). Reported attrition rates vary from study to study. It is not uncommon for drug abuse treatment studies to experience dropout rates of 40 to 50 percent or higher (Baekeland and Lundwall 1975; Kleinman et al. 1990, pp. 24-38). However, dropout is only part of the problem. Some subjects who remain in the study are exposed to less than the optimum number of treatment sessions.

It is important to consider the relationship between retention and outcome, because those who have low attendance or who drop out may differ in systematic ways from the larger sample of those recruited to participate in drug treatment research. Perhaps even more important than concerns about generalizability of research findings is the notion that there is a “dose-response” effect of treatment (Gainey et al. 1993). However, the relationship between retention and outcome often confounds the exposure to treatment with motivation to attend (Atkins et al. 1990; Kaplan and Atkins 1987). As with subject recruitment, characteristics of the client and the program have been identified as influencing the retention of participants in drug treatment programs. However, little is known of the role of these characteristics in retaining adolescent clients. Identifying predictors of retention can provide important insights for enhancing the effect and success of drug treatment programs for this age group.

### Client Characteristics

**Severity of Drug Abuse.** Severity of use seems to have a somewhat paradoxical effect on treatment retention (Baekeland and Lundwall 1975). For example, long-term and heavier drug use may be associated with other risk factors that are incompatible with completing treatment (Gainey et al. 1993). On the other hand, those with heavier drug use and drug-related problems may have stronger motivations to remain in treatment (Carroll et al. 1991). A recent study by Gainey and colleagues (1993) found that those who used cocaine for shorter periods of time were less likely to remain in treatment. The authors suggest that these particular clients may not have perceived their addictions to be serious enough to warrant drug treatment. Most surprisingly, evidence suggests that the longer one is able to remain abstinent from using drugs like cocaine and alcohol, the more likely it is that he or she will complete treatment (Means et al. 1989).

The particular drug being abused also may affect the likelihood of treatment completion. Those who abuse legal drugs such as alcohol are often less likely to seek and remain in treatment because they do not see themselves

as having a particularly serious problem; therefore, they view treatment as unnecessary. These individuals are also less likely to have been referred to treatment as part of a court-ordered requirement. Such a requirement has been linked to improved retention in drug treatment (Gainey et al. 1993). In general, most findings on severity of drug use do not bode well for teens remaining in treatment. Teens are likely to perceive their drug use problems as less severe, and they are less likely to have external pressure to remain in treatment.

**Comorbidity.** Epidemiologic evidence suggests that psychiatric comorbidity, such as anxiety, depression, and personality disorders, increases the risk of alcohol or other drug dependence in adolescents (Christie et al. 1988; Deykin et al. 1987; Kandel 1982). The presence of psychiatric comorbidity also has been identified as a potentially important predictor of drug treatment outcomes (McLellan et al. 1983). However, few studies have systematically studied the impact of psychiatric comorbidity on retention in treatment. Although anxiety and depression may provide some motivation to seek and remain in treatment, drug use and abuse also may ameliorate the systems of psychiatric comorbidities and increase the likelihood that subjects will drop out of treatment.

**Social and Family Support.** The relationships among social and family support, social isolation, and drug abuse treatment retention have been examined in several studies. Social isolation is typically found to be predictive of early dropout from treatment. In a classic review article of treatment dropout, Baekeland and Lundwall (1975) found that social isolation or lack of affiliation predicted early treatment dropout in 19 of 19 studies (100 percent) that addressed the issue. More recently, Gainey and colleagues (1993) found that individuals living alone were three times less likely to complete treatment for cocaine abuse than those living with others. On the other hand, being in a functional relationship or involved in a prosocial organization has been shown to be predictive of longer retention in treatment (Hawkins and Catalano 1985; Means et al. 1989). Thus, positive social support for remaining in treatment can be an important influence.

#### **Program, Therapist, and Environmental Characteristics**

**Convenience and Incentives.** In some cases, characteristics of the treatment environment have been found to be more important motivators for treatment retention than characteristics of the individual seeking treatment (Miller 1985). One of the nonspecific characteristics of the treatment program that has been shown to be important for retention is convenience of the treatment in terms of location and transportation. For example, one study found that the likelihood of attendance was better

predicted by the distance a client had to travel to get to the treatment than by any personality characteristics of the client (Miller 1985). Another important treatment program characteristic is the length of time between referral and program entry. Several studies have demonstrated that both recruitment and retention are negatively correlated with the amount of time the client must wait before being seen in treatment (Miller 1985). Finally, both negative and positive incentives have been shown to be related to treatment retention. Legal pressure has been found to be one of the strongest motivators for treatment retention (Gainey et al. 1993).

**Characteristics of Therapists.** One of the most widely discussed but perhaps least investigated treatment environment variables is the therapist who delivers the treatment (Miller 1985; Crits-Christoph et al. 1990, pp. 39-49). Studies that attempt to characterize treatment effect typically find at least a moderate difference in treatment effect that can be attributed to the therapist who delivers the treatment (Crits-Christoph et al. 1990, pp. 39-49; McLellan et al. 1988). With regard to early dropout, Baekeland and Lundwall (1975) found that therapist attitude and behavior were more predictive of treatment retention than socioeconomic status and motivation of the client in 35 of 35 studies (100 percent) that assessed therapist variables. Therapist attributes, such as expectation for success, confrontational therapeutic style, and permissiveness, all have been implicated as important. However, there are few systematic studies that explicitly characterize the attributes associated with either successful outcomes or client attrition. Certainly, therapist characteristics are important and should be systematically studied with respect to both client and treatment attributes. Teen clients may be particularly influenced by some of the more salient features of the therapist, such as age, ethnicity, and style of treatment delivery.

### Retention of Adolescents in PALS

The experience of PALS offers a unique opportunity to assess some common client characteristics that predict program attendance among a group of adolescent women at high risk for drug abuse and pregnancy. Based on the findings of earlier studies described above and their potential implications for adolescent participation in drug treatment, the authors examined four categories of client characteristics to determine whether one or more of these characteristics were predictive of client attendance at program activities, including classes or scheduled meetings with case managers.

The first category of client characteristics comprised social and demographic characteristics found to be associated with participant recruitment. These included age, ethnicity (Latina or non-Latina), and

school dropout (yes or no) status. In addition, the effect of pregnancy or parenting status (yes or no) on attendance was examined.

The second category of client characteristics included measures of family and social support. The Family Cohesion and Evaluation Scale III (FACES-III) (Olson et al. 1985) was used to obtain a measure of *family cohesion*. The Social Support Questionnaire-Revised (SSQ-R) (Sarason et al. 1983) was used to identify the number of people to whom clients could turn and on whom they could rely in given sets of circumstances (*availability of social support*). The Missouri Peer Relations Inventory (MPRI) (Borduin et al. 1989) consists of 13 five-point scale items relating to various aspects of adolescent peer relations, such as verbal and physical aggression, popularity, respect for others, and sense of humor. This instrument was used to assess levels of *peer emotional bonding*, *aggression*, and *acceptance*. The Children's Report of Parent Behavior Inventory (CRPBI-30)(Schludermann and Schludermann 1988) is a 30-item (for each parent) instrument to assess children's perceptions of their parents' child-rearing style. Three factor scores were derived for each parent: *acceptance*, *psychological control*, and *firm control*. Finally, the *peer relations* and *social skills* domains of the POSIT were used to evaluate nonfamily support.

The third category of client characteristics included measures of potential psychiatric comorbidity. The Children's Depression Inventory (CDI) (Kovacs 1992) was used to assess level of *depressive symptomatology*, and the Revised Children's Manifest Anxiety Scale (Reynolds and Richmond 1979) and anxiety subscale of the Achenbach Inventory (Achenbach 1991) were used to assess the level of *anxiety*. *Self-esteem* was measured with Rosenberg's (1989) scale, and *locus of control* was assessed by means of the Locus of Control Inventory (Nowicki and Strickland 1973).

The fourth category of client characteristics included self-reported measures of *drug use*, *sexual activity*, and *delinquent behavior*. These measures included the substance use/abuse domain of the POSIT, the sexuality and drug abuse subscales of the A-File (McCubbin 1981), and the Self Reported Delinquency Scale (Elliott 1980) and delinquency subscale of the Achenbach Inventory (Achenbach 1991).

Preassessment data for all subjects who enrolled in PALS and for whom complete attendance information was available (waves 1 through 6, n=234) were used for this analysis. Nonparametric correlation coefficients (Spearman's  $r_s$ ) (Snedecor and Cochran 1980) were calculated to examine the association between each candidate measure and attendance. Generalized logistic regression analyses of attendance (i.e., linear regression of the logit of the probability of attendance based on the

observed number of sessions attended in a fixed number of trials) were run using the Statistical Package for the Social Sciences for Personal Computers (SPSSPC) "Probit Analysis" program (Norusis 1992) with the logit option. Variables were selected for an initial regression if the significance level for the Spearman's  $r_s$  was less than 0.10. These variables included general delinquency ( $r_s=-0.21, p=0.001$ ), POSIT substance use/abuse score ( $r_s=-0.19, p=0.002$ ), peer acceptance ( $r_s=0.18, p=0.004$ ), availability of social supports ( $r_s=0.16, p=0.01$ ), locus-of-control scale score ( $r_s=-0.14, p=0.025$ ), and family cohesion ( $r_s=0.12, p=0.06$ ). All these variables had adequate regression coefficients. (The absolute value of the coefficient divided by the standard error was greater than 1.) The remaining variables then were added to this base set, one at a time, and used in separate analyses. Variables found to have an absolute value of the coefficient divided by standard error greater than 1 then were added into the final model. These additional variables were age, pregnancy or parenting status, school dropout status, maternal firm control, sexual activity, and depression.

The final model is presented in table 6. Age, pregnancy or parenting status, school dropout status, family cohesion, locus of control, number of social supports, POSIT substance use/abuse at preassessment, peer acceptance, sexual activity, maternal firm control, and general delinquency were significant independent predictors of program attendance in this cohort. Family cohesion, number of social supports, peer acceptance, maternal firm control, and general delinquency were directly associated with program attendance, whereas age, pregnancy or parenting status, school dropout status, internal locus of control, POSIT substance use/abuse, and sexual activity were inversely associated with attendance. Depression was marginally ( $p=0.06$ ) associated with attendance.

These results suggest that some client characteristics associated with successful recruitment, including age and school dropout status, also are associated with successful retention. Adolescent women who are older or who have a history of dropping out of school are less likely to attend the treatment sessions. Adolescents who are pregnant or parenting also are less likely to attend, usually citing their pregnancy or child care responsibilities, if parenting, as a reason for failure to attend subsequent sessions.

In part, these results confirm the findings of studies on predictors of retention of older clients in drug treatment programs. For instance, as with retention of older adults, adolescent retention is inversely associated with severity of drug use: Those adolescents most in need of drug treatment are often the least likely to remain in treatment. Self-reported drug abuse prior to treatment was the strongest predictor of program attendance in this cohort.



TABLE 6. *Regression of participant characteristics on program attendance: Results of logit analysis*

Variable	B	SE	B/SE	Significance
Age	-0.0075	0.0025	-2.99	<0.01
Pregnant or parenting*	-0.1711	0.0923	-1.85	<0.05
School dropout*	-0.2163	0.1273	-1.70	<0.05
Family cohesion	0.0156	0.0045	3.49	<0.01
Locus of control	-0.0155	0.0080	-1.94	<0.05
Number of social supports	0.0207	0.0031	6.60	<0.001
POSIT substance use/abuse	-0.1254	0.0154	-8.15	<0.001
Peer acceptance	0.1294	0.0263	4.92	<0.001
Sexual activity	-0.1609	0.0367	-4.39	<0.001
Maternal firm control	0.0225	0.0070	3.19	<0.01
Depression	0.0085	0.0057	1.51	<0.07
General delinquency	0.0003	0.0001	2.13	<0.05

\*yes or no

KEY: B=regression coefficient; SE=standard error of regression coefficient

The PALS experience also illustrates that many client characteristics associated with adolescent drug use, including depressive symptoms (Deykin et al. 1987), delinquent behavior (Jessor and Jessor 1977), availability of social support (Wills and Vaughan 1989), relationship with mother (Kokotailo et al. 1992) and peers (Huba and Bentler 1980), and sexual activity (Rosenbaum and Kandel 1990), also are associated with retention in drug treatment. Other studies have demonstrated the importance of social support in predicting retention of women in drug treatment (Huselid et al. 1991). The association between sexual activity and retention in drug treatment may have been confounded by the increased likelihood of drug use among sexually active teens. However, sexual activity predicted low program attendance (B=-0.1609 [see table 6]) independent of drug use. Further research is required to determine the basis for this association.

Similarly, the association between program retention and external locus of control in the PALS cohort appears in contrast to earlier research that linked external locus of control to increased likelihood of drug use (Clark et al. 1982; Diehlman et al. 1984) and decreased likelihood of engaging in health promotion activities such as smoking cessation (Seeman and Seeman 1983). However, a study by Huselid and colleagues (1991) also reported that for women an external locus of control was associated with retention

in a drug treatment program. Further investigation of this association is required.

## CONCLUSIONS

A greater understanding of the factors that promote recruitment and retention of adolescents in drug treatment programs in general and drug treatment research in particular is critical to the success of these programs. Both client and program characteristics appear to exert considerable influence on the ability of programs to successfully recruit and retain adolescent clients. With respect to the program, inclusion and exclusion criteria based on experimental design, treatment approach, and practicalities of implementation may be responsible for the exclusion of a substantial percentage of potential clients. With respect to the client, factors such as ethnicity appear to influence recruitment of adolescents in drug treatment. Factors such as severity of drug use, pregnancy or parenting status, presence of psychiatric comorbidity, delinquent behavior, sexual activity, and internal locus of control appear to decrease the likelihood of retaining adolescents in drug treatment. Factors such as age and school dropout status influence the likelihood of successful recruitment and retention. Most important, drug treatment programs for adolescents can improve both recruitment and retention efforts by making greater use of adolescent social support networks.

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