

ADOLESCENT Marijuana Use & Psychiatric Disorders

by Kevin M. Gray, M.D.

Marijuana is the most commonly used illicit substance in the United States, and onset of use typically occurs during adolescence (SAMHSA, 2007). By senior year of high school, 42 percent of adolescents have tried marijuana (Johnston, O'Malley, Bachman & Schulenberg, 2007). While most adolescents marijuana users have only used on occasion, a significant minority progress to frequent, heavy use. Five percent of high school seniors smoke marijuana daily (Johnston, et al., 2007), and 4 percent of adolescents age 13-17 meet criteria for cannabis abuse or dependence (SAMHSA, 2007). The rapid structural transition and development occurring in the adolescent brain may increase the risk for marijuana use and, in turn, worsen the adverse consequences of marijuana use (Lubman, Yücel & Hall, 2007).

There has been a long-standing debate over the relationship between adolescent marijuana use and psychiatric disorders. Many have suggested that marijuana use may represent "self-medication" for pre-existing psychiatric disorders in some adolescents, while others have posited that marijuana use may predispose to later development of psychiatric disorders. Another theory suggests that some adolescents may possess shared risk factors for both marijuana use and psychiatric illness. Recent research has helped clarify the nature and direction of the relationship between adolescent marijuana use and several psychiatric disorders. In some cases, research has focused specifically on marijuana's association with psychiatric co-morbidity, but in others, adolescent substance use has been explored more broadly.

Depression and Anxiety

Significant associations between marijuana use, depression, and anxiety in adolescents have been found in several studies. Among 1600 Australian adolescents followed prospectively for seven years from age 14-15, females who used marijuana weekly were twice as likely to develop subsequent depression and anxiety than their non-using counterparts (Patton, et al., 2002). Those who used marijuana daily were at five times the risk of non-using peers. Three other large-scale studies have demonstrated that early-onset marijuana use predisposes female and male adolescents to later development of depression and anxiety (Arsenault, et al., 2002; Fergusson, Horwood & Swain-Campbell, 2002; Hayatbakhsh, et al., 2007).

Of note, no association of early-onset depression and anxiety with subsequent cannabis use (i.e. "self-medication") was found in any of these studies. However a recently published investigation revealed a specific association between social anxiety disorder and subsequent marijuana use (Buckner, et al., 2008). Participants who met criteria for social anxiety disorder were at 6.5 times the risk for subsequent development of cannabis dependence than their non-socially anxious peers. No other depressive or anxiety disorder was associated with a similarly elevated risk for subsequent cannabis dependence.

Among the most concerning symptoms of depression are suicidal thinking and behavior. Multiple studies have demonstrated an association between marijuana use and subsequent suicidal behavior (Beautrais, Joyce & Mulder, 1999; Fergusson, et al., 2002; Patton, et al., 1997). Fergusson and colleagues found that this association was specific to adolescent, rather than adult, marijuana use.

Conduct Disorder

Conduct disorder is characterized by a persistent pattern of behaviors that violate societal norms and/or the basic rights of others, with onset of symptoms in childhood or adolescence (American Psychiatric Association, 2000). It appears clear that conduct disorder is closely associated with substance use, including marijuana use, among adolescents. This relationship appears to be bidirectional. Early onset conduct disorder predicts subsequent substance use (McGee, Williams, Poulton & Moffitt, 2000). Additionally, early onset substance use predicts subsequent conduct disorder, even when controlling for potentially confounding factors (Brook, Balka & Whiteman, 1999; Brook, Brook, Rosen & Rabbitt, 2003). One recent study suggests that adolescent-onset conduct disorder is more strongly associated with substance use disorders than childhood-onset conduct disorder (Connor, Ford, Albert & Doerfler, 2007).

Attention-Deficit/Hyperactivity Disorder (ADHD)

ADHD is characterized by a persistent, impairing pattern of impulsivity, hyperactivity, and/or inattention, with onset in early childhood (American Psychiatric Association, 2000). The potential association between ADHD and adolescent substance use in general remains controversial. Some have argued that any increased risk for substance use with ADHD is due solely to the concurrent presence

of conduct disorder (Fergusson, Horwood & Ridder, 2007), while others suggest that ADHD is associated with adolescent substance abuse in males only (Whitmore, et al., 1997). However, recent findings argue that adolescences, who exhibit particularly prominent hyperactive/impulsive, relative to inattentive, symptoms of ADHD, are at elevated risk for substance use, regardless of whether they also have conduct disorder (Elkins, McGue & Iacono, 2007). It appears that symptomatic treatment of ADHD decreases the ADHD-associated risk of substance use (Barkley, Fisher, Smallish & Fletcher, 2003; Biederman, et al., 1999; Wilens, Faraone, Biederman & Gunawardene, 2003).

Bipolar Disorder

Bipolar disorder is characterized by severe mood alterations, including periods of pathologically elevated (“manic” or “hypomanic”) and depressed mood (American Psychiatric Association, 2000). Bipolar disorder has long been associated with elevated risk of substance use disorders (Brady & Sonne, 1995). Of further concern, the presence of substance use disorders worsens the course of bipolar disorder and, conversely, the presence of bipolar disorder worsens the course of substance use disorders. Adolescent-onset bipolar disorder may convey particularly high risk for substance use disorders, as it is associated with 8.8 times the risk for substance use disorders compared with childhood-onset bipolar disorder (Wilens, et al., 1999). This very strong association persists even when controlling for potential confounds, such as co-morbid conduct disorder.

Psychosis

Psychosis is characterized by symptoms such as delusions, prominent hallucinations, and disorganized speech or behavior (American Psychiatric Association, 2000). Marijuana use may precipitate acute psychotic symptoms in some individuals. In general, these symptoms are thought to cease at the conclusion of intoxication. However, emerging evidence suggests that marijuana use, particularly during adolescence, may play a causal role in the subsequent development of chronic psychotic disorders, such as schizophrenia, in vulnerable individuals (Moore, et al., 2007). The association appears to become stronger with early onset and increased frequency of adolescent marijuana use (Henquet, et al., 2005; Stefanis, et al., 2004; van Os, et al., 2002; Zammit, et al., 2002). It may be that, by way of interactions with dopaminergic pathways in the developing adolescent brain, marijuana may precipitate the onset of psychotic symptoms in people who are at genetic risk for psychotic disorders (DeLisi, 2008).

Summary and Implications

Marijuana use during adolescence is associated with several psychiatric disorders. In some cases, presence of a psychiatric disorder may increase the risk for adolescent marijuana use. In other cases, marijuana use itself may predispose some adolescents to subsequently develop psychiatric disorders. Additionally, marijuana use may worsen the course of some psychiatric illnesses. In the interest of prevention and treatment, it is important that health care practitioners, families, and adolescents be made aware of these potential associations. Clinicians in substance abuse treatment and psychiatric treatment settings must establish collaborations in order to address the significant interactions between marijuana use and psychiatric disorders in adolescents. Psychiatric clinicians, while providing evidence-based treatment for psychiatric disorders, must also screen for and monitor the impact of marijuana use on psychiatric presentations. Likewise, substance abuse clinicians, while providing evidence-based treatments, must also screen for and monitor the impact of psychiatric disorders on marijuana use. Communication and collaboration between providers is essential. ▼

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