

A Review of Gender Differences among Substance Abusers

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## Abstract

This article provides a review of various types of literature on gender differences among substance abusers. The authors begin this literature review by summarizing the literature on the differing treatment needs of men and women. The authors continue with a review of the empirically based literature on gender differences in background characteristics of substance users. They conclude with a review of treatment outcome studies. This review provides a context for identifying the gaps in the literature and identifies a research agenda which will help improve treatment services for women in both community-based and prison settings.

Keywords: gender, substance abuse, outcomes, characteristics

Knowledge about gender differences in pathways into addiction and crime have established that these differences are critical in delivering effective treatment to both women and men. One-fifth of all persons arrested are women, and many women who commit crimes have substance use problems. In a random sample of women arrested for any crime, 65% tested positive for one or more of the following drugs: cocaine, opiates, marijuana, methamphetamines, or phencyclidine (National Institute of Justice, 2003). In an effort to address this issue, many women have been mandated into substance use treatment programs in both residential (including prison-based) and community-based settings.

To design effective substance use treatment programs for women who enter through the criminal justice system, an understanding of the research on the unique aspects of being a female substance-abuser must first be addressed. Because most treatment programs were originally developed for men, researchers have, in recent years, more frequently cited the need to understand gender differences in the etiology of drug use, drug treatment needs, how women use treatment services, and how effective the various substance abuse treatment approaches are for women in both community and criminal justice settings. This article provides a review of various types of literature on gender differences among substance abusers to provide a context for identifying the gaps in the literature. We assess whether the empirical research on gender differences provides clear clinical implications for treatment programs. We conclude with suggestions for a research agenda that may improve our understanding of gender differences in treatment and lead to improved outcomes for substance abusing women regardless of treatment setting.

We begin with a review of treatment needs of men and women identified in the literature, most of this literature not being empirically based. We then continue with a review of empirical studies of gender differences in the characteristics of substance users and follow this with a review

of treatment outcome studies that include and report on both women and men. We conclude with an assessment of the relationship between the treatment needs literature and the empirical studies of gender differences and with a discussion of implications for future research.

#### Treatment Needs of Substance Abusing Women

Much of the literature on women's treatment needs state that women substance users require specialized, gender-specific services. Recent research efforts have begun to address some important questions regarding the epidemiology and etiology of substance use among women and the design of treatment strategies for women that address their gender-specific needs. The range of treatment needs cited in this literature is wide. Some cite the type of service needed, others discuss the style of the program, and others cite the types of issues to be addressed.

Comprehensive, multisystemic treatment models have been identified as the standard of care for women substance abusers (Connors, Bradley, Whiteside-Mansell, & Crone, 2001; Substance Abuse and Mental Health Services Administration, 1997). Most notably for community-based programs, women are seen as needing ancillary services that address a wide range of needs. The services most often cited include childcare and training in parenting, assistance with transportation, medical care, educational or vocational training, and assistance with housing (Abbott, 1994; Clark, 2001; Hagan, Finnegan, & Nelson-Zlupko, 1994; Knight, Hood, Logan, & Chatham, 1999; Marsh, D'Aunno, & Smith, 2000; Stein & Cyr, 1997; Wald, Harvey, & Hibbard, 1995; Wellisch, Prendergast, Anglin, & Owen, 1993).

The literature also reports a need for different treatment delivery styles for women. Women's programs are seen as more effective if the focus is on empowerment, support, skill-building and strength-identifying rather than on confrontation, as is the case with many programs for men (Abbott, 1994; Bloom, 1999; Finkelstein, 1996; Inciardi, Lockwood, & Pottieger, 1993; Koons, Burrow, Morash, & Bynum, 1997; LaFave & Echols, 1999; Landry, 1997; Reed, 1985). Treatment models that have been designed specifically for the treatment needs of women include

models that focus on the relational orientation of women (Covington & Surrey, 1997) and feminist and empowerment models that seek to understand the behavior of substance-using women within the context of the dominant culture (Abbott, 1994; Wald et al., 1995). Models for specialized female populations have also been identified, including programs for women offenders (for a review see Welle, Falkin and Jainchill, 1998) and for pregnant substance abusers (for a review see Howell, Heiser, & Harrington, 1999).

Some believe that women do better in all-female settings because the atmosphere is more nurturing and supportive and may provide a safer environment for women to talk about issues such as physical and sexual abuse (Center on Addiction and Substance Abuse, 1996; Lockwood, McCorkel, & Inciardi, 1998; Wald et al., 1995). Female-only programs have also been found to provide a greater number of the ancillary services needed by women (Grella, Polinsky, Hser, & Perry, 1999), which may facilitate treatment enrollment and retention (Logan, Walker, Cole, & Leukefeld, 2002; Stevens, Arbiter, & Glider, 1989). In addition to women-only participants, female staff members who can serve as role models are also seen as providing a positive impact on the treatment environment (Doshan & Bursch, 1982; El-Guebaly, 1995; Koons et al., 1997; Lockwood et al., 1998; Stevens & Glider, 1994).

The types of issues to be addressed in drug treatment programs with female participants should recognize the comprehensive range of women's problems (Substance Abuse and Mental Health Services Administration, 1997). The issues most often cited include women's experiences with physical and sexual abuse (Abbott, 1994; Drabble, 1996; Kassebaum, 1999; Landry, 1997; Logan et al., 2002; Morash, Bynum, & Koons, 1998; Root, 1989), the need for vocational training (Abbott, 1994; Drabble, 1996; Gregoire & Snively, 2001; Kane-Cavaiola & Rullo-Cooney, 1991; Landry, 1997; Logan et al., 2002; Reed, 1985; Wellisch et al., 1993) and child care or parenting issues (Abbott, 1994; Doshan & Bursch, 1982; Drabble, 1996; Gregoire & Snively, 2001; Knight et al., 1999; Koons et al., 1997; Logan et al., 2002; Reed, 1985; Wallen,

1998; Wellisch et al., 1993). Women's treatment programs have also been viewed as requiring special attention to relationship issues, including those with partners (Abbott, 1994; Laudet, Magura, Furst, & Kumar, 1999; Wallen, 1998; Wellisch et al., 1993) as well as with other family members (El-Guebaly, 1995; Gregoire & Snively, 2001; Howell et al., 1999; Logan et al., 2002).

Much of the literature on program needs of women substance users claim that programs have been biased towards the needs of men. As a result, there has been a growing body of conceptual research on designing programs that advocate for and include strategies to address the needs of substance-abusing women. However, much of the literature on the program needs for women do not refer to the literature on gender differences, and furthermore study just women. As noted by Anglin & Hser (1987), studying just women is as meaningless as studying just men. The purpose of this article, then, is to (1) review the research on the characteristics of men and women are substance users, (2) review the research on gender differences in substance use treatment outcomes, and (3) discuss the research implications of the findings.

### Method

Literature searches were conducted in the following databases: PsychInfo, Medline, U.S. Government Printing Office (GPO), National Criminal Justice Reference Center, Annual Reviews, GenderWatch, Academic Search Elite, Contemporary Women's Issues, LegalTrac, LexisNexis Government Periodicals Index, Public Affairs Information Service, Center for Substance Abuse Treatment, and the UCLA Drug Abuse Research Center. To enhance the search, additional studies were sought from the reference lists of the collected articles. The key terms used were: *gender, women, female, substance use, substance abuse, treatment, prison, and offenders*. The search was limited to articles in English language journals published after 1985 where the sample populations were adult substance users in the United States or Canada. In addition, the studies included were limited to those which compared characteristics or treatment outcome results of a

group of women with a comparison group of men.

## Results

### *Characteristics of Substance Users: Gender Differences*

This section reports findings where background characteristics were compared between men and women with substance use problems. The understanding of these differences is of critical importance, as these differences may or may not be risk factors for poorer treatment outcome, necessitating the development of specialized substance use treatment programs for women that address these specific needs.

Research findings for socioeconomic status, drug use patterns, family and abuse histories, criminal histories, and mental health issues are summarized. These detailed findings are provided in a table format available on the Bureau of Prison's website: ([www.bop.gov](http://www.bop.gov)). There were 49 articles and the type of samples were as follows: 11 inpatient, 11 inpatient and outpatient, 9 outpatient, 6 methadone maintenance (MMT), 4 other treatment programs, 3 prison or jail, 3 non-treatment substance users, and 2 community-based therapeutic communities.

*Socioeconomic status indicators.* Most studies examining socioeconomic indicators included measures of both education level and employment. A number of studies reported no gender differences in educational level, but found that women were less likely to be employed, or if employed, made less money than the men (Acharyya & Zhang, 2003; Anglin, Hser, & McGlothlin, 1987; Brady, Grice, Dustan, & Randall, 1993; Brown, Alterman, Rutherford, Cacciola, & Zaballero, 1993; Chatham, Hiller, Rowan-Szal, Joe, & Simpson, 1999; Denier, Thevos, Latham, & Randall, 1991; Hser, Anglin, & Booth, 1987; Hser, Anglin, & McGlothlin, 1987; McCance-Katz, Carroll, & Rounsaville, 1999; Oggins, Guydish, & Delucchi, 2001; Peters, Strozier, Murrin, & Kearns, 1997; Robinson, Brower, & Gomberg, 2001; Ross, 1989; Westermeyer & Boedicker, 2000). Other studies found no differences between men and women in their educational level or employment history (Goldstein et al., 1996; Grella, 2003; Magura,

Kang, Rosenblum, Handelsman, & Foote, 1998; Majer, Jason, Ferrari, & North, 2002; Weiss, Martinez-Raga, Griffin, Greenfield, & Hufford, 1997), whereas others reported women had both lower educational levels and were less likely to be employed or if employed, made less money (Fiorentine, Anglin, Gil-Rivas, & Taylor, 1997; Grella & Joshi, 1999; Lundy, Gottheil, Serota, Weinstein, & Sterling, 1995; Messina, Burdon, & Prendergast, 2003; Riechman, Hser, & Zeller, 2000; Tortu et al., 1998). One study found women had lower educational levels but that they did not differ from men in employment history (Langan & Pelissier, 2001). There was only one study which found that women had more favorable socioeconomic circumstances than did men. Messina, Wish, & Nemes (2000) found women had higher educational levels, although there was no gender difference in employment history.

A smaller number of studies (11) measured differences in educational level only or employment history only. Studies that assessed only educational level found no gender differences (Boyd, Blow, & Orgain, 1993; Brown & Nixon, 1997; Downey, Rosengren, & Donovan, 2003; Dudish & Hatsukami, 1996; Galen, Brower, Gillespie, & Zucker, 2000; Kingree, 1995; Kosten, Gawin, Kosten, & Rounsaville, 1993; Ouimette, Kimerling, Shaw, & Moos, 2000). Findings from the few studies assessing employment history only found women to be worse off than their male counterparts (Anglin et al., 1987; Griffin, Weiss, Mirin, & Lange, 1989).

Overall, the inconsistent findings suggest that although women substance abusers are certainly not better off than their male counterparts in educational attainment or employment history, they do not consistently have more difficult economic circumstances than men do. It is noteworthy that most of the studies where there were no gender differences in employment had either a very small sample size of women (Goldstein et al., 1996; Majer et al., 2002; Weiss et al., 1997) or had very different measures, such as ever employed or number of times ever unemployed (Langan & Pelissier, 2001; Messina et al., 2000) unlike the most frequently used measure of employment at or just prior to admission. Therefore, it appears that although women generally do



not have lower education levels than do men, they do have more employment problems.

*Drug use patterns.* Drug use patterns have been studied in multiple ways, ranging from measures of severity such as the Addiction Severity Index (ASI) to measures of frequency of use, age of first use, and type of drug used. Most who have assessed overall frequency or severity of substance use (often using the ASI) have found no differences between women and men (Brown & Nixon, 1997; Brown et al., 1993; Chermack, Stoltenberg, Fuller, & Blow, 2000; Denier et al., 1991; Downey et al., 2003; Galen et al., 2000; Haas & Peters, 2000; Lundy et al., 1995; McCance-Katz et al., 1999; Riehman et al., 2000; Weiss et al., 1997; Westermeyer & Boedicker, 2000). Only one study found that the men had more severe drug use consequences than women did (Liebschutz et al., 2002) and one that the women had more severe substance use than men did (Acharyya & Zhang, 2003).

Some studies assessing gender differences in polydrug use found no difference (Goldstein et al., 1996; Haas & Peters, 2000; Ross, 1989; Weiss et al., 1997). On the other hand, other studies showed women to have a higher incidence of polydrug use (Denier et al., 1991; Langan & Pelissier, 2001; Messina et al., 2003) and others found men to have a higher incidence of polydrug use or dependence (Grella, 2003; Grella & Joshi, 1999; Peters et al., 1997).

In examining type of drug used, most studies found that a greater percentage of men than women reported problems related to alcohol use (Acharyya & Zhang, 2003; Anglin, et al., 1987; Benishek, Bieschke, Stoffelmayr, Mavis, & Humphreys, 1992; Brady et al., 1993; Brown et al., 1993; Chatham et al., 1999; Grella, 2003; Grella & Joshi, 1999; Hser, Anglin, & Booth, 1987; Hser, Anglin, & McGlothlin, 1987; Kosten et al., 1993; Liebschutz et al., 2002; Lundy et al., 1995; Magura et al., 1998; Majer et al., 2002; McCance-Katz et al., 1999; Peters et al., 1997; Robinson et al., 2001; Tortu et al., 1998), although a few reported no gender differences (Benishek et al., 1992; Chermack et al., 2000; Dudish & Hatsukami, 1996; Griffin et al., 1989; Haas & Peters, 2000; Hesselbrock, 1991; Westermeyer & Boedicker, 2000). Findings for

marijuana were mixed. While the majority of studies found more men than women used or were dependent on marijuana (Acharyya & Zhang, 2003; Anglin, et al., 1987; Brown et al., 1993; Grella, 2003; Haas & Peters, 2000; Hser, Anglin, & Booth, 1987; Hser, Anglin, & McGlothlin, 1987; Magura et al., 1998; Messina et al., 2003; Peters et al., 1997; Westermeyer & Boedicker, 2000), a few found no gender differences (Dudish & Hatsukami, 1996; Fiorentine et al., 1997; Langan & Pelissier, 2001; Robinson et al., 2001). Anglin et al. (1987) found more Anglo men than Anglo women used marijuana daily, but no gender difference was found among Chicanos.

In studies where the sample population was cocaine users, almost all found no gender differences in cocaine use or dependence (Dudish & Hatsukami, 1996; Griffin et al., 1989; Kosten et al., 1993; Lundy et al., 1995). Tortu et al. (1998), who distinguished crack from cocaine, found that women used crack more often, whereas men use cocaine more often. In other samples, women were more often found to have higher rates of cocaine use (Acharyya & Zhang, 2003; Brady et al., 1993; Brown et al., 1993; Chatham et al., 1999; Fiorentine et al., 1997; Grella & Joshi, 1999; Langan & Pelissier, 2001; Messina et al., 2003; Peters et al., 1997; Robinson et al., 2001). However, Robinson et al. (2001) found that women used cocaine more in the past 28 days, although they found no difference for cocaine dependence. Others found no gender differences for cocaine (Grella, 2003; Haas & Peters, 2000; Hser, Anglin, & Booth, 1987; Jainchill, Hawke, & Yagelka, 2000; Magura et al., 1998; Messina et al., 2000; Westermeyer & Boedicker, 2000).

Gender differences in heroin varied considerably. Women were found by some to have used heroin more frequently or more likely to have a diagnosis of heroin dependence than men (Fiorentine et al., 1997; Kosten et al., 1993; Langan & Pelissier, 2001; Messina et al., 2003). Yet others found that men had greater heroin use (Brown et al., 1993; Grella, 2003) or found no gender differences (Anglin, et al., 1987; Dudish & Hatsukami, 1996; Hser, Anglin, & Booth, 1987; Magura et al., 1998; Peters et al., 1997; Tortu et al., 1998; Westermeyer & Boedicker,

2000).

When reviewing the age of first drug use, most studies have reported no gender differences (Boyd et al., 1993; Goldstein et al., 1996; Hser, Anglin, & Booth, 1987; Westermeyer & Boedicker, 2000), or have reported that men began using illicit substances at an earlier age than women did (Grella, 2003; Grella & Joshi, 1999; Jainchill et al., 2000; Weiss et al., 1997). Only Griffin et al. (1989) found women began using illicit substances at an earlier age than men. When considering specific types of drugs, Messina et al. (2000) found that women used cocaine at an older age but there was no difference for heroin use. Similarly, Messina et al. (2003) found women were older at first use for all drugs except heroin, where there was again no difference. Hser, Anglin, & McGlothlin (1987) found no gender difference in the age of first use of any drug for Anglos but found Chicano men began using heroin and marijuana at a younger age than Chicano women. Three studies found no gender difference in age of first cocaine use (Chatham et al., 1999; Haas & Peters, 2000; McCance-Katz et al., 1999). However, when examining a population of African American cocaine users, men were found to have started using cocaine at a later age (Lundy et al., 1995). The limited studies of age of first use for marijuana and alcohol show that men generally have an earlier onset of alcohol or marijuana use (Chatham et al., 1999; Haas & Peters, 2000; McCance-Katz et al., 1999).

The few studies that have assessed the circumstances under which drugs are used were qualitative in nature or incorporated single-item questions that asked about reason for use. Griffin et al. (1989) found no differences in the reasons cited for drug use. Reasons cited more frequently by men than women include hedonistic motivations or pleasure seeking (Hser, Anglin, & Booth, 1987; Langan & Pelissier, 2001) and peer acceptance (Hser, Anglin, & McGlothlin, 1987). Reasons cited more frequently by women include alleviation of physical or emotional pain (Chatham et al., 1999; Hser, Anglin, & Booth, 1987; Langan & Pelissier, 2001), social reasons or having a spouse who uses drugs (Hser, Anglin, & Booth, 1987), and drug availability or

recreational purposes (Chatham et al., 1999).

Even though studies generally did not find gender differences in overall severity of drug use, there appears to be more evidence that men have more problems with alcohol and marijuana and women with cocaine. The difficulty in identifying consistent patterns for various indicators of drug use is likely a result of different populations (i.e., alcohol users, cocaine users, methadone maintenance clients, and others), as well as different measures and differing time frames.

*Family and abuse histories.* One of the most frequently cited gender differences among substance users concerns abuse history. Most studies found women to have experienced higher rates of both sexual and physical abuse than men (Chatham et al., 1999; Gil-Rivas, Fiorentine, Anglin, & Taylor, 1997; Langan & Pelissier, 2001; Liebschutz et al., 2002; Messina et al., 2003; Messina et al., 2000; Peters et al., 1997; Robinson et al., 2001). However, other studies found that women experienced higher rates of sexual abuse but there were no gender differences in prior physical abuse (Boyd et al., 1993; Jainchill et al., 2000; Ouimette et al., 2000; Wallen, 1992). One study assessed only incest and found that women had higher rates than men (Janikowski, Bordieri, & Glover, 1997). Another study found no differences between men and women in received partner and non-partner violence (Chermack, Walton, Fuller, & Blow, 2001), and another found no gender differences related to family history of violence (Chermack et al., 2000). These findings are fairly consistent in finding that substance-abusing women have higher rates of abuse, particularly sexual abuse, than substance-abusing men.

Research has also examined whether or not women come from more dysfunctional families than men. The majority of studies found that women were more likely to have relatives, other than one's spouse, who had a substance use problem (Chermack et al., 2000; Davis & DiNitto, 1996; Denier et al., 1991; Langan & Pelissier, 2001) and that more women were more likely than men to have a spouse who used drugs (Anglin, et al., 1987; Griffin et al., 1989; Hser, Anglin, & Booth, 1987; Hser, Anglin, & McGlothlin, 1987; Langan & Pelissier, 2001; Riehm et

al., 2000). In contrast, Downey et al. (2003) and Grella (2003) did not find any gender differences in having a spouse who uses drugs. Several studies found differences by specific family member. Some found no difference for drug use of father but found women more likely to have other family members who used drugs (Boyd et al., 1993; Chatham et al., 1999; Westermeyer & Boedicker, 2000). In contrast, Peters et al. (1997) did not find any difference between men and women in the incidence of parents with substance use problems but found women were more likely to have siblings who used drugs. Although there were some differences in drug use by type of family member, the findings generally show that women were more likely than men to have family members who were also substance users.

As for the role of children, studies found that more women than men lived with (or planned to live with) their children or reported having minor dependents (Chatham et al., 1999; Langan & Pelissier, 2001; Lundy et al., 1995; McCance-Katz et al., 1999; Messina et al., 2000; Robinson et al., 2001). However, one study found no difference in the number of dependents (Goldstein et al., 1996), whereas another study found that although women had a greater number of minor children, there was no difference between men and women who lived with minor children (Grella, 2003).

*Criminal history.* Criminal history is the only aspect where women consistently appear to have less severe problems than men. The majority of studies found that a greater percentage of men experienced legal problems (Anglin, et al., 1987; Brown et al., 1993; Chatham et al., 1999; Grella & Joshi, 1999; Langan & Pelissier, 2001; Lundy et al., 1995; McCance-Katz et al., 1999; Messina et al., 2003; Messina et al., 2000; Oggins et al., 2001; Peters et al., 1997; Ross, 1989; Tortu et al., 1998; Westermeyer & Boedicker, 2000). Nonetheless, a few studies found no difference in the number of legal problems experienced by women and men (Dudish & Hatsukami, 1996; Haas & Peters, 2000; Weiss et al., 1997). Two studies (Hser, Anglin, & Booth, 1987; Hser, Anglin, & McGlothlin, 1987) found no difference in arrests among Chicanos but found that

Anglo men had more arrests than Anglo women. While seldom done, analysis by type of crime showed men engaged in more serious crimes, such as burglary, robbery, and assault, whereas women engaged in crimes such as prostitution (Dudish & Hatsukami, 1996; Grella, 2003; Luthar, Cushing, & Rounsaville, 1996; Peters et al., 1997; Tortu et al., 1998). Hser, Anglin, & McGlothlin (1987) found Anglo men engaged in more property crime than Anglo women, although this gender difference was not found between Chicano men and Chicano women do. These results demonstrate that men generally have more serious criminal histories than women. The only studies that found no difference are ones where the sample consisted of drug court participants currently charged with a non-violent crime (Haas & Peters, 2000) or where there sample size of women was very small (Weiss et al., 1997).

*Mental health issues.* A high prevalence of cooccurring mental health problems has been found in persons with substance use problems, with depression, anxiety, and antisocial personality disorder being the most common comorbid disorders reported (Anthony, Warner, & Kessler, 1997; Reiger et al., 1990). Various studies examining overall rates of psychiatric comorbidity found that women substance abusers had more psychological problems than men did (Benishek et al., 1992; Brown et al., 1993; Davis & DiNitto, 1996; Denier et al., 1991; Downey et al., 2003; Garg, Yates, Jones, Zhou, & Williams, 1999; Lundy et al., 1995; Peters et al., 1997), whereas others found women no more likely to experience psychological problems than men (Fiorentine et al., 1997; Galen et al., 2000; Grella, 2003; McCance-Katz et al., 1999; Weiss et al., 1997).

Studies of the commonly cooccurring disorders also found that women did not always have higher rates than men. More women than men have been reported to have anxiety including posttraumatic stress disorder (Benishek et al., 1992; Brady et al., 1993; Chatham et al., 1999; Grella & Joshi, 1999; Jainchill et al., 2000; Kingree, 1995; Messina et al., 2003; Peters et al., 1997). In contrast, women and men have also been found to have equivalent histories of anxiety (Fiorentine et al., 1997; Grella, 2003; McCance-Katz et al., 1999; Robinson et al., 2001; Weiss et

al., 1997). Studies of depression were also inconsistent. Some studies reported women experienced higher rates of depression than men (Benishek et al., 1992; Chatham et al., 1999; Fiorentine et al., 1997; Grella & Joshi, 1999; Griffin et al., 1989; Langan & Pelissier, 2001; Magura et al., 1998; Messina et al., 2003; Messina et al., 2000; Peters et al., 1997); while others found no gender differences (Brady et al., 1993; Dudish & Hatsukami, 1996; Grella, 2003; Jainchill et al., 2000; Kosten et al., 1993; McCance-Katz et al., 1999; Oggins et al., 2001; Robinson et al., 2001; Wallen, 1992; Weiss et al., 1997). Only one study found men had higher rates of both depression and anxiety (Lundy et al., 1995) and it is noteworthy that the sample of this study was a specific population, that is, African American cocaine users.

When differences in antisocial personality disorder (ASPD) were found, men had higher rates than women (Grella & Joshi, 1999; Griffin et al., 1989; Jainchill et al., 2000; Magura et al., 1998; Messina et al., 2000; Weiss et al., 1997) or no gender differences were found (Brady et al., 1993; Brown & Nixon, 1997; Galen et al., 2000; Langan & Pelissier, 2001; McCance-Katz et al., 1999). Studies that examined specific antisocial behaviors engaged in by men and women found that more men than women met the childhood criteria for ASPD, suggesting their antisocial behaviors may have begun earlier in life (Chermack et al., 2000; Luthar et al., 1996) or that the symptoms only began as an adult (Goldstein et al., 1996).

In summary, whether looking at the global level of mental health problems or specific diagnostic categories such as anxiety, depression and ASPD, no definitive conclusions about gender differences can be made except that women do not have less serious problems than men.

Overall, the most compelling evidence for gender differences regarding background characteristics and psychosocial functioning appears to be the higher rates of sexual abuse, employment problems and drug use problems among at least one family member experienced by women, as well as the greater percentage of women being responsible for a dependent child. In addition, men have more extensive criminal histories than women do. Findings about severity of

drug use problem and comorbid disorders are inconsistent.

*Drug Treatment Outcome Literature: A Focus on Women*

As mentioned earlier, many have assumed that gender differences in characteristics equate with gender differences in treatment needs and outcomes (Mulvaney et al., 1999). We now turn to an examination of the evidence on gender differences in outcomes.

Since 1980, the Federal government has funded more than 100 demonstration treatment programs for women with substance abuse problems. The Center for Substance Abuse Treatment (CSAT) also created a women and children's branch and some of its activities include the administration of 65 residential treatment programs for women and children and 12 outpatient programs for parenting and pregnant women (Mactas, 1998). More recently, CSAT awarded grants to seven demonstration programs to treat women with substance abuse problems in institutional settings (Kassebaum, 1999). However, few studies look at outcomes of treatment programs designed specifically for women (Landry, 1997).

The limited outcome data on women is considered by some as surprising given the large literature arguing for gender-specific treatment (Moras, 1998). One problem may be the relatively small numbers of female participants which result in sample sizes too small for statistical analyses (Moras, 1998). On the other hand, Hagan, Finnegan, and Nelson-Zlupko (1994) note that in all the studies published between 1984 and 1989, only 27.8% of the studies in which potential gender differences could have been observed reported evaluating such differences. This supports the conclusion of Tonneato, Sobell, & Sobell (1992) that outcome studies with both men and women often fail to report outcome by gender.

What do we know about drug and alcohol treatment outcomes for women? Table 1 provides a summary of the studies since 1985 where outcome analyses include gender. The studies are ordered by recency with the most recent studies listed first. The first column provides the author names and year of publication. The second column provides information on the sample



size of men and women and the third column identifies the type of program. In addition, type of drug of abuse is specified in this third column when the study's sample consists of users of a specific drug. The fourth column describes the domain(s) of the outcome measure(s) and the length of follow-up period. The outcome measures were limited to drug use and criminal history. Studies that have looked at outcomes such as employment and psychiatric symptoms are not included because of their scarcity. The fifth column provides information on the type of statistical analysis used and specifies whether the statistics were univariate or multivariate in nature. Unless otherwise specified, the studies do not have a comparison group but are pre-post designs. Furthermore, mention is made of whether the purpose was on an issue other than gender and identifies this purpose. If no mention is made, the focus is on gender. The findings column also summarizes the nature of gender differences.

Looking across the studies that have examined drug use during or after treatment and assessing whether women had more favorable outcomes than men, the findings show that either there was no significant difference between men and women (Acharyya & Zhang, 2003; Chatham et al., 1999; Galen et al., 2000; Gerstein et al., 1997; Martin, Butzin, Saum, & Inciardi, 1999; Messina et al., 2000; Mulvaney et al., 1999; Schildhaus & Shaw-Taylor, 2002) or that women had more favorable outcomes than men did (Gil-Rivas, Fiorentine, & Anglin, 1996; Kranzler, Del Boca, & Rounsaville, 1996; Pelissier, Camp, Gaes, Saylor, & Rhodes, 2003; Weiss et al., 1997). These findings are from studies where overall rates of drug use (or alcohol use when the population was a sample of alcohol dependent individuals) were examined. When studies examine the specific type of drug used, findings diverge by type of drug. For example, Kosten et al. (1993) found women to have lower cocaine use but there were no significant gender differences for alcohol and other drugs. Chatham et al. (1999) found that although there was no significant gender difference for drug use in general, women were more likely to use tranquilizers and men were more likely to use alcohol. In contrast, Schildhaus, Gerstein, Dugoni, Brittingham, &

Cerbone (2000) found that men had greater alcohol and marijuana use but that there were no gender differences for cocaine, crack and heroin use. Other results on gender differences in drug use outcomes do not have a clear interpretation because of the type of analysis used. Using path analysis, Walton, Blow, & Booth (2001) found no direct effect of gender on alcohol or drug use but rather found an indirect effect.

Even though many of these community-based studies focus on one type of program modality, others have samples from a variety of modalities. Some studies have, therefore, assessed gender differences across program modality type. Gender differences were found in such a study that compared results across program modality type. Gerstein et al. (1997) found that women in short-term residential programs, but not other programs, had less reduction in alcohol use than men did.

Criminal activity was examined in approximately half of the studies. These studies found that gender was not significant (Hiller, Knight, Broome, & Simpson, 1996; Martin et al., 1999), that women had a lower pre treatment to post treatment reduction in crime severity (Gerstein et al., 1997), or that women had lower arrest or recidivism rates (Messina et al., 2000; Pelissier et al., 2003). When criminal activity was reported by specific type of activity, women were found to have greater activity than men in some categories such as prostitution, but men had greater activity in other categories such as burglary (Chatham et al., 1999). Schildhaus et al. (2000) examined different categories and found some similar results. Women were more likely to engage in prostitution, men in selling drugs and burglary, but there was no gender difference for larceny or theft. Schildhaus & Shaw-Taylor (2002) reported no significant difference in overall rates of crime but reported men were more likely to sell or manufacture drugs.

We highlight that two studies, rather than assessing gender differences in one multivariate analysis, conducted separate analyses for men and women and compared predictors. Messina et al. (2000) did not test whether the coefficients were significantly different in their two regressions

presented but Pelissier et al. (2003) performed such a test. Both studies found many similarities between men and women in predictors of drug use or arrests. However, some differences were identified. Messina et al. (2000) found history of physical abuse to be a significant predictor of post-discharge drug use only among women. Among men only, age was a predictor of arrest, and among women only, the predictors of arrest included number of prior arrests and a history of drug treatment. In contrast, Pelissier et al. (2003) found that women with a history of mental health treatment were less likely to use drugs after release from prison. They also found that among men only, living with a spouse was predictive of lower arrest rates after release.

The limited literature on treatment outcomes is fraught with conflicting findings with respect to gender. This is not surprising given that these studies address different questions, use different methods of studying gender differences, are conducted in different settings, use different measures, and use different follow-up time frame (see Table 1). Such differences impede our ability to arrive at clear conclusions about the differential effects of treatment for men and women.

Even if we attempted to limit our conclusions to gender differences in outcomes in similar types of programs, it is difficult to assess the extent of gender similarities and differences in outcomes because of wide variation across various domains of these studies. Although not listed in Table 1 because information is not consistently provided, the studies vary in follow-up rates. Without an understanding of which individuals were not followed, conclusions about gender differences may be biased. A number of studies had follow-up rates ranging between 50% and 75% (Acharyya & Zhang, 2003; Galen et al., 2000; Kranzler et al., 1996; Walton, Blow, Bingham, & Chermack, 2003). Mulvaney et al. (1999) report that only 50% of those approached agreed to participate and among those, 82% actually completed the follow-up. In Gerstein et al. (1997), follow-up was limited to those not incarcerated before or after treatment, resulting in a follow-up rate of 67%. Did some of the other studies also lose individuals to incarceration?

Looking at the measure of drug use, most outcome studies use self-report measures and

few use urinalysis test results. Measures of criminal activity were used in less than half of the studies and varied from self-reported criminal activity to official arrest records. In addition to the difference between self-reported versus official records, comparisons across studies are rendered more difficult by the nature of the follow-up. A few studies use a follow-up period when individuals are still in treatment, that is, 6 months after treatment admission or baseline (Galen et al., 2000; Kosten et al., 1993; Mulvaney et al., 1999). The remaining studies assess outcomes which range from 5 months to 5 years after treatment.

It is also noteworthy that all of the community-based studies are natural history analyses of individuals in treatment. The two prison-based studies include comparison groups. The natural history studies cannot be readily compared with those including comparison groups.

Analyses are primarily multivariate in nature. The few studies which use univariate statistics were constrained by small samples sizes (Kosten et al., 1993; Weiss et al., 1997). The multivariate studies are diverse in nature and use logistic regression, event history analysis, and path analysis. The multivariate models include different predictor variables, and it is not unreasonable to presume that some of the studies may have found different results if additional predictors were used or if interaction terms between gender and salient characteristics were included.

## Discussion

Empirical data on gender differences does substantiate that the issues frequently mentioned in the literature on treatment needs – victims of sexual abuse, vocational training, child care, and parenting – are ones where a greater percentage of women have a problem than men do. However, statistical differences for a characteristic do not readily translate into clinical relevance, as many of the studies cited found that a large percentage of men also had these same issues. For example, many persons who enter substance use treatment (male or female) are undereducated and have sporadic employment histories, and although more women than men may live with their

minor children, men might also benefit from parenting classes that focus on their lack of involvement or avoidance of responsibility of being a parent (Goldstein et al., 1996).

Two frequently cited gender differences in the review literature on treatment needs that yielded inconsistent results in our more comprehensive review of the literature are that women substance users experience greater psychological problems and greater polydrug use than men do. For specific disorders such as anxiety, depression, and antisocial personality, as well as for severity of drug problems, our review of the research suggests that the functional problems experienced by persons with substance use disorders may be a result of the specific sample (e.g., type of drug users, type of program) examined rather than one's gender per se. Further investigation that evaluates the qualitative differences in these areas (rather than simply rate differences) may provide further insight into the impact of these issues on treatment modality or current standards for best practice.

There is a clear disconnect between studies assessing gender differences in background characteristics and those assessing gender in the context of outcome studies. Characteristics highlighted in the literature on background characteristics as differentiating men who use drugs from women who use drugs, are seldom, if ever, discussed in outcome studies. For example, women substance abusers are more likely to have experienced sexual abuse, and the literature on treatment needs consistently cites the need to address this issue in treatment. Gil-Rivas et al. (1996) found that neither gender nor posttraumatic stress disorder, a result of abuse, was related to drug relapse after treatment. Without additional research incorporating these factors, it is difficult to assess whether and how they are salient to gender differences in recovery.

There are a number of aspects – multisystemic approach, delivery style, type of orientation such as relational style, type of staff (e.g., all female) – cited in the theoretically based literature on treatment needs for which there is little or no research. It is not clear that some of the aspects mentioned are specific to women. For example, a study of 597 outpatient treatment sites

(Friedmann, D'Aunno, Jin, & Alexander, 2000) found that providing linkage mechanisms had a positive impact on client usage of medical and psychosocial services for both men and women. In a study of client engagement in treatment, Fiorentine et al. (1997) found the strongest predictors for both men and women included the perceived utility of treatment, the provision of ancillary services provided, and the relationship of the client with their counselor. Thus, incorporating a multisystemic treatment approach may yield positive effects regardless of gender. Also, although it has been proposed that women would benefit from treatment that was less confrontational, research has shown a confrontational therapist style has a negative impact on substance use behaviors for men (Miller, Benefield, & Tonigan, 1993) as well as families (Patterson & Forgatch, 1985) who present for treatment.

Although we identified 17 studies that reported on gender differences in treatment outcomes, we note that some studies did not have as their primary purpose the assessment of gender differences. Schildhaus et al.'s (2000) study focused upon comparing individual-level and program-level predictors. In Hiller et al.'s (1996) study, gender was a control variable which was not even discussed. But more important to the question of what is known about gender differences in treatment outcomes, the studies reveal little about the need for gender-specific treatment. The studies are ones where the men and women were either served in mixed-gender programs or where the programs for women were not described as being different from those available for men. Therefore, no conclusions can be made about whether gender-specific treatment is needed or whether gender-specific treatment produces more favorable outcomes than non gender-specific treatment.

We note the importance of criminal activity as a subject of outcome because it is used in almost half of the outcome studies, most of which are not comprised of populations in a criminal justice setting. However, other indicators of outcome such as employment, health, quality of life, etc. are seldom assessed.

In conclusion, much research remains to be done to adequately address the question of what specific components of treatment are necessary to ensure positive outcomes for female substance abusers. Outcome studies do not address the question of whether the programs would have had more or less success among women with gender-specific interventions as they rarely mention gender specific issues.

Despite the lack of information about treatment effectiveness for women, some, such as Zweben (1996) are ready to speculate why existing treatment models are less effective for women: male partners play a large role in recovery and are less supportive, and women face stressful life situations – they have many competing child care, legal, employment, and financial demands. In addition, poor vocational skills, depression, and physical disorders, make recovery for women much more difficult. In contrast to Zweben's (1996) viewpoint, Fiorentine et al. (1997) discuss the gender paradox which refers to the fact that women are no more likely to relapse despite having risk factors for relapse. One explanation offered for the gender paradox is that women are more likely to engage in drug treatment (Fiorentine et al., 1997). These comments suggest the need to examine differences in the process of recovery and not only differences in treatment needs.

Research has not systematically addressed whether women have better outcomes when treated in all-women programs as compared to mixed-gender programs (Walitzer & Connors, 1997). A roadblock to addressing this question may be that most women, particularly in community-based settings, are in mixed-gender programs (National Evaluation Data and Technical Assistance Center, 1997). Furthermore, as noted by Hodgins, El-Guebaly, & Addington (1997), there is a lack of controlled research on single-gender treatment.

Some limitations of this literature review should be noted. First, it does not incorporate information on physical health, antecedents of drugs use or biological effects of drugs. Second, it does not include studies of treatment entry as well as treatment retention. Third, no interpretation

is made of why gender differences may or may not exist and whether such differences may be distinct across criminal justice and non-criminal justice drug using populations. This information would need to be incorporated into a second phase of a literature synthesis on gender differences among drug users. Finally, the findings do not incorporate studies that had populations in which substance abuse may be high (e.g., persons with a severe mental illness), but substance abusers were not the base population sampled.

The following are recommendations for future research which may improve our understanding of the role of gender differences in treatment outcomes: (a) Identify what factors may be related to positive treatment outcomes for women but not men and vice-versa; (b) assess what program components are related to improved outcomes for women as well as men and whether there are specific program components more relevant to women than men; (c) evaluate not only what background differences and differences in etiology of drug abuse have clinical relevance but the process by which they are relevant to treatment outcomes in both community and criminal justice settings; (d) study the role of process issues mentioned in the treatment needs literature, such as role models and confrontational versus relationship orientation; (e) identify what factors are related to treatment entry and treatment engagement for men and women and how these, in turn, are related to treatment outcome; and, (f) conduct efficacy studies of treatment to assess gender differences in the existing non-gender-specific treatments as well as efficacy studies to assess differences in gender-specific versus non-gender specific treatment. In general, an underlying theme of such research would need to consider the role of gender differences in the general population as a context for assessing gender differences among substance users. Furthermore, consideration will need to be given to identifying qualitative differences rather than simply quantitative differences. For example, is the nature of depression among substance abusing women different than that of men, even though the rates of comorbidity may not be dissimilar? Such research would provide not only a more detailed analysis of our understanding of gender



differences in persons who abuse substances but would also have important implications for the provision of treatment among this population.

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Table 1

Outcome Studies of Drug Users which Report Results by Gender

Author/year	Sample	Program	Outcome measures	Time	Methods	Findings
Kosten, et. al., (1993)	31 men, 12 women	outpatient, cocaine abuse	self-reported drug use confirmed with urinalysis	6 months posttreatment	t-test	for women, lower cocaine use, no differences for other drugs or alcohol.
Gil-Rivas, et. al., (1996)	148 men, 182 women	outpatient	self-reported drug use	2 to 5 months posttreatment	logistic regression; focus on abuse history and PTSD	for women, somewhat less likely to use drugs, explained by women's higher frequency of counseling participation.
Hiller, et. al., (1996)	132 men, 59 women	outpatient, corrections-run, probationers	official arrest records	18 months posttreatment	logistic regression; focus on role of mental health status	gender not significant.
Kranzler, et. al., (1996)	166 men, 59 women	inpatient, VA, alcohol dependence	self-reported alcohol use: intensity and symptoms	3 years post-treatment	linear regression; focus on comorbid diagnoses	for men, poorer global alcohol-related outcomes; no gender by diagnosis interaction

Author/year	Sample	Program	Outcome measures	Time	Methods	Findings
Gerstein, et. al., (1997)	4,411 total; men vs. women unknown	Methadone Maintenance treatment, outpatient, residential and prison	self-reported drug use (some with urinalysis tests); self-reported criminal activity (some with state arrest records)	12 months posttreatment	multiple regression; purpose was what type of client improves	for women, less reduction in alcohol use in short-term residential and prison programs; gender not significant for other types of drug use; for women, less reduction in crime severity (for each type of program)
Weiss, et. al., (1997)	43 men, 31 women	inpatient, cocaine dependence	self-reported drug use	6 months posttreatment	Chi-square	for women, more abstinent
Chatham, et. al., (1999)	279 men, 126 women	MMT	self-reported drug use and urinalysis tests; self-reported criminal activity	12 months posttreatment	ANOVA	gender not significant for drug use in general; for women, higher use of tranquilizers; for men, higher use of alcohol; for women, higher rates of prostitution and forgery; for men, higher rates of burglary

Author/year	Sample	Program	Outcome measures	Time	Methods	Findings
Martin, et. al., (1999)	428 total; men vs. women unknown	therapeutic community work-release	self-reported drug use and urinalysis tests; self-reported criminal activity and official arrest record	3 years after release	logistic regression; comparison group	gender not significant
Mulvaney, et. al., (1999)	343 men, 205 women; Hispanic, African American	MMT	urinalysis tests	6 months post baseline	ANOVA and equivalence testing	gender not significant using ANOVA; however, equivalent testing does not allow conclusion that the groups had equivalent outcomes.
Galen, et. al., (2000)	121 men, 76 women	outpatient	self-reported drug use	6 months post baseline	ANOVA	gender not significant
Messina, et. al., (2000)	296 men, 116 women; outcome sample unclear	inpatient and out-patient	urinalysis tests ; official arrest record	19 months post treatment (average)	Chi-square; separate analyses for men and women	gender not significant for drug use; for men, higher arrest rates.

Author/year	Sample	Program	Outcome measures	Time	Methods	Findings
Reiber, et. al., (2000)	200 men, 97 women; outcome sample unclear	outpatient, cocaine and cocaine/opiate	self-reported drug use and urinalysis tests (# of urines not testing positive)	12 months post treatment admission	multiple regression	gender not significant
Schildhaus, et. al., (2000)	1,285 men, 514 women; outcome sample unclear	MMT, outpatient, hospital, residential	self-reported drug use (verified by urinalysis tests); self-reported criminal activity	5 years post treatment	multiple regression; focus was to compare individual vs. program level predictors	gender not significant for cocaine, crack and heroin; for men, higher rates of any illicit drug use, alcohol and marijuana use; gender not significant for larceny/theft; for men, higher rates of selling drugs and burglary; for women, higher rates of prostitution.
Schildhaus & Shaw-Taylor (2002)	880 M 304 W	MMT, residential, outpatient, combination modality	self-reported drug use; self-reported criminal activity	12 months posttreatment	logistic regression; focus was to compare individual vs. program predictors	Gender not significant for drug use or any crime; for men, higher rates of manufacturing drugs

Author/year	Sample	Program	Outcome measures	Time	Methods	Findings
Acharyya & Zhang (2003)	2,966 total; men vs. women unknown	MMT, short-term inpatient, residential, outpatient	self-reported cocaine use	12 months posttreatment	cumulative logit model	gender not significant
Pelissier, et. al., (2003)	1,842 men, 473 women	residential, prison-based	urinalysis tests; arrest record (as reported by probation officer)	3 years post-release from prison	event history; separate analyses for men and women; comparison group	For women, lower rates of post-release drug use and arrests.
Walton, et. al., (2003)	180 total; men vs. women unknown	not specified	self-reported drug use (# of days)	2 years post-treatment	path analysis; purpose was social & environmental predictors	No direct effect of gender on alcohol or drug use. Indirect effect of gender.

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