

A Tale of Two Systems: Co-Occurring Mental Health and Substance Abuse Disorders Treatment for Adolescents

Elizabeth H. Hawkins

Addictive Behaviors Research Center, University of Washington, Seattle,
Washington 98195; email: elizabeth@u.washington.edu

Annu. Rev. Psychol. 2009. 60:197–227

The *Annual Review of Psychology* is online at
psych.annualreviews.org

This article's doi:
10.1146/annurev.psych.60.110707.163456

Copyright © 2009 by Annual Reviews.
All rights reserved

0066-4308/09/0110-0197\$20.00

Key Words

behavioral health services, evidence-based practices, integrated
treatment, therapeutic interventions

Abstract

Co-occurring disorders present serious challenges to traditional mental health and substance abuse treatment systems. Among adolescents in need of behavioral health services, co-occurring disorders are highly prevalent and difficult to treat. Without effective intervention, youth with co-occurring disorders are at increased risk of serious medical and legal problems, incarceration, suicide, school difficulties and dropout, unemployment, and poor interpersonal relationships. In general, current service systems are inadequately prepared to meet this need due to a variety of clinical, administrative, financial, and policy barriers. This article presents an overview of co-occurring disorders among adolescents, highlights general considerations for co-occurring disorders treatment, reviews selected treatment models and outcomes, and discusses recommendations and best practice strategies.

Contents		
INTRODUCTION	198	
CO-OCCURRING DISORDERS		
AMONG ADOLESCENTS	198	
Definitions	198	
Epidemiology	199	
Characteristics	200	
Etiology	201	
Course	202	
GENERAL CONSIDERATIONS IN		
THE TREATMENT OF		
CO-OCCURRING		
DISORDERS		203
Barriers to Treatment	203	
Which System is Primary?	205	
Program Readiness for Integrated		
Services	206	
Unmet Treatment Needs and		
Consequences	206	
TREATMENT MODELS AND		
OUTCOMES		207
Treatment Planning and Care		
Coordination	207	
Integrated Treatment Models	209	
RECOMMENDATIONS		215
Principles to Guide Clinical		
Practice	215	
Research Considerations	217	
Systemic Recommendations	217	
CONCLUSION		218

INTRODUCTION

Adolescence is a time of dramatic physical, developmental, social, and emotional change. It is also a time when both mental health and substance abuse problems commonly first emerge. Symptoms are often mistaken for the normative angst and emotional volatility that can accompany youth. This, in addition to multiple systemic and organizational barriers, leads co-occurring disorders to be frequently underdiagnosed (King et al. 2000). In recent years, however, attention has increasingly focused on the issue of co-occurring mental health and

substance use disorders among young people (President's New Freedom Commission Ment. Health 2003, U.S. Dep. Health Human Serv. 2002). Clinicians, researchers, and policymakers are now recognizing that individuals with co-occurring disorders are less likely to receive treatment and tend to have poor outcomes in traditional treatment settings when they do receive care. This can result in disastrous consequences, both individual and societal, because the presence of co-occurring disorders increases the risk for serious medical and legal problems, incarceration, suicide, school difficulties and dropout, unemployment, homelessness, and poor peer and parental relationships (U.S. Dep. Health Human Serv. 2002). Co-occurring disorders present significant challenges to traditional mental health and substance abuse service sectors, and critical changes are needed in order to provide effective and competent treatment for adolescents.

The goal of this article is to provide a better understanding of these issues by offering a background overview of co-occurring disorders, a discussion of general treatment considerations, a review of selected treatment models and outcomes, and a presentation of recommendations and best practice strategies. Sources were primarily drawn from the published peer-review literature found in the MEDLINE and PsycINFO databases.

CO-OCCURRING DISORDERS AMONG ADOLESCENTS

Definitions

Co-occurring disorder, also known as dual diagnosis, commonly refers to a person who meets *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; Am. Psychiatr. Assoc. 2000) criteria for at least one mental health and one substance use disorder. These disorders must be independent of each other, not merely a cluster of symptoms resulting from a single disorder (Cent. Subst. Abuse Treat. 2005). This is often difficult to determine because the effects of substance use can resemble mental health

Co-occurring

disorders: refers to an individual who meets DSM-IV criteria for at least one mental health and one substance abuse disorder

symptomatology and vice versa. In addition, substance abuse can lead to mental illness and mental illness can lead to substance abuse.

The term “substance use disorders” encompasses both abuse and dependence. Substance abuse is characterized by a maladaptive pattern of use that results in significant and recurrent negative consequences, such as failure to fulfill major role obligations, use in situations that are physically dangerous, legal problems, and social or interpersonal difficulties. Substance dependence, often commonly referred to as “addiction,” is more severe and is additionally marked by the development of compulsive drug-seeking behavior, tolerance, and withdrawal symptomatology (Am. Psychiatr. Assoc. 2000). The term “substance abuse,” although referring to a distinct clinical diagnosis, is often informally used to describe substance use disorders in general (Cent. Subst. Abuse Treat. 2007a).

Among adolescents, diagnostic criteria are less standardized due to developmental, psychological, and social differences between adult and adolescent substance use and misuse (Hawkins et al. 2004). For example, youth often use less frequently but in greater amounts, and use occurs more often within the context of partying (Oetting & Beauvais 1989, White & LaBouvie 1989). This binge-style pattern of drinking and drug use increases risk for immediate adverse consequences but decreases the likelihood that substance-abusing adolescents will experience tolerance or withdrawal symptoms.

Serious emotional disturbance (SED) refers to youth under the age of 18 who currently or at any time during the past year have had a DSM-IV diagnosable mental, behavioral, or emotional disorder (Cent. Subst. Abuse Treat. 1998). This disorder must result in a functional impairment that significantly interferes or limits a child’s family, school, or community activities (Cent. Subst. Abuse Treat. 1998). The determination of SED includes any mental disorder listed in the DSM-IV with the exception of substance-related disorders, developmental disorders, dementia, and mental disorders due to a general medical condition.

Although it is commonly understood that co-occurring disorders refer to individuals with both mental health and substance use disorders, there is little agreement about the precise definition. The label co-occurring disorders has been used to categorize everything from currently meeting diagnostic criteria for both classes of disorders to both being present at some point during the lifetime of the individual, whether concurrent or not (Angold et al. 1999). The Substance Abuse and Mental Health Services Administration’s (SAMHSA) Co-Occurring Center for Excellence recommends using a broad service definition of co-occurring disorder that includes individuals who (a) are prediagnosis, in which there is one established and one evolving disorder; (b) are postdiagnosis, in which one or more of the disorders have resolved for a substantial period of time; or (c) have a single disorder and acute symptoms of a co-occurring condition, such as substance-related suicidal ideation (Cent. Subst. Abuse Treat. 2007a).

Epidemiology

Determining the true prevalence of co-occurring disorders among youth is very difficult for a number of reasons. Many people underreport behavioral health symptoms in survey research (Turner et al. 1998), the diagnostic precision and definition of comorbidity are often very different from one study to another, and there are usually biases in epidemiological estimates based on sample differences. Prevalence data generally come from either population-based community or clinical studies. Although gathering community data is the preferable method, it often underestimates rates for adolescents because of selection bias. For example, studies of youth often capitalize on school-based surveys, but youth with co-occurring disorders are less likely to attend school on a regular basis and so may be missed. And clinical samples, although useful for many purposes, tend to overestimate the prevalence of co-occurring disorders (Costello et al. 2000).

Despite these methodological difficulties, there does seem to be agreement that co-occurring disorders among adolescents are the norm rather than the exception (Riggs 2003, Roberts & Corcoran 2005). Among representative community samples, 12-month estimates from both the Epidemiologic Catchment Area Survey (Regier et al. 1990) and the U.S. National Comorbidity Study (Kessler 2004, Kessler et al. 1996) show that about 22%–23% of the adult population has a diagnosable psychiatric disorder. About 15% of these are believed to have a co-occurring substance abuse disorder. Data from the National Comorbidity Study further indicate that about half of respondents with a lifetime substance abuse disorder (51.4%) also met criteria for at least one lifetime mental health disorder. Likewise, half of those with a lifetime mental disorder (50.9%) also had history of a substance abuse disorder. The National Household Survey on Drug Abuse (Subst. Abuse Ment. Health Serv. Admin. 2002) estimates that about 7% of adults surveyed qualified as having serious mental illness, a more severe designation than merely having a diagnosable mental disorder. Of these, approximately 20% also had a substance abuse disorder.

Although these large-scale epidemiological studies often do not give specific prevalence rates for adolescents, it is believed that the rates are comparable to or higher than those for adults (Rohde et al. 1991). Kandel and colleagues (1999) looked at this issue using data from the Methods for the Epidemiology of Child and Adolescent Mental Disorders Study, which included a community sample of 401 adolescents from four geographic regions in the United States (Lahey et al. 1996). They found that 6.2% of 14- to 18-year-olds had a current substance use disorder, with the prevalence increasing with age to a high of 9.9% among 17-year-olds. On the mental health side, 27.8% of youth had a current anxiety, mood, or disruptive behaviors disorder diagnosis. Among youth with a current substance use disorder, 76% had a comorbid psychiatric disorder. When looking at lifetime comorbidity, the Oregon Adolescent

Depression Project (Lewinsohn et al. 1993) reports a similar finding. In their study of 1710 Oregon high school students ages 14 to 18, they found psychiatric comorbidity among 66.2% of youth with a substance use disorder.

Further evidence of the high rate of co-occurring disorders among adolescents comes from research utilizing clinical samples. In one study of youth seeking mental health treatment, approximately 43% had been diagnosed with a co-occurring disorder (Cent. Mental Health Serv. 2001). Research on adolescents entering substance abuse treatment found that 72% of marijuana users reported two or more psychiatric symptoms (Diamond et al. 2006). The Center for Substance Abuse Treatment reports that among adolescents entering substance abuse treatment, 62% of males and 83% of females also had one or more emotional or behavioral disorders (U.S. Dep. Health Human Serv. 2002). A study of Latino and African American adolescents who were referred to outpatient substance abuse treatment indicates that 87% reported symptoms of at least one co-occurring disorder, with about 54% reporting symptoms of three or more disorders (Robbins et al. 2002). Finally, data pooled from 77 substance abuse treatment studies funded by the Center for Substance Abuse Treatment, the National Institute on Alcohol Abuse and Alcoholism, the National Institute on Drug Abuse, the Robert Wood Johnson Foundation, and the Interventions Foundation found that 90% of adolescents under the age of 15 with substance dependence had at least one co-occurring mental health problem in the past year (Chan et al. 2008). Approximately 81% were identified as having at least one externalizing problem, 69% as having one or more internalizing problems, and 61% as having both externalizing and internalizing problems.

Characteristics

General rates of comorbidity are high among adolescents, but certain diagnostic combinations are more likely than others. Study after study has found the highest rate of co-occurring

substance use disorders among youth with disruptive behavior disorders and the lowest among those with anxiety disorders (Boyle & Offord 1991, Brown et al. 1990, Cohen et al. 1993, DeMilio 1989, Greenbaum et al. 1991, Kaminer 1991, Kandel et al. 1999, Lewinsohn et al. 1993, Roehrich & Gold 1986). In a meta-analysis, Costello and colleagues (2000) found that youth with a substance use disorder had a five to seven times increased risk of also having a disruptive behavior disorder, such as attention deficit hyperactivity disorder (ADHD), conduct disorder, or oppositional defiant disorder. Youth who abused substances were approximately four times more likely to have comorbid depression and were two times more likely to have an anxiety disorder.

Although the research literature is small, there does seem to be evidence of gender differences in patterns among adolescents with co-occurring disorders. Males tend to have higher rates of illicit drug use, particularly frequent use (Johnston et al. 2007), and are more likely to develop polysubstance abuse or dependence. As well, they are more likely to be diagnosed with externalizing disorders, such as conduct disorder and ADHD, whereas girls are more likely to have internalizing mood or anxiety disorders (Latimer et al. 2002, Loeber & Keenan 1994). Consequently, males tend to have higher rates of co-occurring disorders because disruptive behavior disorders are highly linked to comorbidity, and males have higher rates of both substance abuse and externalizing disorders.

However, even though males have higher absolute rates of co-occurring disorders, the risk for comorbidity is higher for females. It has been reported by the National Household Survey on Drug Abuse (Subst. Abuse Ment. Health Serv. Admin. 1996) that females with high rates of psychological problems are as likely as males to smoke cigarettes, binge drink, and use illicit drugs. Similarly, although females are less likely to have a disruptive behavior disorder, when they do they are more likely to have a co-occurring substance abuse problem than are males (Boyle & Offord 1991). In their meta-analysis, Costello and colleagues (2000) found

that females who used alcohol or drugs were at greater risk for comorbidity than were males. This relationship held for every disorder category except for depression. Finally, in a study of adolescents referred to drug treatment (Rowe et al. 2004), it was found that females had higher rates of co-occurring substance abuse, internalizing, and externalizing disorders than did males (83% versus 44%). These findings all point to the conclusion that the pattern and severity of co-occurring disorders may be different in males and females.

Etiology

It is clear that mental health and substance use disorders often co-occur. Both can be considered developmental disorders, in the sense that they generally begin in childhood or adolescence while the brain is still developing. Inevitably, the question arises as to which type of disorder tends to emerge first. According to Mueser and colleagues (1998), there are four general models for the development of co-occurring disorders: (a) common factor models, in which shared risk factors predispose individuals to both mental health and substance abuse disorders; (b) secondary substance abuse disorder models, which posit that mental illness increases risk for developing a substance use disorder; (c) secondary mental/psychiatric disorder models, in which substance abuse precipitates a mental disorder in individuals who might not otherwise develop problems; and (d) bidirectional models, which state that the presence of either a mental health or substance abuse disorder increases vulnerability for developing the other disorder. Based on their review of the literature, these researchers found modest support for the common factor model and the secondary substance abuse disorder model.

Common factor model. According to the common factor model, high rates of comorbidity are the result of shared risk factors. Indeed, research shows that both mental health and substance abuse disorders among adolescents are

associated with similar risk factors, including family history, individual personality variables, environmental factors, and traumatic events. It is important to note that various risk factors may be more or less salient depending on the developmental stage of the child (Kandel 1982). For example, parental influences may be particularly critical with younger youth, whereas peer influences gain more relevancy as the child grows older.

Family history includes genetic factors, parental psychopathology, and parental substance use. Individual personality variables associated specifically with disruptive behavior disorders and the development of co-occurring disorders include sensation seeking, risk taking, and impulsive behavior. Shared environmental risks include poverty and lower socioeconomic status (Hawkins et al. 1992, Holzer et al. 1986, Reinherz et al. 1992), the availability of alcohol and drugs within the home, poor parental support, poor parental supervision or neglect (Clark et al. 2005), parental separation or divorce (Libby et al. 2005), and affiliation with deviant peers (Cornelius et al. 2007, Moss et al. 2003). Traumatic events associated with the development of mental health and substance abuse problems include physical or sexual abuse and significant early loss (Libby et al. 2005). The onset of sexual behavior at an early age has also been found to predict subsequent substance use disorders among youth (Cornelius et al. 2007, McGue & Iacono 2005).

Secondary substance abuse disorder model.

Although consensus is far from clear on this issue, and individual cases differ, research suggests that mental health problems most often precede substance abuse among youth. Data from the National Comorbidity Study found that among adults surveyed, the median age of onset for a mental disorder was 11, whereas the substance abuse disorder developed between 5 to 10 years later (Kessler 2004, Kessler et al. 1996). Approximately 83% of those with lifetime co-occurring disorders reported having at least one mental health disorder prior to the

onset of a substance abuse disorder, with about 13% reporting that a substance use disorder preceded the mental health disorder and 4% reporting that they first occurred in the same year. (Kessler et al. 1996). When looking at 12-month co-occurrence rates, approximately 89% of respondents reported having a mental health disorder prior to onset of a substance abuse disorder, 10% reported the substance abuse disorder as occurring first, and 1% reported that they first occurred in the same year (Kessler et al. 1996). Similarly, Libby and colleagues (2005) found that almost 70% of their adolescent sample had onset of major depression prior to the onset of a substance use disorder. Finally, one longitudinal study found that signs of emotional and behavioral problems at young ages (e.g., not getting along with others, low self-esteem, showing physical signs of stress, inattentiveness) distinguished those who were later to become heavy marijuana users (Shedler & Block 1990).

It is commonly assumed that older children and adolescents with mental health problems often begin using substances as a means of self-medication, to forget unpleasant experiences, or to fill an emotional void (Mainous et al. 1996, Weiss & Mirin 1987). The social stress model posits that adolescents may begin using alcohol and drugs as a method of coping with stressors that occur within the family, school environment, peer relationships, or the community (Rhodes & Jason 1990). Older siblings, parents, or other adults who use substances in these ways may model this behavior. Youth not only learn the substance use behavior, but they may also internalize a positive expectancy that alcohol or drugs are a helpful way of escape or a useful method of coping with stress, tension, or overwhelming emotional states. This expectancy, in turn, predicts alcohol and drug use (Rather et al. 1992, Simons-Morton et al. 1999, Stacy et al. 1991).

Course

Adolescence is a critical period for the development and acquisition of major social, emotional,

and occupational life skills. The presence of either a mental health or substance use disorder can disrupt this period and have long-term effects. It has been noted that prevalence rates of depression and substance abuse are increasing for younger generations as compared to what older research has shown (Burke et al. 1990, Kessler et al. 1994). This indicates that the developmental impact and associated negative sequelae may be more pronounced for youth with co-occurring disorders, as comorbidity is often associated with an earlier age of onset of symptoms and a more chronic and persistent course.

In general, psychopathology in adolescence may be associated with lower social competence (McGee et al. 1990) and continued or long-term impairment in young adulthood (Fleming et al. 1993, Kandel & Davies 1986). One study found that early onset of psychiatric disorders (by age 14) was strongly related to impaired psychological functioning at age 18 (Giaconia et al. 1994), even among youth who were not actively symptomatic at that age.

Compared to adolescents with substance use disorders alone, those with psychiatric comorbidity are more likely to have an earlier onset of substance use and to use more frequently and chronically (Cent. Subst. Abuse Treat. 2007b, Chan et al. 2008, Greenbaum et al. 1991, Grella et al. 2001, Rohde et al. 1996, Rowe et al. 2004). Adolescents who have early onset of substance use tend to continue using as they age and are at greater risk of developing substance dependence as adults (Brown et al. 1994, Crowley et al. 1998, Giaconia et al. 1994, Robins & Pryzbeck 1985). Youth with co-occurring substance abuse and behavioral disorders tend to have higher rates of poly-substance use, engage in more delinquent and criminal activity, and are at higher risk for out-of-home placements (Randall et al. 1999). They are also more likely to drop out of treatment and have poorer outcomes (Crowley et al. 1998, Kaminer et al. 1992, Wise et al. 2001).

GENERAL CONSIDERATIONS IN THE TREATMENT OF CO-OCCURRING DISORDERS

Barriers to Treatment

Adolescents with co-occurring disorders often fail to receive effective treatment, if any at all. Although both mental health and substance use disorders are considered psychiatric conditions, and both are delineated in the DSM-IV (Am. Psychiatr. Assoc. 2000), in practice, there has been a divergence in how they are assessed and treated. What follows is a brief discussion of some of the major barriers to receiving treatment, including youth and family issues, a fragmented service delivery system, clinical and administrative barriers, and funding gaps and policy barriers.

Youth and family issues. A great stigma is associated with both mental health and substance abuse problems. This stigma affects help-seeking behavior at all levels. The youth often believes s/he is fine, perhaps no different or even better off than peers, and may be highly resistant to any form of intervention. Parents, while concerned about their child's behavior, might fear the social or economic repercussions of treatment. They might believe they can handle it alone or that the adolescent will outgrow the behavior. In addition, parental psychopathology or substance use, both of which are more common among families with co-occurring disordered youth (Rowe et al. 2001), may foster resistance to treatment.

In a study examining reasons for early termination among youth attending outpatient substance abuse treatment, it was found that therapist-client racial match, practical obstacles such as transportation or other responsibilities, and treatment readiness were related to whether a youth attended sessions (Mensingher et al. 2006). In another study, poor therapeutic alliance and parental money concerns were main reasons cited for ending mental health treatment early (Garcia & Weisz 2002). Stigma,

resistance, and family stressors, coupled with lack of education about co-occurring disorders and available resources, often results in an underutilization of adolescent treatment services.

Fragmented service delivery system. Traditional behavioral health treatment in this country revolves around separate and often disconnected systems. In general, conceptualizations of illness and corresponding treatment philosophies are strikingly different, and required educational backgrounds, training experiences, and licensing requirements vary widely between mental health and substance abuse sectors. Few significant cross-training opportunities are present in training programs (Drake et al. 2001), and incentives and resources for seeking them out are limited once students have become practitioners. There are no widely accepted models for co-occurring disorders specialist certifications, and becoming dually certified or licensed is an onerous burden that most do not undertake. As a result, few providers at the local level are knowledgeable and capable of treating co-occurring disorders.

Historically, some degree of animosity has existed between mental health and substance abuse treatment systems. Each side is justifiably invested in its own system and feels strongly about the education and training it promotes. Substance abuse treatment providers commonly believe in the medical or disease model of addictions, whereas mental health providers are more likely to believe in a biopsychosocial model. Both sets of providers are highly specialized, and often there is disdain for the idea that the other can adequately assess or treat both disorders. These conflicts often make it difficult to coordinate and collaborate across systems.

Further, there is generally poor communication and coordination between behavioral health care systems and other child-serving agencies, such as education, child welfare, juvenile justice, and medical health care. This is especially problematic for youth with co-occurring disorders because juvenile justice is often the gateway through which these adoles-

cents are first referred to mental health and substance abuse services (Libby & Riggs 2005), and they are much more likely than their peers to be involved in multiple systems.

Clinical and administrative barriers. Clinically, there is a lack of comprehensive, developmentally appropriate treatment services for co-occurring youth. The vast majority of research has tested adult interventions, but these are generally not suitable for adolescents. Age and developmental stage must be taken into account, as well as the differing emotional pressures and needs faced by adolescents. For example, youth are highly vulnerable to influences from peers and family, both of which need to be considered in a treatment setting (Lysaught & Wodarski 1996).

As a result, treatment agencies and programs tend to be unprepared to serve youth with co-occurring disorders. They most often lack provider capacity, appropriate treatment models, administrative guidelines, and quality assurance procedures. In addition, comprehensive screening, assessment, treatment planning, and outcome measures are not commonly used.

Funding gaps and policy barriers. Funding for both mental health and substance abuse services comes from a patchwork of separate federal, state, local, and private funding sources (U.S. Dep. Health Human Serv. 2002). Coverage is limited and does not cover the need in either system, thus creating competition. It is estimated that only about one-third of people in need of mental health treatment receive services (U.S. Dep. Health Human Serv. 1999), and only 20% of those in need of substance abuse treatment receive care (Subst. Abuse Ment. Health Serv. Admin. 2000). Co-occurring disorders are often not covered by either system, and many providers are reluctant to assess and diagnose a problem for which treatment or reimbursement is unavailable.

Another factor influencing financing for co-occurring disorders is that mental health services are generally covered under Medicaid,

whereas substance abuse benefits are optional (Libby & Riggs 2005). As a result, mental health services have developed a Medicaid billing system to supplement other funding sources, and substance abuse centers tend to rely on block funds and grants. Having different funding streams and administrative requirements hinders cross-system collaboration and the development of integrated treatment services.

Which System is Primary?

There is often debate surrounding which disorder to treat first with adolescents with co-occurring disorders. Mental health systems may be unwilling to provide services until substance use has stopped and associated symptoms are under control. Likewise, the substance abuse system may be leery of treating clients with active mental illness symptoms or those who are on psychotropic medications. Frequently, there is the belief that any drug use, even that which is prescribed psychiatrically, is harmful. Traditionally, neither system has the knowledge, experience, or capacity to provide integrated treatment.

To address this issue of where and how to treat people with co-occurring disorders, SAMHSA worked in collaboration with the National Association of State Mental Health Program Directors (NASMHPD) and the National Association of State Alcohol and Drug Abuse Directors (NASADAD). Together, NASMHPD and NASADAD (1998) developed a conceptual framework to aid in understanding co-occurring conditions and the level of coordination needed between service systems to address them. It is based on relative symptom severity, not diagnosis, and comprises four quadrants: (a) low addiction, low mental illness severity; (b) low addiction, high mental illness severity; (c) high addiction, low mental illness severity; and (d) high addiction, high mental illness severity.

The model recommends moving toward integration as the severity of the co-occurring disorder increases, and it delineates a continuum

of care based on provider behavior that spans minimal coordination consultation, collaboration, and integration (Cent. Subst. Abuse Treat. 2007a, Nat. Assoc. State Ment. Health Prog. Directors, Nat. Assoc. State Alcohol Drug Abuse Directors 1998). Minimal coordination occurs when one service provider is aware of a co-occurring condition but has little to no contact with other providers. Consultation is relatively informal and includes the occasional exchange of clinical information. Collaboration is more structured and involves regular and planned communication between providers. It is marked by the existence of formal agreements or expectations regarding contact between providers. And last, integration refers to the development of a single treatment plan that addresses both mental health and substance abuse conditions. Integrated treatment can be provided by two individuals in separate systems that have entered into a formal arrangement to develop and implement a treatment plan that addresses the co-occurring disorders. It can also be provided by two individuals in the same system or by one individual who is qualified to treat both conditions.

The utility of this framework has been questioned by a panel of experts (Pincus et al. 2006), and an argument could be made that it is less developmentally appropriate for adolescents than adults. For youth with co-occurring disorders, it is necessary to provide integrated services, including prevention and early intervention, regardless of which quadrant they fall into. Both disorders should be considered primary and treated as such (Drake et al. 1991, Minkoff 1991). Since many adolescents with co-occurring disorders do not recognize their substance use as a problem, integrated services may offer an opportunity to engage and motivate youth in treatment while offering additional supportive services (Drake et al. 1998). To ensure optimal outcomes, it is critical to provide comprehensive assessment and treatment planning that includes the family, school, and other systems with which the child is involved (e.g., child welfare, juvenile justice, medical).

Integrated services: any process in which mental health and substance abuse services are combined at the individual-client level to include at a minimum integrated screening, assessment, treatment planning, services delivery, and continuing care

Program Readiness for Integrated Services

Traditionally, if adolescents with co-occurring disorders were to receive dual treatment, it would be either serial or parallel. Serial treatment refers to individuals receiving treatment for one kind of disorder followed sequentially by treatment for the other. Parallel treatment refers to individuals who receive both kinds of treatment at the same time, but the providers either have little or no coordination with one another. Currently it is recognized that serial and parallel treatment models are not effective and that integration is necessary for optimal outcomes. Services integration includes any process in which mental health and substance abuse services are combined at the individual-client level (Cent. Subst. Abuse Treat. 2007c).

The American Society of Addiction Medicine has developed a patient placement system that categorizes three types of substance abuse programs for people with co-occurring disorders. These are addiction-only, dual-diagnosis-capable, and dual-diagnosis-enhanced services (Am. Soc. Addict. Med. 2001). Dual-diagnosis-capable programs address co-occurring issues throughout their assessment and treatment planning and delivery, whereas dual-diagnosis-enhanced programs provide integrated treatment services for those who are more symptomatic or functionally impaired. SAMHSA (2005) employs a system that classifies both mental health and substance abuse programs as basic, intermediate, or advanced in terms of their abilities to provide integrated care. According to SAMHSA (Cent. Subst. Abuse Treat 2007c), integrated care includes at a minimum providing integrated screening, assessment, treatment planning, treatment delivery, and continuing care. Integrated services can be offered by a single provider in one setting, by two or more providers in the same setting, or by multiple providers in multiple settings. Systems integration can facilitate this by offering infrastructure support and sustainability.

Unmet Treatment Needs and Consequences

Youth with co-occurring disorders are challenging to serve. Symptoms are often more severe than in individuals with just one disorder, and adolescents with co-occurring disorders tend to have multiple psychosocial and family issues that further complicate their care. Treatment engagement and retention are difficult, and intervention outcomes tend to be poor. In one study of adolescents in substance abuse treatment, it was found that youth without co-occurring disorders showed the best long-term outcomes. Those with co-occurring externalizing disorders recovered more slowly, and those with both co-occurring externalizing and internalizing disorders had the worst outcomes (Rowe et al. 2004). Youth with co-occurring disorders are more likely to relapse after treatment (Grella et al. 2001), and relapse usually occurs more quickly than for youth with substance use disorders only (Tomlinson et al. 2004). Youth experiencing psychiatric symptoms and limited feelings of self-efficacy appear most vulnerable to relapse following periods of conflict, life stress, or negative emotional states (Ramo et al. 2005).

It is estimated that the majority of people with co-occurring disorders do not receive treatment (Subst. Abuse Ment. Health Serv. Admin. 2000, U.S. Dep. Health Human Serv. 1999). Many never get identified or referred for services or they fail to attend their intake appointment. Of those who do enter outpatient therapy, between 40% and 60% terminate early (Kazdin 1996, Wierzbicki & Pekarik 1993). The cost of failing to effectively treat these youth is high. Youth with co-occurring disorders have higher rates of impaired functioning, suicide attempts, and academic difficulties (Lewinsohn et al. 1996). Left untreated, their problems are likely to continue into adulthood with a chronic and persistent course. This sets the stage for increased risk as adults of unemployment, homelessness, victimization, legal difficulties, serious medical problems,

emergency room care, and institutionalization (U.S. Dep. Health Human Serv. 1999).

TREATMENT MODELS AND OUTCOMES

As the need for integrated treatment for adolescents with co-occurring disorders has become increasingly clear, it has intersected with a separate but related movement concerning best practices. Over the past decade, there have been increased demands from consumers, family members, and policymakers for accountability for behavioral health interventions and improved outcomes. Although the idea of evidence-based practice is not new (Mechanic 1998), there is no commonly accepted definition, and organizations have responded in various ways.

The Institute of Medicine (2001, p. 147) defines evidence-based practice as “the integration of best research evidence with clinical expertise and patient values.” The Presidential Task Force on Evidence-Based Practice (2006) of the American Psychological Association (APA) expanded this definition for the field of psychology to “the integration of the best available research with clinical expertise in the context of patient characteristics, culture, and preferences.” In addition, APA has published a variety of resources that delineate criteria for evaluating the efficacy of clinical interventions (Am. Psychol. Assoc. 1995, 2002) as well as specify those treatments they consider to be empirically validated (Chambless & Ollendick 2001).

Rather than advancing a concrete definition of evidence-based practice, the National Institute on Drug Abuse (1999) outlined 13 principles of effective treatment plus developed a clinical toolbox of science-based materials for drug abuse treatment providers. Likewise, SAMHSA does not offer a single definition of evidence-based practice. Instead, under the auspices of the National Registry of Evidence-Based Programs and Practices (NREPP), mental health and substance abuse interventions are evaluated and rated by independent reviewers on the qual-

ity of their research and their readiness for dissemination.

An examination of these various evidence-based practice lists and registries reveals a paucity of interventions developed to concurrently treat mental health and substance abuse disorders in adolescents. Those that do emerge tend to fall into one of two general approaches. The first is treatment planning and care coordination, which helps create a system of care in which individual services are provided to best meet the needs of each adolescent and his/her family. The second approach includes a handful of research-supported integrated interventions that simultaneously address both mental health and substance abuse disorders. Major findings of the treatment models reviewed here are summarized in **Table 1**.

Treatment Planning and Care Coordination

With the traditional separation of mental health and substance abuse fields, integrated service systems have been hard to achieve. Although successful efforts are being made, numerous clinical, administrative, financial, and policy barriers stand in the way of mainstream adoption of these models. However, there are treatment planning and support services that help facilitate a more coordinated treatment approach without the necessity of integrated programs. Two such services, intensive case management and wraparound, are described here.

In intensive case management, specially trained professionals assess and coordinate the supports and services necessary to help individuals with serious mental illness live in the community. For adolescents with co-occurring disorders, this may include developing and monitoring a comprehensive service plan, providing support services to the client and his/her family, and providing crisis intervention and advocacy services as needed. A case manager generally has a small caseload to allow for the frequency and intensity of services needed. One model, New York’s Child and Youth Intensive Case Management, was developed to maintain

Evidence-based practice (APA definition):

the integration of the best available research with clinical expertise in the context of patient characteristics, culture, and preferences

APA: American Psychological Association

NREPP: National Registry of Evidence-Based Programs and Practices

Table 1 Major findings of co-occurring disorder treatment models

	Major findings	Supporting research studies	Model cited by
<i>Treatment planning and care coordination</i>			
Child and Youth Intensive Case Management	<ul style="list-style-type: none"> • Reduction in hospitalization rates and duration • Increase in days spent in the community • Decrease in symptoms • Higher functioning levels 	<ul style="list-style-type: none"> • Evans et al. 1994 • Evans et al. 1996 	<ul style="list-style-type: none"> • U.S. Department of Health and Human Services
Wraparound	<ul style="list-style-type: none"> • Decrease in at-risk and delinquent behavior • Increase in less restrictive environment placements • Increase in school attendance and grade point average • Decrease in school disciplinary actions 	<ul style="list-style-type: none"> • Bruns et al. 2006 • Carney & Buttell 2003 	<ul style="list-style-type: none"> • National Alliance on Mental Illness • National Mental Health Association • Substance Abuse and Mental Health Services Administration • U.S. Surgeon General
<i>Cognitive behavioral and motivational enhancement interventions</i>			
MET/CBT 5	<ul style="list-style-type: none"> • Reduction in substance use • Higher number of youth in recovery at the end of the study • Low cost of intervention per day of abstinence achieved 	<ul style="list-style-type: none"> • Compton & Pringle 2004 • Dennis et al. 2004 	<ul style="list-style-type: none"> • U.S. Department of Health and Human Services
Seeking Safety	<ul style="list-style-type: none"> • Decrease in substance use and associated problems • Decrease in some trauma-related and psychopathology symptoms • Decrease in cognitions related to substance abuse and post-traumatic stress disorder 	<ul style="list-style-type: none"> • Hien et al. 2004 • Najavits et al. 1998 • Najavits et al. 2006 • Zlotnick et al. 2003 	<ul style="list-style-type: none"> • Addiction Technology Transfer Center • National Registry of Evidence-Based Programs and Practices
Dialectical behavior therapy	<ul style="list-style-type: none"> • Increase in treatment retention • Reduction in suicidal behavior • Decrease in psychiatric hospitalizations • Decrease in substance abuse, anger, and serious problem behaviors • Reduction in interpersonal difficulties 	<ul style="list-style-type: none"> • Grove Street 2004 • Rathus & Miller 2002 • Trupin et al. 2002 	<ul style="list-style-type: none"> • American Psychological Association • National Registry of Evidence-Based Programs and Practices
<i>Family Therapies</i>			
Family behavior therapy	<ul style="list-style-type: none"> • Reduction in frequency of alcohol and drug use • Decrease in problem behaviors and depression • Improved family relationships • Increase in school attendance 	<ul style="list-style-type: none"> • Azrin et al. 1994 • Azrin et al. 2001 	<ul style="list-style-type: none"> • National Institute on Drug Abuse • National Registry of Evidence-Based Programs and Practices
Multidimensional family therapy	<ul style="list-style-type: none"> • Reduction in substance use • Decrease in internalizing and externalizing psychiatric symptoms • Improvement in school performance • Increase in family functioning 	<ul style="list-style-type: none"> • Dennis et al. 2004 • Liddle 2001 • Liddle et al. 2004 • Rowe et al. 2004 	<ul style="list-style-type: none"> • National Institute on Drug Abuse • Office of Juvenile Justice and Delinquency Prevention • Substance Abuse and Mental Health Services Administration • U.S. Department of Health and Human Services

(Continued)

Table 1 (Continued)

	Major findings	Supporting research studies	Model cited by
Multisystemic therapy	<ul style="list-style-type: none"> • Reduction in alcohol and drug use • Decrease in psychiatric symptomatology • Improvement in family and peer relations • Decrease in out-of-home placements • Decrease in criminal activity, rearrests, and days incarcerated 	<ul style="list-style-type: none"> • Borduin et al. 1995 • Henggeler et al. 1992 • Henggeler et al. 1999 • Schaeffer & Borduin 2005 	<ul style="list-style-type: none"> • National Alliance on Mental Illness • National Institute on Drug Abuse • National Registry of Evidence-Based Programs and Practices • Office of Juvenile Justice and Delinquency Prevention • President's New Freedom Commission • U.S. Surgeon General

children with serious emotional disturbance in the least restrictive environment possible. Findings from two controlled studies suggest that this program is associated with fewer hospitalizations, fewer hospital days, more days spent in the community, a decrease in symptoms, and better functioning (Evans et al. 1994, 1996). Intensive case management was cited as an effective intervention for youth with co-occurring disorders by the U.S. Department of Health and Human Services (2002).

Wraparound is a family-driven model of care coordination for children and youth with mental health problems who are also involved with one or more other systems (e.g., child welfare, juvenile justice, special education). As the name implies, comprehensive services and supports are “wrapped” around the child in order to meet all of his/her complex needs. Wraparound requires a team-based planning process through which families, formal supports, and natural supports develop, monitor, and evaluate an individualized plan. The essential values of wraparound are that the planning process, as well as the services and supports provided, are individualized, family driven, strengths based, culturally competent, and community oriented (Burchard et al. 2002).

Wraparound does not endorse any specific therapeutic interventions. Instead it helps facilitate a system of care that increases engagement, accessibility, and acceptability of treatment thus allowing the individual services involved to be maximally effective. Wraparound

has been evaluated in nine controlled outcome studies that consistently show positive findings. Results include a decrease in at-risk and delinquent behavior (Carney & Buttell 2003) and an increase in positive outcomes in less-restrictive environment placements, school attendance, school disciplinary actions, and grade-point average (Bruns et al. 2006). Wraparound has been cited as a promising practice in the Surgeon General's reports on youth violence (U.S. Dep. Health Human Serv. 2001) and mental health (U.S. Dep. Health Human Serv. 1999) and is endorsed by the National Alliance on Mental Illness (2007), the National Mental Health Association, and SAMHSA's Center for Mental Health Services.

Integrated Treatment Models

Despite the current focus on evidence-based practices (see sidebar Evidence-Based Practice Resources), very few interventions have been developed and evaluated specifically for adolescents with co-occurring disorders. Clinical trials often suffer from difficulties engaging youth in treatment, poor attendance and compliance with treatment, and high rates of early termination (Donohue et al. 1998, Wise et al. 2001). Despite these difficulties, a few effective and promising outpatient treatment models have emerged. It should be noted that although these treatments are distinct, there is much overlap between them in terms of conceptual framework, clinical strategies, and techniques.

EVIDENCE-BASED PRACTICE RESOURCES

The following evidence-based practice resources are available online.

1. The National Registry of Evidence-Based Programs and Practices (NREPP): <http://www.nrepp.samhsa.gov>
2. The Office of Juvenile Justice and Delinquency Prevention Model Programs Guide: <http://www.dsgonline.com/mpg2.5>
3. The Addiction Technology Transfer Network's Best Practices Resources: http://www.ceattc.org/nidacsat_bpr.asp?id=ALL

Cognitive-behavioral and motivational enhancement interventions. Cognitive-behavioral therapy (CBT) is not a single, unified treatment but rather an umbrella term that incorporates a variety of interventions aimed at present-focused, goal-directed behavior change. Core strategies include identifying and challenging irrational and maladaptive thoughts and patterns, cognitive restructuring, and learning more functional skills through modeling and role-play exercises.

From a cognitive-behavioral point of view, substance use is a learned behavior that is initiated and maintained by an interplay of cognitive processes, environmental factors, and behavioral reinforcement. Treatment often involves a focus on self-monitoring, identifying and changing reinforcement contingencies, coping skills training, and relapse prevention. Cognitive-behavioral interventions are well supported in the treatment of both adolescent mental health (Barrett et al. 2001, Kazdin 1995, Kendall et al. 1997, Rohde et al. 1994) and substance use disorders (Kaminer et al. 1998, Kaminer & Burlinson 1999, Liddle et al. 2001). Although few studies have examined the effectiveness of CBT for the treatment of adolescent co-occurring disorders, it is believed that they would likely be helpful, especially for youth with comorbid depression and substance abuse (Waldron & Kaminer 2004).

Motivational enhancement interventions are often coupled with CBT. Motivational in-

terviewing (MI, Miller & Rollnick 2002) is a nonconfrontational, client-directed intervention that emphasizes an empathetic nonjudgmental stance, developing discrepancy, avoiding argumentation, rolling with resistance, and supporting self-efficacy for change. Motivational enhancement treatment (MET) is a four-session adaptation of MI developed for Project MATCH (Proj. MATCH Res. Group 1993), a clinical multisite trial of treatments for alcohol use disorders. MI-based interventions have been found to be effective in reducing substance use among adolescents presenting to an emergency department (Monti et al. 1999, 2001), among first-year college students (Baer et al. 1992, 2001; Marlatt et al. 1998, Roberts et al. 2000), and among college students in the high-risk Greek system (Larimer et al. 2001). For youth with co-occurring disorders, MI/MET alone is likely insufficient to effect change (Tevyaw & Monti 2004). However, it has been suggested that motivational enhancement interventions may be helpful with this population in increasing treatment engagement and retention, motivation to change, and goal setting (Myers et al. 2001). The nonlecturing stance of MI and its ability to be used with individuals in a wide range of readiness-to-change states may make MI particularly attractive to adolescents (Tevyaw & Monti 2004).

Motivational Enhancement Treatment/Cognitive Behavioral Therapy 5. One specific model that has received considerable interest of late is the five-session motivational enhancement treatment/cognitive behavioral therapy (MET/CBT5) developed for use in the Cannabis Youth Treatment Study. MET/CBT5 consists of two individual MET sessions followed by three sessions of group CBT. The MET component focuses on moving the adolescent through the stages of change (Prochaska & DiClemente 1984) and developing motivation to change, whereas the CBT component emphasizes learning and practicing coping skills to handle high-risk substance use situations (Diamond et al. 2002). In the Cannabis Youth Treatment Study, five short-term outpatient treatment models were

CBT: cognitive-behavioral therapy

MI: motivational interviewing

MET: motivational enhancement therapy

compared: (a) MET/CBT5; (b) 12-session MET/CBT (MET/CBT12), which supplemented MET/CBT5 with seven additional group CBT sessions; (c) a family support network intervention, which used MET/CBT12 plus six parent education group meetings; (d) the adolescent community reinforcement approach, which consisted of 10 individual sessions with the adolescent, four sessions with caregivers, and a limited amount of case management provided by the therapist; and (e) multidimensional family therapy, which was typically composed of six sessions with the adolescent, three sessions with the parents, and six sessions with the entire family.

The main target of this study was the treatment of marijuana abuse. However, unlike many clinical trials, youth with co-occurring disorders were not excluded. As a result, more than 95% of the 600 adolescents reported one or more other problems, including 53% with conduct disorder, 38% with ADHD, 23% with generalized anxiety, 18% with major depression, and 14% with traumatic stress disorders. Overall, 83% had had justice system involvement, and 23% had received mental health treatment (Dennis et al. 2004). Results showed that all five treatment models were effective at reducing substance use at the 3-, 6-, 9-, and 12-month follow-up periods. There was little difference in clinical outcomes based on treatment condition, and relapse rates were high (Dennis et al. 2004). Two-thirds of the adolescents were still reporting substance use or related problems at the 12-month follow-up, underscoring that substance use among many youth, especially those with co-occurring disorders, is best conceptualized as a chronic condition (Kazdin 1987). However, when treatment costs were combined with clinical outcomes, MET/CBT5 was found to be one of the most cost-effective interventions studied (Compton & Pringle 2004, Dennis et al. 2004).

The findings from the Cannabis Youth Treatment Study highlight the potential for cognitive-behavioral and motivational enhancement interventions in the treatment of adolescent co-occurring disorders, and

MET/CBT 5 has been cited as an effective intervention for this population (U.S. Dep. Health Human Serv. 2002). However, comparing the effectiveness of CBT or MET with other treatments is difficult because CBT and MET strategies and techniques are widely incorporated into other intervention models. Future research may yield subgroups of youth with co-occurring disorders for whom such an intervention is most effective.

Seeking Safety. Seeking Safety (Najavits 2007) was developed in the 1990s for individuals diagnosed with both a substance use disorder and post-traumatic stress disorder (PTSD). Although the treatment originally was designed as a cognitive-behavioral intervention, it was expanded to also include interpersonal and case management topics. Treatment is present-focused and revolves around teaching clients how to attain safety by identifying and eliminating self-destructive behaviors and learning new coping skills. The treatment has five principles (Najavits et al. 2006): (a) safety as a priority; (b) integrated treatment of both disorders; (c) a focus on ideals to counteract the loss of ideals in both PTSD and substance abuse; (d) four content areas: cognitive, behavioral, interpersonal, and case management; and (e) attention to therapist processes.

Seeking Safety was developed to be highly flexible. It can be conducted in individual or group sessions, with single or mixed gender, and with varying session lengths and pacing. The treatment consists of 25 topics that are independent of one another; all 25 can be implemented or a subset can be chosen. Individual topics can be further customized to be implemented in a single session or over multiple sessions, depending on clinical needs. Although Seeking Safety can be used as a stand-alone intervention, it was designed to be integrated with other treatments. In fact, the model includes an intensive case management component to help engage clients in additional treatments (Najavits 2007).

Seeking Safety has been evaluated with adults, both women and men, in a variety of therapeutic settings including residential treatment centers, prisons, community mental

health programs, and Veterans Affairs. Results indicate positive outcomes in terms of reductions in substance use, trauma-related symptoms, suicide risk, and depression, along with improvements in social adjustment, family functioning, and problem-solving skills (Hien et al. 2004, Najavits et al. 1998, Zlotnick et al. 2003).

Seeking Safety has also been tested in a randomized clinical trial with adolescent females meeting DSM-IV criteria for both PTSD and a substance use disorder (Najavits et al. 2006). The original treatment model was followed as closely as possible, with implementation modifications made as appropriate to match the developmental level of the youth. In comparison to adolescents receiving treatment as usual, those who participated in the Seeking Safety condition had decreases in substance use and associated problems, some trauma-related and psychopathology symptoms, and cognitions related to substance abuse and PTSD.

The body of research supporting Seeking Safety meets APA's criteria for an empirically supported treatment (Najavits 2007). Seeking Safety has also been recognized by NREPP as an evidence-based program for co-occurring disorders among adolescents, young adults, and adults and as a best practice by the Addiction Technology Transfer Center Network.

Dialectical Behavior Therapy. Although little research has explicitly tested dialectical behavior therapy (DBT) as an intervention for adolescent co-occurring disorders, it is an approach that holds much promise for this population. It was originally developed as a treatment for suicidal and parasuicidal adults with borderline personality disorder and blends standard elements of cognitive-behavioral therapy with mindfulness and meditation practices. DBT is recognized as an effective treatment for borderline personality disorder by APA and as an evidence-based practice for the treatment of co-occurring disorders among young adults by NREPP.

According to Linehan (1993), the central problem in borderline personality disorder is an emotional dysregulation that contributes to in-

terpersonal, self, cognitive, and behavioral dysregulation. This dysregulation is caused and maintained by a transactional process between an emotionally vulnerable person and an invalidating environment (Woodberry et al. 2002). Consequences include engagement in impulsive, high-risk behaviors such as substance abuse, high-risk sexual encounters, and self-injurious behaviors. At the core of DBT is a focus on dialectics or the synthesis of two seemingly opposite positions. For example, a primary dialectical challenge is to accept people as they are while at the same time helping them to change.

DBT has been formally adapted for multiproblem, suicidal adolescents to make the treatment more developmentally and culturally appropriate (Miller et al. 2007). Modifications include shortening the first phase of treatment from one year to 16 weeks, including parents in the skills training group, including parents and other family members in individual therapy sessions as needed, reducing the number of skills to teach, simplifying and adapting materials to better address the needs of adolescents and their families, and developing a new skills training module called "Walking the Middle Path." Miller and colleagues (2002) discuss detailed methods to further synthesize DBT with family therapy principles and goals. By working with the family and adolescent together, the family is recognized as a partner rather than a target in treatment.

DBT has been adapted and used with a variety of adolescent treatment populations including inpatient (Katz et al. 2002, 2004; Sunseri 2004) and outpatient (Katz et al. 2002) suicidal youth, adolescents with serious emotional disturbance in a residential facility (Grove St. Adolesc. Resid. Bridge Central Mass. 2004), young adolescents with oppositional defiant disorder (Nelson-Gray et al. 2006), adolescent binge eating disorder (Safer et al. 2007), and incarcerated juvenile offenders (Trupin et al. 2002). Research has shown that the use of DBT among adolescents leads to increases in treatment retention and reductions in suicidal behavior, psychiatric hospitalization, substance abuse, anger, serious

problem behaviors, and interpersonal difficulties (Grove St. Adolesc. Resid. Bridge Central Mass. 2004, Rathus & Miller 2002, Trupin et al. 2002).

DBT's focus on emotional validation and acceptance coupled with skills training makes it an attractive treatment option for adolescents with co-occurring conditions. The many successful adaptations of DBT to various treatment settings and populations demonstrate that it may be an effective intervention for youth with complicated and severe diagnostic profiles (Trupin et al. 2002). Adolescents in these studies tended to have a high level of comorbidity and to exhibit a wide variety of extreme problem behaviors. In fact, DBT research often deliberately seeks the type of participants that are excluded from other clinical studies. Although outcomes are preliminary, DBT appears to be a very promising treatment model that merits future consideration for the treatment of adolescent co-occurring disorders.

Family therapies. Although various family-based therapies for adolescent co-occurring disorders may differ in terms of strategies and techniques, they share certain common elements. All utilize basic research on developmental psychology and psychopathology, emphasize the systemic and contextual nature of adolescent problem behavior, and focus on the important role parents and caregivers play in youth treatment and outcomes (Liddle et al. 2004). Research shows that, compared to control conditions, family-based therapies often have better success engaging and retaining families in treatment, reducing youth substance use, increasing school attendance and performance, and improving family functioning (Azrin et al. 1994, Donohue et al. 1998, Friedman 1989, Henggeler et al. 1991, Liddle & Dakof 2002, Szapocznik et al. 1983, Waldron et al. 2001). Three family-based therapy models that have shown positive outcomes for the integrated treatment of adolescent co-occurring disorders are highlighted here.

Family Behavior Therapy. Family behavior therapy (FBT) is an intervention that targets

adolescent substance use and associated behavioral problems (Donohue & Azrin 2001). It is recognized as an evidence-based practice for the treatment of adolescent co-occurring disorders by NREPP and as a scientifically based approach to drug treatment by the National Institute on Drug Abuse (1999).

The theory underlying FBT draws heavily on the community reinforcement approach, and the model employs multiple evidence-based techniques such as behavioral contracting, stimulus control, urge control, and communication skills training (Azrin et al. 2001). FBT is designed to be highly flexible and to accommodate a wide variety of adolescents in an office-based setting, although home-based sessions can be conducted when the target population is particularly hard to reach. FBT emphasizes treatment engagement and retention strategies including frequent early phone communication with youth and caregivers, enlisting the family in choosing its own treatment plan from a menu of alternatives, and the provision of food and beverages at sessions.

In a clinical trial, FBT was compared with supportive group counseling treatment (Azrin et al. 1994). Youth in the FBT condition showed better outcomes in terms of substance use, problem behaviors, depression, family relationships, and school attendance. However, the sample size in this study was very small. In another study comparing FBT to individual-cognitive problem-solving therapy, both interventions were equally effective at reducing the frequency of alcohol and drug use and improving conduct problems (Azrin et al. 2001).

Multidimensional Family Therapy. Multidimensional family therapy (MDFT) was developed as a family-based treatment for adolescents with substance use and related emotional and behavioral problems (Liddle 1999). It is a comprehensive approach that targets multiple domains of risk, protection, and functioning within the youth, his/her family, and community. Interventions concentrate on the individual problems, strengths, and goals of the adolescent, as well as focusing on parent issues, parenting and family relationships, and

FBT: family behavior therapy

MDFT: multidimensional family therapy

MST: multisystemic therapy

extrafamilial influences (Hogue et al. 2006). In contrast to other family-based therapies, MDFT targets youth and parents individually as well as interactively. In addition to parenting behavior, parental and caregiver well-being and substance use are also a program focus. In order to increase treatment accessibility and relevancy, MDFT can be delivered in both home and community settings. Further, the format, components, and timing can be adjusted to best meet the needs of different clinical populations.

MDFT was one of the five interventions tested in the Cannabis Youth Treatment study. It, like the other study interventions, demonstrated significant posttreatment reductions in substance use that were sustained at the 12-month follow-up (Dennis et al. 2004). In another randomized clinical trial of MDFT (Liddle et al. 2001), participants in the MDFT condition showed a sharp reduction in drug use that was maintained at the 6- and 12-month follow-ups. In addition, youth who received MDFT had improved school performance and family functioning. MDFT was tested with a sample of adolescents referred to an inner-city drug treatment program (Rowe et al. 2004). The youth showed an extremely high rate of psychiatric comorbidity, with only 12% of the sample meeting criteria for substance abuse or dependence alone. In addition to having a substance use disorder, 20% had one mental health disorder, 24% had two, 17% had three, and 26% had four or more. Youth in the MDFT condition showed reductions in marijuana use and drug involvement as well as both internalizing and externalizing symptoms (Liddle 2001). These treatment effects were retained after termination. MDFT has also shown positive results as a brief early intervention for young high-risk adolescent substance users (Liddle et al. 2004).

The strong research base demonstrating the effects of MDFT in both indicated prevention and treatment settings has led it to be recognized as a best practice by the Office of Juvenile Justice and Delinquency Prevention, the National Institute on Drug Abuse (1999), the U.S. Department of Health

and Human Services (2002), and SAMHSA (2005).

Multisystemic Therapy. Multisystemic therapy (MST) was developed as a family- and community-based treatment approach for youth with co-occurring substance abuse and antisocial behavior (Henggeler & Borduin 1990, Henggeler et al. 1998). It is based on Bronfenbrenner's (1979) social ecology theory and posits that adolescent antisocial behavior is multidetermined and linked to variables of the individual and his or her family, peer group, school, and community. Interventions are developed in conjunction with the family with the explicit goal of structuring the youth's environment to promote healthier, less risky behavior. MST services are usually intense, short term (average of four to six months), and offered in the youth's natural environment, such as at home or school. MST draws heavily on strategies and techniques found in cognitive behavioral, behavioral, and family therapies. However, it differs by offering more intensive and direct interactions with the youth and his environment and by providing services outside of traditional care settings (Henggeler & Borduin 1990).

To date, MST has been tested in 15 published outcome studies. In two of the early efficacy trials, MST was related to posttreatment reductions in self-report of alcohol and drug use (Henggeler et al. 1992), one-year follow-up improvements in family and peer relations and a decrease in out-of-home placements (Henggeler et al. 1992), a decrease in psychiatric symptomatology and substance-related arrests at four-year follow-up (Borduin et al. 1995), and a decrease in rearrests and days incarcerated at the 14-year follow-up (Schaeffer & Borduin 2005). In a subsequent randomized trial of MST with substance-abusing and delinquent youth, adolescents in the MST condition had decreased alcohol and drug use, criminal activity, and number of out-of-home placement days posttreatment (Henggeler et al. 1999). However, these results were not maintained at the six-month or four-year follow-up, and outcomes regarding criminal activity,

substance use, and mental health functioning were not as good as earlier studies (Henggeler et al. 1991). Finally, in a 2004 meta-analysis of MST outcome studies (Curtis et al. 2004), it was found that youth who had received MST were functioning better and offending less than 70% of those in the control conditions. MST outcomes tended to show reductions in emotional and behavioral problems in individual family members, improvements in parent-youth and family relations, and decreases in youth criminality, involvement with deviant peers, and youth aggression toward peers. Similar to past studies (Huey et al. 2000, Mann et al. 1990), this meta-analysis found that improvements in family relations predicted decreases in youth problems and delinquent peer affiliation.

Based on these findings, MST has been cited as an effective treatment for youth with co-occurring disorders by the National Institute on Drug Abuse (1999), the U.S. Surgeon General's report of youth violence (2001), NREPP, the Office of Juvenile Justice and Delinquency Prevention, the President's New Freedom Commission on Mental Health (2003), and the National Alliance on Mental Illness (2007).

RECOMMENDATIONS

Although the literature review presented here is comprehensive, it is by no means exhaustive. A handful of existing treatment approaches has shown positive outcomes, and additional research is currently under way. However, virtually all of the models share modest reductions in symptoms, difficulties maintaining treatment gains, and high relapse rates. Although the field is far from having a definitive list of best-practice strategies or programs for the treatment of adolescent co-occurring disorders, certain themes have emerged that can help provide guidance.

Principles to Guide Clinical Practice

Rethinking co-occurring disorders. Traditionally, mental health and substance abuse

treatment has been conducted in very separate and disconnected systems. Neither side habitually assessed for or treated co-occurring conditions. Now, epidemiologic research overwhelmingly shows that co-occurring disorders are the norm rather than the exception. Among adolescents, the presence of co-occurring disorders is related to more severe symptomatology, greater treatment challenges, and poorer outcomes. We cannot continue to perpetuate the historical separation of the mental health and substance abuse fields. Both mental health and substance abuse disorders must be conceptualized as psychiatric conditions, with common developmental etiologies and trajectories. In an adolescent with co-occurring disorders, both conditions must be considered primary and treated as such.

In addition, it is essential to redefine ideals of treatment success. Although it is appealing to consider that pairing a certain disorder with an evidence-based practice will result in remission of symptoms and recovery, this is unlikely to occur in individuals with complex diagnostic profiles. Co-occurring disorders can be thought of as chronically relapsing conditions, with treatment as a necessary component of care and maintenance. According to Kazdin (1994, p. 585), "it may be useful to conceive of treatment as a routine and ongoing part of everyday life." Relapse prevention skills (Marlatt & Gordon 1985) can be targeted to both substance abuse and mental health conditions and can help identify relapse warning signs and triggers and strengthen coping strategies to either prevent a relapse or lessen its consequences.

Greater emphasis on prevention and early intervention. Research showing that mental health problems often precede substance abuse in adolescents indicates that there is a critical period for the prevention of co-occurring disorders. Early identification and intervention for mental health conditions, coupled with substance abuse prevention, may help prevent or lessen the severity of co-occurring disorders.

However, regardless of which disorder emerges first, effective early treatment is likely to reduce risk of future problems. Moving toward a public health model that emphasizes health promotion and disease prevention through a full continuum of prevention, intervention, and aftercare services is essential.

In order to accomplish early identification and referrals for comprehensive assessment and treatment, though, behavioral health screening needs to become commonplace in all child-serving agencies. Early identification and intervention by gatekeepers (e.g., primary care doctors, school counselors and psychologists, child-welfare workers, probation officers) can lead to better access to services for children and youth with problems and may help prevent the need for more intensive and expensive treatment later on (King et al. 2000). When indicated, these front-line professionals should be able to refer identified youth for further assessment and treatment. In addition, they should be an active component of care teams if the child receives services.

Integrated behavioral health assessment and treatment. A comprehensive evaluation for behavioral health disorders and psychosocial problems should be the standard of care for anyone entering either the mental health or substance abuse treatment system. Behavioral health symptomatology must be assessed as well as a wide variety of life domains impacted by co-occurring disorders (Sacks et al. 2008). In addition to developing an integrated care plan for both mental health and substance abuse disorders, when life problems and deficits are identified they should be incorporated into the treatment planning process.

There is strong support for the need to develop effective interventions that treat both mental health and substance abuse disorders simultaneously. Although treatment does not necessarily need to be provided by a single individual, service systems must be integrated to allow for coordinated assessment, treatment planning, intervention delivery, and outcome monitoring. Integrated treatment should be in-

dividualized and flexible, allowing the treatment and care coordination plan to include a wide variety of needed services and supports. This is especially true for adolescents with co-occurring disorders, as they are likely to be involved in multiple systems such as juvenile justice, child welfare, and specialized educational services. Multidisciplinary care teams developing and implementing a single unified treatment plan are ideal.

Effective systems of care for adolescents with co-occurring disorders include several critical components of integrated treatment programs identified by Drake and colleagues (2001). These include integrated services that incorporate motivational and social support interventions; a comprehensive, multisystem approach; the availability of multiple therapeutic modalities; a long-term perspective that includes transition, aftercare, and support services; and a focus on risk reduction. In addition, extensive family involvement is critical. Research consistently shows that when families are involved in adolescent treatment, outcomes are better (Copello & Orford 2002, Kazdin et al. 1990, Liddle 2004, Waldron 1997). Within the family context, it is vital to address issues of cultural sensitivity and competence to ensure that services are appropriate for each individual adolescent and family.

No wrong door. One of the philosophies underlying the recommendation for comprehensive screening and assessment in a wide variety of social and health services agencies is that of “no wrong door.” This policy acknowledges that individuals with co-occurring conditions might not understand the differences between various social service and treatment systems and may present to any one of them. Rather than placing the burden for finding appropriate services on the individual, agencies accept responsibility for responding to the person’s needs either through direct service provision or linkages to other programs. Extensive referral networks and lines of communication and coordination are required for a no wrong door policy to be effective.

Research Considerations

Your comorbidity is not my comorbidity.

All mental health and substance use disorders are not equally likely to co-occur among adolescents. For example, disruptive behavior disorders and mood disorders have higher rates of comorbidity with substance abuse than do anxiety disorders. Research shows that patterns of comorbidity are also likely to vary based on population characteristics such as age and gender. Younger adolescents tend to have a different diagnostic pattern and course than do older adolescents. Females, too, are likely to present with different clusters of symptoms and treatment needs than will males.

These varied patterns clearly have implications for the development and implementation of therapeutic interventions. Greater specificity of the various subtypes of co-occurring disorders, along with prevention and treatment implications, is needed in the research literature. Future directions include examining the differential impact that individual variables such as age, gender, race, ethnicity, and sexual preference have on the development and treatment of co-occurring disorders.

Need for additional process and translational research.

Research on adolescent co-occurring disorders is still in its infancy. Although certain treatment models have shown positive outcomes, by and large it is unclear what are the underlying mechanisms of change. This is seen clearly in large controlled trials of multiple forms of evidence-based or promising treatments. Results often show support for the effectiveness of all forms of intervention, with little differential impact to be found between conditions. Although there is much theoretical and strategic overlap between current best practice approaches, it would be helpful for research to begin delineating which components of these treatments are the most effective in achieving favorable therapeutic change.

In addition to aiding in the development of effective interventions, identifying which process components are linked to positive

outcomes will also support the transport of evidence-based treatment models into standard clinical practice (Hogue et al. 2006, Weisz & Kazdin 2003). This sort of translational research can identify which are the critical elements and conditions to be included in community settings, while allowing other aspects of the treatment to be adapted to best meet the needs of a specific population.

Systemic Recommendations

Develop and expand professional resources.

A significant barrier to the provision of integrated services is a lack of cross-training in both mental health and substance abuse fields. Educational and training programs can begin to address this by offering courses on co-occurring disorders and by providing clinical opportunities to work with this population. With the high prevalence of co-occurring disorders in both adults and adolescents, such experiences should be required rather than optional. Furthermore, it is essential to expand the cross-training opportunities available to current service providers through workforce development and continuing education efforts. This includes providing and promoting training for gatekeepers (primary care physicians, nurses, school counselors, child welfare workers, etc.) so that they can adequately screen and assess for mental health, substance abuse, and co-occurring disorders.

In addition to these training and retraining measures, it is essential to reform the certification and licensure process. There are currently few incentives for either individual clinicians or programs to seek out cross-training. The development of certification programs for co-occurring disorders specialists, with corresponding reimbursement schedules, may provide the leverage needed to change this dynamic. Developing and expanding cross-training opportunities, and updating and revising current certification and licensure requirements, may increase appropriate treatment provider capacity for youth with co-occurring disorders.

Categorical funding: funds that are provided to an agency or organization to be used exclusively for a certain type of services or a certain population

Flexible funding: funding recipients have some level of discretion in how to use the money provided

Eliminate gaps in coverage. Lack of adequate funding is a fundamental problem facing treatment systems. There currently is simply not enough money available to address the needs of individuals with mental health, substance abuse, and co-occurring disorders. Research shows that the average cost of treating youth with co-occurring disorders is more than twice that of serving an adolescent with either a mental health or a substance abuse disorder alone, \$29,057 versus \$13,067 (King et al. 2000). Although this may seem like a steep price to pay, failing to serve these youth results in dire individual consequences and high costs to society through increased rates of institutionalization, incarceration, homelessness, and comorbid medical costs. In addition, untreated co-occurring disorders are likely to persist and worsen over time, leading to the need for more intensive treatment services in the future.

Political solutions for eliminating gaps in coverage include promoting parity for mental health and substance abuse services and advocating for the government to fund behavioral health services at the level of need. Although we can remain hopeful that in future years such political gains will be achieved, alternative solutions are necessary until then.

One strategy is to reprogram current funds from higher- to lower-cost services, such as through jail diversion or deinstitutionalization programs. Related to this is expanding the current crisis- and treatment-based model of health care to include a wider array of prevention and early-intervention services. Another method that may offer cost savings in the long term is the added use of ancillary support services, such as intensive case management, wraparound, employment and education training, housing services, and transportation. Although these programs require an upfront cost with few options for reimbursement, such services can increase the effectiveness of the interventions offered and reduce future treatment and societal costs. Finally, linking funding to outcomes to ensure that programs that receive public support are providing the most effective

services available has been proposed as a strategy for reducing the funding gap (U.S. Dep. Health Human Serv. 2002).

Flexible funding. The myriad of administrative, policy, and financial barriers outlined above pose a major impediment to the delivery of effective co-occurring disorders treatment. Creative and flexible financing strategies are needed to overcome these obstacles and support the development of integrated treatment systems. Within the financing realm, categorical funding refers to money that is provided to an agency or organization to be used exclusively for a certain type of services or a certain population. Flexible funding provides recipients with some level of discretion in how it is used (Cent. Subst. Abuse Treat. 2007d).

The availability of flexible funding from multiple sources that can be combined or pooled at the local level in less-restrictive ways is essential. One form of pooling is blended funding, in which mental health and substance abuse service dollars are combined and made indistinguishable from one another. Many believe, however, that blended funding may hinder the timely development of integrated services and will negatively impact treatment for individuals with solely mental health or substance abuse problems (U.S. Dep. Health Human Serv. 2002). Another option for flexible financing is the use of braided funds. With braiding, the funding sources remain visible and can be tracked and monitored separately. Although it is evident that flexible funding strategies are needed in order to sustain the multidisciplinary care teams and support services indicated in the effective treatment of adolescent co-occurring disorders, there is no clear consensus on the best method for achieving this.

CONCLUSION

The co-occurrence of mental health and substance use disorders among adolescents are of great concern. Clinical, research, and policy

distinctions traditionally separate their treatment, despite the fact that both are psychiatric conditions. Throughout this review, certain themes have resonated. First, co-occurring disorders are highly prevalent and are to be expected in every adolescent service setting. Second, there is wide variability in the subtypes, severity, and treatment needs of adolescents with co-occurring mental health and substance abuse conditions. Third, a comprehensive integrated service system is the most promising method of effectively treating this population. And last, critical clinical, administrative, and systemic changes must be made in order to

adequately provide services for adolescent co-occurring disorders.

Great progress has been made in recent years in shifting the way in which co-occurring disorders are conceptualized and treated. It is clear that additional work is necessary, however. Although the needs of these youth are great, and the barriers are daunting, many promising avenues of care are currently available. By continuing to address the salient clinical, research, and policy issues, we can persist in making practice improvements that substantially enhance the quality of services provided to these youth and improve their outcomes.

SUMMARY POINTS

1. Co-occurring disorders are highly prevalent and are to be expected in every adolescent service setting.
2. Youth with co-occurring disorders tend to have severe symptoms, multiple psychosocial and family issues, and are often engaged in numerous systems such as specialized education services, child welfare, or juvenile justice.
3. Co-occurring disorders among adolescents are associated with difficulties in treatment engagement and retention, poor treatment outcomes, high relapse rates, and a chronic and persistent course that often continues into adulthood.
4. Comprehensive integrated treatment programs appear to be the most effective method of treating co-occurring disorders in adolescents.
5. Critical clinical, administrative, financial, and policy changes are necessary to support effective systems of care for youth with co-occurring disorders and improve their outcomes.

DISCLOSURE STATEMENT

The author is not aware of any biases that might be perceived as affecting the objectivity of this review.

ACKNOWLEDGMENTS

The author is grateful to Alan Marlatt, Neha Bahadur, Jason Schuman, and Katherine Thornton for the important roles they played during the preparation of this review.

LITERATURE CITED

- Am. Psychiatr. Assoc. 2000. *Diagnostic and Statistical Manual of Mental Disorders*. Washington, DC: Am. Psychiatr. Assoc. 4th ed., text rev.
- Am. Psychol. Assoc. 1995. *Template for Developing Guidelines: Interventions for Mental Disorders and Psychosocial Aspects of Physical Disorders*. Washington, DC: Am. Psychol. Assoc.

- Am. Psychol. Assoc. 2002. Criteria for evaluating treatment guidelines. *Am. Psychol.* 57:1052-59
- Am. Psychol. Assoc. Pres. Task Force on Evidence-Based Pract. 2006. Evidence-based practice in psychology. *Am. Psychol.* 61(4):271-85
- Am. Soc. Addict. Med. 2001. Patient placement criteria for the treatment of substance-related disorders: ASAM PPC-2R. Chevy Chase, MD: Am. Soc. Addict. Med. 2nd rev. ed.
- Angold A, Costello E, Erkanli A. 1999. Comorbidity. *J. Child Psychol. Psychiatry* 40(1):57-87
- Azrin NH, Donohue B, Besalel VA, Kogan ES, Acierno R. 1994. Youth drug abuse treatment: a controlled outcome study. *J. Child Adolesc. Subst. Abuse* 3:1-16
- Azrin NH, Donohue B, Teichner GA, Crum T, Howell J, DeCato LA. 2001. A controlled evaluation and description of individual-cognitive problem solving and family-behavior therapies in dually-diagnosed conduct-disordered and substance-dependent youth. *J. Child Adolesc. Subst. Abuse* 11(1):1-43
- Baer JS, Kivlahan DR, Blume AW, McKnight P, Marlatt GA. 2001. Brief intervention for heavy-drinking college students: 4-year follow-up and natural history. *Am. J. Public Health* 91:1310-16
- Baer JS, Marlatt GA, Kivlahan DR, Fromme K, Larimer M, Williams E. 1992. An experimental test of three methods of alcohol risk reduction with young adults. *J. Consult. Clin. Psychol.* 60:974-79
- Barrett PM, Shortt AL, Wescombe K. 2001. Examining the social validity of the FRIENDS treatment program for anxious children. *Behav. Change* 18:63-77
- Borduin CM, Mann BJ, Cone LT, Henggeler SW, Fucci BR, et al. 1995. Multisystemic treatment of serious juvenile offenders: long-term prevention of criminality and violence. *J. Consult Clin. Psychol.* 63:569-78
- Boyle MH, Offord DR. 1991. Psychiatric disorder and substance use in adolescence. *Can. J. Psychiatry* 36:699-705
- Bronfenbrenner U. 1979. *The Ecology of Human Development*. Cambridge, MA: Harvard Univ. Press
- Brown SA, Mott MA, Meyers MG. 1990. Adolescent alcohol and drug treatment outcome. In *Drug and Alcohol Abuse Prevention*, ed. RR Watson, pp. 373-403. Clifton, NJ: Humana
- Brown SA, Myers MG, Mott MA, Vik PW. 1994. Correlates of success following treatment for adolescent substance abuse. *Appl. Prev. Psychol.* 3:61-73
- Bruns EJ, Rast J, Walker JS, Peterson CR, Bosworth J. 2006. Spreadsheets, service providers, and the state-house: using data and the wraparound process to reform systems for children and families. *Am. J. Commun. Psychol.* 38:201-12
- Burchard JD, Bruns EJ, Burchard SN. 2002. The wraparound approach. In *Community Treatment for Youth: Evidence-Based Interventions for Severe Emotional and Behavioral Disorders*, ed. BJ Burns, K Hoagwood, pp. 69-90. New York: Oxford Univ. Press
- Burke KC, Burke JD, Regier DA, Rae DS. 1990. Age at onset of selected mental disorders in five community populations. *Arch. Gen. Psychiatry* 47:511-18
- Carney MM, Buttell F. 2003. Reducing juvenile recidivism: evaluating the wraparound services model. *Res. Soc. Work Pract.* 13:551-68
- Cent. Ment. Health Services. 2001. *Mental health care for youth: a national assessment, annual/final progress report, January 2001-December 2001*. Rockville, MD: Subst. Abuse Ment. Health Serv. Admin.
- Cent. Subst. Abuse Treat. 1998. *Contracting for managed substance abuse and mental health services: a guide for public purchasers*. Tech. Assist. Publ. Ser. No. 22. DHHS Publ. No. (SMA) 98-3173. Rockville, MD: Subst. Abuse Ment. Health Serv. Admin.
- Cent. Subst. Abuse Treat. 2005. *Substance abuse treatment for persons with co-occurring disorders*. Treatment Improvement Protocol (TIP) Ser., No. 42. DHHS Publ. No. (SMA) 05-3992. Rockville, MD: Subst. Abuse Ment. Health Serv. Admin.
- Cent. Subst. Abuse Treat. 2007a. *Definitions and terms relating to co-occurring disorders*. COCE overview paper 1. DHHS Publ. No. (SMA) 07-4163. Rockville, MD: Subst. Abuse Ment. Health Serv. Admin.
- Cent. Subst. Abuse Treat. 2007b. *The epidemiology of co-occurring substance use and mental disorders*. COCE overview paper 8. DHHS Publ. No. (SMA) 07-4308. Rockville, MD: Subst. Abuse Ment. Health Serv. Admin.
- Cent. Subst. Abuse Treat. 2007c. *Services integration*. COCE overview paper 6. DHHS Publ. No. (SMA) 07-4294. Rockville, MD: Subst. Abuse Ment. Health Serv. Admin.
- Cent. Subst. Abuse Treat. 2007d. *Systems integration*. COCE overview paper 7. DHHS Publ. No. (SMA) 07-4295. Rockville, MD: Subst. Abuse Ment. Health Serv. Admin.

- Chambless DL, Ollendick TH. 2001. Empirically supported psychological interventions: controversies and evidence. *Annu. Rev. Psychol.* 52:685–716
- Chan YF, Dennis ML, Funk RR. 2008. Prevalence and comorbidity of major internalizing and externalizing problems among adolescents and adults presenting to substance abuse treatment. *J. Subst. Abuse Treat.* 34:14–24
- Clark DB, Thatcher DL, Maisto SA. 2005. Supervisory neglect and adolescent alcohol use disorders: effects on AUD onset and treatment outcome. *Addict. Behav.* 30(9):1737–50
- Cohen P, Cohen J, Brook J. 1993. An epidemiological study of disorders in late childhood and adolescence: 2. Persistence of disorders. *J. Child Psychol. Psychiatry* 34:869–77
- Compton WM, Pringle B. 2004. Services research on adolescent drug treatment. Commentary on “The Cannabis Youth Treatment (CYT) Study: main finding from two randomized trials.” *J. Subst. Abuse Treat.* 27:195–96
- Copello A, Orford J. 2002. Addiction and the family: Is it time for services to take notice of the evidence? *Addiction* 97:1361–63
- Cornelius JR, Clark DB, Reynolds M, Kirisci L, Tarter R. 2007. Early age of first sexual intercourse and affiliation with deviant peers predict development of SUD: a prospective longitudinal study. *Addict. Behav.* 32(4):850–54
- Costello EJ, Armstrong TD, Erkanli A. 2000. *Report on the developmental epidemiology of comorbid psychiatric and substance use disorders*. Paper presented to Nat. Inst. Drug Abuse. Durham, NC: Duke Univ. Med. Cent., Cent. Dev. Epidemiol.
- Crowley TJ, Mikulich SK, MacDonald M, Young SE, Zerbe GO. 1998. Substance-dependent, conduct-disordered adolescent males: severity of diagnosis predicts 2-year outcome. *Drug Alcohol Depend.* 49:225–37
- Curtis NM, Ronan KR, Borduin CM. 2004. Multisystemic treatment: a meta-analysis of outcome studies. *J. Fam. Psychol.* 18:411–19
- DeMilio L. 1989. Psychiatric syndromes in adolescent substance abusers. *Am. J. Psychiatry* 146:1212–14
- Dennis ML, Godley SH, Diamond GS, Tims FM, Babor T, et al. 2004. The Cannabis Youth Treatment (CYT) study: main findings from two randomized trials. *J. Subst. Abuse Treat.* 27:197–213
- Diamond G, Godfrey SH, Liddle HA, Sampl S, Webb C, et al. 2002. Five outpatient treatment models for adolescent marijuana use: a description of the Cannabis Youth Treatment interventions. *Addiction* 97(Suppl. 1):70–83
- Diamond G, Panichelli-Mindel SM, Shera D, Dennis ML, Tims F, Ungemack J. 2006. Psychiatric syndromes in adolescents seeking outpatient treatment for marijuana with abuse and dependency in outpatient treatment. *J. Child Adolesc. Subst. Abuse* 15:37–54
- Donohue B, Azrin NH. 2001. Family behavior therapy. In *Innovations in Adolescent Substance Abuse Interventions*, ed. EF Wagner, HB Waldron, pp. 205–27. New York: Pergamon
- Donohue B, Azrin N, Lawson H, Friedlander J, Teicher G, Rindsberg J. 1998. Improving initial session attendance of substance abusing and conduct disordered adolescents: a controlled study. *J. Child Adolesc. Subst. Abuse* 8:1–13
- Drake RE, Essock SM, Shaner A, Carey KB, Minkhoff K, et al. 2001. Implementing dual diagnosis services for clients with severe mental illness. *Psychiatr. Serv.* 52(4):469–76
- Drake RE, McLaughlin P, Pepper B, Minkoff K. 1991. Dual diagnosis of major mental illness and substance disorder: an overview. *New Dir. Ment. Health Serv.* 50:3–12
- Drake RE, Mercer-McFadden C, Mueser K, McHugo G, Bond G. 1998. Review of integrated mental health and substance abuse treatment for patients with dual disorders. *Schizophr. Bull.* 24(4):589–608
- Evans ME, Armstrong MI, Kuppinger AD. 1996. Family-centered intensive case management: a step toward understanding individualized care. *J. Child Fam. Stud.* 5:55–65
- Evans ME, Banks SM, Huz S, McNulty TL. 1994. Initial hospitalization and community tenure outcomes of intensive case management for children and youth with serious emotional disturbance. *J. Child Fam. Stud.* 3(2):225–34
- Fleming JE, Boyle MH, Offord DR. 1993. The outcome of adolescent depression in the Ontario Child Health Study follow-up. *J. Am. Acad. Child Adolesc. Psychiatry* 32:28–33

- Friedman AS. 1989. Family therapy vs. parent groups: effects on adolescent drug abusers. *Am. J. Fam. Ther.* 17:335-47
- Garcia JA, Weisz JR. 2002. When youth mental health care stops: therapeutic relationship problems and other reasons for ending youth outpatient treatment. *J. Consult. Clin. Psychol.* 70:439-43
- Giaconia RM, Reinherz HZ, Silverman AB, Pakiz B, Frost AK, Cohen E. 1994. Ages of onset of psychiatric disorders in a community population of older adolescents. *J. Am. Acad. Child Adolesc. Psychiatry* 33:706-17
- Greenbaum PE, Prange ME, Friedman RM, Silver SE. 1991. Substance abuse prevalence and comorbidity with other psychiatric disorders among adolescents with severe emotional disturbances. *J. Am. Acad. Child Adolesc. Psychiatry* 30:575-83
- Grella CE, Hser Y, Joshi V, Rounds-Bryant J. 2001. Drug treatment outcomes for adolescents with comorbid mental and substance use disorders. *J. Nerv. Ment. Dis.* 189:384-92
- Grove St. Adolesc. Resid. Bridge Central MA. 2004 (Oct.). Using dialectical behavior therapy to help troubled adolescents return safely to their families and communities. *Psychiatr. Serv.* 55(10):1168-70
- Hawkins EH, Marlatt GA, Cummins LH. 2004. Preventing substance abuse in American Indian and Alaska Native youth: promising strategies for healthier communities. *Psychol. Bull.* 130(2):304-23
- Hawkins JD, Catalano RF, Miller JY. 1992. Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for substance abuse prevention. *Psychol. Bull.* 112(1):64-105
- Henggeler SW, Bourdin CM. 1990. *Family Therapy and Beyond: A Multisystemic Approach to Treating the Behavior Problems of Children and Adolescents*. Pacific Grove, CA: Brooks/Cole Publ.
- Henggeler SW, Borduin CM, Melton GB, Mann BJ, Smith L, et al. 1991. Effects of multisystemic therapy on drug use and abuse in serious juvenile offenders: a progress report from two outcome studies. *Fam. Dyn. Addict. Q.* 1:40-51
- Henggeler SW, Melton GB, Smith LA. 1992. Family preservation using multisystemic therapy: an effective alternative to incarcerating serious juvenile offenders. *J. Consult. Clin. Psychol.* 60:953-61
- Henggeler SW, Pickrel SG, Brondino MJ. 1999. Multisystemic treatment of substance abusing and dependent delinquents: outcomes, treatment fidelity, and transportability. *Ment. Health Serv. Res.* 1:171-84
- Henggeler SW, Schoenwald SK, Borduin CM, Rowland MD, Cunningham PB. 1998. *Multisystemic Treatment of Antisocial Behavior in Children and Adolescents*. New York: Guilford
- Hien DA, Cohen LR, Litt LC, Miele GM, Capstick C. 2004. Promising empirically supported treatments for women with comorbid PTSD and substance use disorders. *Am. J. Psychiatry* 161:1426-32
- Hogue A, Dauber S, Samuolis J, Liddle HA. 2006. Treatment techniques and outcomes in multidimensional family therapy for adolescent behavior problems. *J. Fam. Psychol.* 20(4):535-43
- Holzer CE III, Shea BM, Swanson JW, Leaf PJ, Myers JK, et al. 1986. The increased risk for specific psychiatric disorders among persons of low socioeconomic status: evidence from the Epidemiologic Catchment Area Surveys. *Am. J. Soc. Psychiatry* 6:259-71
- Huey SJ, Henggeler SW, Brondino MJ, Pickrel SG. 2000. Mechanisms of change in multisystemic therapy: reducing delinquent behavior through therapist adherence and improved family and peer functioning. *J. Consult. Clin. Psychol.* 68:451-67
- Inst. Med. 2001. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: Nat. Acad. Press
- Johnston LD, O'Malley PM, Bachman JG, Schulenberg JE. 2007. *Monitoring the Future National Survey Results on Drug Use, 1975-2006: Volume I, Secondary School Students 2006*. NIH Publ. No. 07-6205. Bethesda, MD: Nat. Inst. Drug Abuse
- Kaminer Y. 1991. The magnitude of concurrent psychiatric disorders in hospitalized substance abusing adolescents. *Child Psychiatry Hum. Dev.* 22(2):89-95
- Kaminer Y, Blitz C, Burleson JA, Sussman J, Rounsaville BJ. 1998. Psychotherapies for adolescent substance abusers: treatment outcome. *J. Nerv. Ment. Dis.* 186:684-90
- Kaminer Y, Burleson JA. 1999. Psychotherapies for adolescent substance abusers: 15-month follow-up. *Am. J. Addict.* 8:114-19
- Kaminer Y, Tarter RE, Bukstein O, Kabene M. 1992. Comparison between treatment completers and non-completers among dually diagnosed substance abusing adolescents. *J. Am. Acad. Child Adolesc. Psychiatry* 31:1046-49

- Kandel DB. 1982. Epidemiological and psychological perspectives on adolescent drug use. *J. Am. Acad. Child Psychiatry* 21:328-47
- Kandel DB, Davies M. 1986. Adult sequelae of adolescent depressive symptoms. *Arch. Gen. Psychiatry* 43:255-62
- Kandel DB, Johnson JG, Bird HR, Weissman MM, Goodman SH, et al. 1999. Psychiatric comorbidity among adolescents with substance use disorders: findings from the MECA study. *J. Am. Acad. Child Adolesc. Psychiatry* 38:693-99
- Katz LY, Cox BJ, Gunasekara S, Miller AL. 2004. Feasibility of dialectical behavior therapy for suicidal adolescent inpatients. *J. Am. Acad. Child Adolesc. Psychiatry* 43(3):276-82
- Katz LY, Gunasekara S, Miller AL. 2002. Dialectical behavior therapy for inpatient and outpatient parasuicidal adolescents. In *Adolescent Psychiatry: Developmental and Clinical Studies*, Vol. 26, ed. LT Flaherty, pp. 161-78. Hillsdale, NJ: Analytic
- Kazdin AE. 1987. Treatment of antisocial behavior in children: current status and future directions. *Psychol. Bull.* 102:187-202
- Kazdin AE. 1994. *Behavior Modification in Applied Settings*. Pacific Grove, CA: Brooks/Cole Publ.
- Kazdin AE. 1995. *Conduct Disorder*. Newbury Park, CA: Sage
- Kazdin AE. 1996. Dropping out of child psychotherapy: issues for research and implications for practice. *Clin. Child Psychol. Psychiatry* 1:133-56
- Kazdin AE, Siegel TC, Bass D. 1990. Drawing on clinical practice to inform research on child and adolescent psychotherapy: survey of practitioners. *Prof. Psychol. Res. Pract.* 21:189-98
- Kendall PC, Flannery-Schroeder E, Panichelli-Mindel SM, Southam-Gerow M, Henin A, et al. 1997. Therapy for youths with anxiety disorders: a second randomized clinical trial. *J. Consult. Clin. Psychol.* 65(3):366-80
- Kessler RC. 2004. The epidemiology of dual diagnosis. *Biol. Psychiatry* 56:730-37
- Kessler RC, McGonagle KA, Zhao S, Nelson CB, Hughes M, et al. 1994. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: results from the National Comorbidity Study. *Arch. Gen. Psychiatry* 51:8-19
- Kessler RC, Nelson CB, McGonagle KA, Edlund MJ, Frank RG, Leaf PJ. 1996. The epidemiology of co-occurring addictive and mental disorders: implications for prevention and service utilization. *Am. J. Orthopsychiatry* 66(1):17-31
- King RD, Gaines LS, Lambert EW, Summerfelt WT, Bickman L. 2000. The co-occurrence of psychiatric and substance abuse diagnoses in adolescents in different service systems: frequency, recognition, cost, and outcomes. *J. Behav. Health Serv. Res.* 27:417-30
- Lahey BB, Flagg EW, Bird HR, Schwab-Stone ME, Canino G, et al. 1996. The NIMH Methods for the Epidemiology of Child and Adolescent Mental Disorders (MECA) study: background and methodology. *J. Am. Acad. Child Adolesc. Psychiatry* 35:855-64
- Larimer ME, Turner AP, Anderson BK, Fader JS, Kilmer JR, et al. 2001. Evaluating a brief alcohol intervention with fraternities. *J. Stud. Alcohol* 62:370-80
- Latimer WW, Stone AL, Voight A, Winters KC, August GJ. 2002. Gender differences in psychiatric comorbidity among adolescents with substance use disorders. *Exp. Clin. Psychopharmacol.* 10(3):310-15
- Lewinsohn PM, Hops H, Roberts RE, Seeley JR, Andrews JA. 1993. Adolescent psychopathology, I: prevalence and incidence of depression and other DSM-III-R disorders in high school students. *J. Abnorm. Psychol.* 102:133-44
- Lewinsohn PM, Rohde P, Seeley JR. 1996. Adolescent psychopathology: III. The clinical consequences of comorbidity. *J. Am. Acad. Child Adolesc. Psychiatry* 34(4): 510-19
- Libby AM, Orton HD, Stover SK, Riggs PD. 2005. What came first, major depression or substance use disorder? Clinical characteristics and substance use comparing teens in a treatment cohort. *Addict. Behav.* 30:1649-62
- Libby AM, Riggs PD. 2005. Integrated substance use and mental health treatment for adolescents: aligning organizational and financial incentives. *J. Child Adolesc. Psychopharmacol.* 15(5):826-34
- Liddle HA. 1999. Theory development in a family-based therapy for adolescent drug abuse. *J. Clin. Child Psychol.* 28:521-32

- Liddle HA. 2001. Advances in family-based therapy for adolescent substance abuse: findings from the Multidimensional Family Therapy research program. In *Problems of Drug Dependence 2001: Proceedings from the 63rd Annual Scientific Meeting of the College on Problems of Drug Dependence, Inc.*, ed. LS Harris, pp. 113–15. NIDA Res. Monog. No. 182. NIH Publ. No. 02–5097. Bethesda, MD: Nat. Inst. Drug Abuse
- Liddle HA. 2004. Family-based therapies for adolescent alcohol and drug use: research contributions and future research needs. *Addiction* 99(Suppl. 2):76–92
- Liddle HA, Dakof GA. 2002. A randomized controlled trial of intensive outpatient, family-based therapy vs residential drug treatment for comorbid adolescent drug abusers. *Drug Alcohol Depend.* 66:S2–202
- Liddle HA, Dakof GA, Parker K, Diamond GS, Barrett K, Tejada M. 2001. Multidimensional family therapy for adolescent substance abuse: results of a randomized clinical trial. *Am. J. Drug Alcohol Abuse* 27:651–87
- Liddle HA, Rowe CL, Dakof GA, Ungaro RA, Henderson C. 2004. Early intervention for adolescent substance abuse: Pretreatment to posttreatment outcomes of a randomized controlled trial comparing multidimensional family therapy and peer group treatment. *J. Psychoactive Drugs* 36:49–63
- Linehan MM. 1993. *Cognitive-Behavioral Treatment of Borderline Personality Disorder*. New York: Guilford
- Loeber R, Keenan K. 1994. Interaction between conduct disorder and its comorbid conditions: effects of age and gender. *Clin. Psychol. Rev.* 14:497–523
- Lysaught E, Wodarski JS. 1996. Model: a dual focused intervention for depression and addiction. *J. Child Adolesc. Subst. Abuse* 5(1):55–71
- Mainous AG, Martin CA, Oler MJ, Richardson ET, Haney AS. 1996. Substance use among adolescents: fulfilling a need state. *Adolescence* 31:807–15
- Mann BJ, Borduin CM, Henggeler SW, Blaske DM. 1990. An investigation of systemic conceptualizations of parent-child coalitions and symptom change. *J. Consult. Clin. Psychol.* 58:336–44
- Marlatt GA, Baer JS, Kivlahan DR, Dimeff LA, Larimer ME, et al. 1998. Screening and brief intervention for high-risk college student drinkers: results from a 2-year follow-up assessment. *J. Consult. Clin. Psychol.* 66:604–15
- Marlatt GA, Gordon JR, eds. 1985. *Relapse Prevention: Maintenance Strategies in the Treatment of Addictive Behaviors*. New York: Guilford
- McGee R, Feehan M, Williams S, Partridge F, Silva PA, Kelly J. 1990. DSM-III disorders in a large sample of adolescents. *J. Am. Acad. Child Adolesc. Psychiatry* 29:611–19
- McGue M, Iacono WG. 2005. The association of early adolescent problem behavior with adult psychopathology. *Am. J. Psychiatry* 162:1118–24
- Mechanic D. 1998. Bringing science to medicine: the origins of evidence-based practice. *Health Affairs* 17(6):250–51
- Mensingher JL, Diamond GS, Kaminer Y, Wintersteen MB. 2006. Adolescent and therapist perception of barriers to outpatient substance abuse treatment. *Am. J. Addict.* 15:16–25
- Miller AL, Glinski J, Woodberry KA, Mitchell AG, Indik J. 2002. Family therapy and dialectical behavior therapy with adolescents. Part I: proposing a clinical synthesis. *Am. J. Psychother.* 56(4):568–84
- Miller AL, Rathus JH, Linehan MM. 2007. *Dialectical Behavior Therapy with Suicidal Adolescents*. New York: Guilford
- Miller WR, Rollnick S. 2002. *Motivational Interviewing: Preparing People for Change*. New York: Guilford. 2nd ed.
- Minkoff K. 1991. Program components of a comprehensive integrated care system for serious mentally ill patients with substance disorders. In *New Directions for Mental Health Services: Dual Diagnosis of Major Mental Illness and Substance Disorder*, ed. K Minkoff, RE Drake, 50:13–27. San Francisco, CA: Jossey-Bass
- Monti PM, Barnett NP, O’Leary TA, Colby SM. 2001. Motivational enhancement for alcohol-involved adolescents. In *Adolescents, Alcohol, and Substance Abuse: Reaching Teens Through Brief Interventions*, ed. PM Monti, SM Colby, TA O’Leary, pp. 145–82. New York: Guilford
- Monti PM, Colby SM, Barnett NP, Spirito A, Rohsenow DJ, et al. 1999. Brief intervention for harm reduction with alcohol-positive older adolescents in a hospital emergency department. *J. Consult. Clin. Psychol.* 67:989–94
- Moss HB, Lynch KG, Hardie TL. 2003. Affiliation with deviant peers among children of substance dependent fathers from preadolescence into adolescence: associations with problem behaviors. *Drug Alcohol Depend.* 71:117–25

- Mueser KT, Drake RE, Wallach MA. 1998. Dual diagnosis: a review of etiological theories. *Addict. Behav.* 23(6):717-34
- Myers MG, Brown SA, Tate S, Abrantes A, Tomlinson K. 2001. Toward brief interventions for adolescents with substance abuse and comorbid psychiatric problems. In *Adolescents, Alcohol, and Substance Abuse: Reaching Teens Through Brief Interventions*, ed. PM Monti, SM Colby, TA O'Leary, pp. 275-96. New York: Guilford
- Najavits LM. 2007. Seeking Safety: an evidence-based model for substance abuse and trauma/PTSD. In *Therapist's Guide to Evidence-Based Relapse Prevention: Practical Resources for the Mental Health Professional*, ed. KA Witkiewitz, GA Marlatt, pp. 141-67. San Diego, CA: Elsevier
- Najavits LM, Gallop RJ, Weiss RD. 2006. Seeking Safety therapy for adolescent girls with PTSD and substance use disorder: a randomized controlled trial. *J. Behav. Health Serv. Res.* 33(4):453-63
- Najavits LM, Weiss RD, Shaw SR, Muenz L. 1998. "Seeking Safety": outcome of a new cognitive-behavioral psychotherapy for women with posttraumatic stress disorder and substance dependence. *J. Trauma. Stress* 11:437-56
- Nat. Alliance Ment. Illness. 2007. *Choosing the Right Treatment: What Families Need to Know About Evidence-Based Practices*. Arlington, VA: Nat. Alliance Ment. Illness
- Nat. Assoc. State Ment. Health Prog. Directors, Nat. Assoc. State Alcohol Drug Abuse Directors. 1998. *National dialogue on co-occurring mental health and substance abuse disorders*. Washington, DC: Nat. Assoc. State Alcohol Drug Abuse Directors. <http://www.nasadad.org/index.php?doc.id=101>
- Nat. Inst. Drug Abuse. 1999. *Principles of drug addiction treatment: a research-based guide*. NIH Publ. No. 99-4180. Bethesda, MD: Nat. Inst. Health
- Nelson-Gray RO, Keane SP, Hurst RM, Mitchell JT, Warburton JB, et al. 2006. A modified DBT skills training program for oppositional defiant adolescents: promising preliminary findings. *Behav. Res. Ther.* 44(12):1811-20
- Oetting ER, Beauvais F. 1989. Epidemiology and correlates of alcohol use among Indian adolescents living on reservations. In *Alcohol Use Among U.S. Ethnic Minorities*, ed. D Spiegler, D Tate, S Aitken, C Christian, pp. 239-67. NIAAA Res. Monogr. 18. Rockville, MD: Nat. Inst. Alcohol Abuse Alcoholism
- Pincus HA, Watkins K, Vilamovska AM, Keyser D. 2006. *Models of care for co-occurring disorders: final report*. RAND Corp. final rep. Cent. Subst. Abuse Treat. Rockville, MD: Subst. Abuse Ment. Health Serv. Admin.
- President's New Freedom Commission Ment. Health. 2003. *Achieving the promise: transforming mental health care in America. Final report*. DHHS Publ. No. SMA 03-3832. Rockville, MD: Dep. Health Human Serv.
- Prochaska JO, DiClemente CC. 1984. *The Trans Theoretical Approach: Crossing Traditional Boundaries of Therapy*. Homewood, IL: Dow Jones/Irwin
- Proj. MATCH Res. Group. 1993. Project MATCH: rationale and methods for a multisite clinical trial matching patients to alcoholism treatment. *Alcohol. Clin. Exp. Res.* 17:1130-45
- Ramo DE, Anderson KG, Tate SR, Brown SA. 2005. Characteristics of relapse to substance use in comorbid adolescents. *Addict. Behav.* 30(9):1811-23
- Randall J, Henggeler SW, Pickrel S, Brondino MJ. 1999. Psychiatric comorbidity and the 16-month trajectory of substance-abusing and substance-dependent juvenile offenders. *J. Am. Acad. Child Adolesc. Psychiatry* 38:1118-25
- Rather BC, Goldman MS, Roehrich L, Brannick M. 1992. Empirical modeling of an alcohol expectancy network using multidimensional scaling. *J. Abnorm. Psychol.* 101:174-83
- Rathus JH, Miller AL. 2002. Dialectical behavior therapy adapted for suicidal adolescents. *Suicide Life Threat. Behav.* 32(2):146-57
- Regier D, Farmer M, Rea D, Locke BZ, Keith SJ, et al. 1990. Comorbidity of mental disorders with alcohol and other drug abuse: results from the epidemiologic catchment area study. *J. Am. Med. Assoc.* 264(19):2511-18
- Reinherz HZ, Giaconia RM, Pakiz B, Silverman AB, Frost AK, et al. 1993. Psychosocial risks for major depression in late adolescence: a longitudinal community study. *J. Am. Acad. Child Adolesc. Psychiatry* 32(6):1155-63
- Rhodes JE, Jason LA. 1990. The social stress model of substance abuse. *J. Consult. Clin. Psychol.* 58:395-401
- Riggs P. 2003. Treating adolescents for substance use and comorbid psychiatric disorders. *NIDA Sci. Pract. Perspect.* 2(1):18-29

- Robbins MS, Kumar S, Walker-Barnes C, Feaster DJ, Briones E, Szapocznik J. 2002. Ethnic differences in comorbidity among substance-abusing adolescents referred to outpatient therapy. *J. Am. Acad. Child Adolesc. Psychiatry* 41(4):394–401
- Roberts AR, Corcoran K. 2005. Adolescents growing up in stressful environments, dual diagnosis, and sources of success. *Brief Treat. Crisis Interv.* 5:1–8
- Roberts LJ, Neal DJ, Kivlahan DR, Baer JS, Marlatt GA. 2000. Individual drinking changes following a brief intervention among college students: clinical significance in an indicated preventive context. *J. Consult. Clin. Psychol.* 68:500–5
- Robins LN, Pryzbeck TR. 1985. Age of onset of drug use as a factor in drug and other disorders. In *NIDA Research Monograph 56. Etiology of Drug Abuse: Implications for Prevention*, ed. CL Jones, RJ Battjes, pp. 178–92. Rockville, MD: Nat. Inst. Drug Abuse
- Roehrich H, Gold MS. 1986. Diagnosis of substance abuse in an adolescent psychiatric population. *Int. J. Psychiatry Med.* 18:137–43
- Rohde P, Lewinsohn PM, Seeley JR. 1991. Comorbidity of unipolar depression: II. Comorbidity with other mental disorders in adolescents and adults. *J. Abnorm. Psychol.* 100:214–22
- Rohde P, Lewinsohn PM, Seeley JR. 1994. Response of depressed adolescents to cognitive-behavioral treatment: Do differences in initial severity clarify the comparison of treatments? *J. Consult. Clin. Psychol.* 62:851–54
- Rohde P, Lewinsohn PM, Seeley JR. 1996. Psychiatric comorbidity with problematic alcohol use in high school students. *J. Am. Acad. Child Adolesc. Psychiatry* 35(1):101–9
- Rowe CL, Liddle HA, Dakof GA. 2001. Classifying clinically referred adolescent substance abusers by level of externalizing and internalizing symptoms. *J. Child Adolesc. Subst. Abuse* 11(2):41–65
- Rowe CL, Liddle HL, Greenbaum PE, Henderson CE. 2004. Impact of psychiatric comorbidity on treatment of adolescent drug abusers. *J. Subst. Abuse Treat.* 26(2):129–40
- Sacks S, Chandler R, Gonzales J. 2008. Responding to the challenge of co-occurring disorders: suggestions for future research. *J. Subst. Abuse Treat.* 34:139–46
- Safer DL, Lock J, Couturier JL. 2007. Dialectical behavior therapy modified for adolescent binge eating disorder: a case report. *Cogn. Behav. Pract.* 14(2):157–67
- Schaeffer CM, Borduin CM. 2005. Long-term follow-up to a randomized clinical trial of multisystemic therapy with serious and violent juvenile offenders. *J. Consult. Clin. Psychol.* 73(3):445–53
- Shedler J, Block J. 1990. Adolescent drug use and psychological health: a longitudinal inquiry. *Am. Psychol.* 45:612–30
- Simons-Morton B, Haynie DL, Crump AD, Saylor KE, Eitel P, Yu K. 1999. Expectancies and other psychosocial factors associated with alcohol use among early adolescents boys and girls. *Addict. Behav.* 24:229–38
- Stacy AW, Newcomb MD, Bentler PM. 1991. Cognitive motivation and drug use: a 9-year longitudinal study. *J. Abnorm. Psychol.* 100:502–15
- Subst. Abuse Ment. Health Serv. Admin. 1996. *Mental health estimates from the 1994 National Household Survey on Drug Abuse*. Rockville, MD: Subst. Abuse Ment. Health Serv. Admin.
- Subst. Abuse Ment. Health Serv. Admin. 2000. *Prevention of comorbidity in children and adolescents: the nexus of mental health and substance abuse*. Background paper. Silver Spring, MD: Johnson, Bassin & Shaw
- Subst. Abuse Ment. Health Serv. Admin. 2002. *Results from the 2001 National Household Survey on Drug Abuse: volume I. Summary of national findings*. DHHS Publ. No. SMA 02–3758. Rockville, MD: Subst. Abuse Ment. Health Serv. Admin.
- Subst. Abuse Ment. Health Serv. Admin. 2005. *Transforming mental health care in America. Federal action agenda: first steps*. DHHS Publ. No. SMA 05–4060. Rockville, MD: Subst. Abuse Ment. Health Serv. Admin.
- Subst. Abuse Ment. Health Serv. Admin. 2007. *The DASIS report: male admissions with co-occurring psychiatric and substance use disorders: 2005*. Rockville, MD: Subst. Abuse Ment. Health Serv. Admin.
- Sunseri PA. 2004. Preliminary outcomes on the use of dialectical behavior therapy to reduce hospitalization among adolescents in residential care. *Residential Treat. Child. Youth* 21:59–76
- Szapocznik J, Kurtines WM, Foote FH, Perez-Vidal A, Hervis O. 1983. Conjoint versus one-person family therapy: some evidence for the effectiveness of conducting family therapy through one person. *J. Consult. Clin. Psychol.* 51:889–99

- Tevyaw TO, Monti PM. 2004. Motivational enhancement and other brief interventions for adolescent substance abuse: foundations, applications and evaluations. *Addiction* 99(Suppl. 2):63–75
- Tomlinson KL, Brown SA, Abrantes A. 2004. Psychiatric comorbidity and substance use treatment outcomes of adolescents. *Psychol. Addict. Behav.* 18:160–69
- Trupin EW, Stewart DG, Beach B, Boesky L. 2002. Effectiveness of a dialectical behaviour therapy program for incarcerated female juvenile offenders. *Child Adolesc. Mental Health* 7(3):121–27
- Turner CF, Ku L, Rogers SM, Lindberg LD, Pleck JH, Sonenstein FL. 1998. Adolescent sexual behavior, drug use, and violence: increased reporting with computer survey technology. *Science* 280:867–73
- U.S. Dep. Health Human Serv. 1999. *Mental Health: A Report of the Surgeon General*. Rockville, MD: U.S. Dep. Health Human Serv.
- U.S. Dep. Health Human Serv. 2001. *Youth Violence: A Report of the Surgeon General*. Rockville, MD: U.S. Dep. Health Human Serv.
- U.S. Dep. Health Human Serv. 2002. *Report to Congress on the Prevention and Treatment of Co-occurring Substance Abuse and Mental Disorders*. Rockville, MD: Subst. Abuse Ment. Health Serv. Admin.
- Waldron HB. 1997. Adolescent substance abuse and family therapy outcome: a review of randomized trials. In *Advances in Clinical Child Psychology*, ed. TH Ollendick, RJ Prinz, pp. 199–234. New York: Plenum
- Waldron HB, Kaminer Y. 2004. On the learning curve: the emerging evidence supporting cognitive-behavioral therapies for adolescent substance abuse. *Addiction* 99(Suppl. 2):93–105
- Waldron HB, Slesnick N, Brody JL, Turner CW, Peterson JR. 2001. Treatment outcomes for adolescent substance abuse at 4- and 7-month assessments. *J. Consult. Clin. Psychol.* 69:802–13
- Weiss RD, Mirin SM. 1987. Substance abuse as an attempt at self-medication. *Psychiatr. Med.* 3:357–67
- Weisz JR, Kazdin AE. 2003. Concluding thoughts: present and future of evidence-based psychotherapies for children and adolescents. In *Evidence-Based Psychotherapies for Children and Adolescents*, ed. AE Kazdin, JR Weisz, pp. 439–51. New York: Guilford
- White HR, LaBouvie EW. 1989. Towards the assessment of adolescent problem drinking. *J. Stud. Alcohol* 50:30–37
- Wierzbicki M, Pekarik G. 1993. A meta-analysis of psychotherapy dropout. *Prof. Psychol. Res. Pract.* 24:190–95
- Wise BK, Cuffe SP, Fischer T. 2001. Dual diagnosis and successful participation of adolescents in substance abuse treatment. *J. Subst. Abuse Treat.* 21(3):161–65
- Woodberry KA, Miller AL, Glinski J, Indik J, Mitchell AG. 2002. Family therapy and dialectical behavior therapy with adolescents. Part II: a theoretical review. *Am. J. Psychother.* 56(4):585–602
- Zlotnick C, Najavits LM, Rohsenow DJ. 2003. A cognitive-behavioral treatment for incarcerated women with substance use disorder and posttraumatic stress disorder: findings from a pilot study. *J. Subst. Abuse Treat.* 25:99–105



Contents

Prefatory

- Emotion Theory and Research: Highlights, Unanswered Questions,
and Emerging Issues
Carroll E. Izard 1

Concepts and Categories

- Concepts and Categories: A Cognitive Neuropsychological Perspective
Bradford Z. Mahon and Alfonso Caramazza 27

Judgment and Decision Making

- Mindful Judgment and Decision Making
Elke U. Weber and Eric J. Johnson 53

Comparative Psychology

- Comparative Social Cognition
Nathan J. Emery and Nicola S. Clayton 87

Development: Learning, Cognition, and Perception

- Learning from Others: Children's Construction of Concepts
Susan A. Gelman 115

Early and Middle Childhood

- Social Withdrawal in Childhood
Kenneth H. Rubin, Robert J. Coplan, and Julie C. Bowker 141

Adulthood and Aging

- The Adaptive Brain: Aging and Neurocognitive Scaffolding
Denise C. Park and Patricia Reuter-Lorenz 173

Substance Abuse Disorders

- A Tale of Two Systems: Co-Occurring Mental Health and Substance
Abuse Disorders Treatment for Adolescents
Elizabeth H. Hawkins 197

Therapy for Specific Problems

- Therapy for Specific Problems: Youth Tobacco Cessation
Susan J. Curry, Robin J. Mermelstein, and Amy K. Sporer 229

Adult Clinical Neuropsychology

- Neuropsychological Assessment of Dementia
David P. Salmon and Mark W. Bondi 257

Child Clinical Neuropsychology

- Relations Among Speech, Language, and Reading Disorders
Bruce F. Pennington and Dorothy V.M. Bishop 283

Attitude Structure

- Political Ideology: Its Structure, Functions, and Elective Affinities
John T. Jost, Christopher M. Federico, and Jaime L. Napier 307

Intergroup relations, stigma, stereotyping, prejudice, discrimination

- Prejudice Reduction: What Works? A Review and Assessment
of Research and Practice
Elizabeth Levy Paluck and Donald P. Green 339

Cultural Influences

- Personality: The Universal and the Culturally Specific
Steven J. Heine and Emma E. Buchtel 369

Community Psychology

- Community Psychology: Individuals and Interventions in Community
Context
Edison J. Trickett 395

Leadership

- Leadership: Current Theories, Research, and Future Directions
Bruce J. Avolio, Fred O. Walumbwa, and Todd J. Weber 421

Training and Development

- Benefits of Training and Development for Individuals and Teams,
Organizations, and Society
Herman Aguinis and Kurt Kraiger 451

Marketing and Consumer Behavior

- Conceptual Consumption
Dan Ariely and Michael I. Norton 475

Psychobiological Mechanisms

- Health Psychology: Developing Biologically Plausible Models Linking
the Social World and Physical Health
Gregory E. Miller, Edith Chen, and Steve Cole 501

Health and Social Systems

- The Case for Cultural Competency in Psychotherapeutic Interventions
Stanley Sue, Nolan Zane, Gordon C. Nagayama Hall, and Lauren K. Berger 525

Research Methodology

- Missing Data Analysis: Making It Work in the Real World
John W. Graham 549

Psychometrics: Analysis of Latent Variables and Hypothetical Constructs

- Latent Variable Modeling of Differences and Changes with
Longitudinal Data
John F. McArdle 577

Evaluation

- The Renaissance of Field Experimentation in Evaluating Interventions
William R. Shadish and Thomas D. Cook 607

Timely Topics

- Adolescent Romantic Relationships
W. Andrew Collins, Deborah P. Welsh, and Wyndol Furman 631

- Imitation, Empathy, and Mirror Neurons
Marco Iacoboni 653

- Predicting Workplace Aggression and Violence
Julian Barling, Kathryne E. Dupré, and E. Kevin Kelloway 671

- The Social Brain: Neural Basis of Social Knowledge
Ralph Adolphs 693

- Workplace Victimization: Aggression from the Target's Perspective
Karl Aquino and Stefan Thau 717

Indexes

- Cumulative Index of Contributing Authors, Volumes 50–60 743

- Cumulative Index of Chapter Titles, Volumes 50–60 748

Errata

An online log of corrections to *Annual Review of Psychology* articles may be found at
<http://psych.annualreviews.org/errata.shtml>