Carefully assessing for substance use and abuse, and their possible effects on youth functioning should be an integral part of the services provided by agencies and individuals working with adolescents. This is particularly important to remember in mental health service systems, which traditionally have not screened for substance use problems on a regular basis.

Youth services providers should always be aware of the links between adolescent traumatic stress and substance abuse problems. The traditional division between mental health and substance abuse service systems, the limited availability of evidence-based integrated approaches, and the difficulties associated with having separate sources of funding available for these types of problems all can pose many challenges to providing integrated and coordinated care for multiproblem youth. Adolescents in treatment for traumatic stress and other emotional problems benefit greatly from receiving care from clinical staff who are knowledgeable about substance abuse and treatment, how both disorders present and manifest, and how the functional relationship between them can have an impact on treatment outcomes.

A stimulus or trigger can lead to dysregulated emotions or behaviors in adolescents experiencing substance abuse or traumatic stress. In substance-abusing youth, a stimulus or trigger of the context of use (e.g., substance-using peers, place where they obtain drugs, time of day) can lead to an increase in substance abuse cravings, which is likely to lead to use. For traumatized individuals who have substance abuse problems, a reminder of past trauma or loss can also lead to increased substance abuse cravings (Coffey, Saladin, Drobes, Brady, Dansky, & Kilpatrick, 2002; Saladin, Drobes, Coffey, Dansky, Brady & Kilpatrick, 2003). When mental health providers become more substance abuse-informed and when substance abuse providers become more trauma-informed, they all become better able to reinforce in youth the practice and acquisition of coping skills to manage distress in the context of either type of problem. Improvements in the ability to manage substance abuse cravings, for example, may enhance the youth’s readiness to learn how to manage trauma and loss reminders.

With the information in this fact sheet, providers can broaden their understanding of adolescent substance use and abuse and the reasons why teens are drawn to drugs and alcohol. Risk and protective factors associated with use along with types of problems youth experience with prolonged use are presented in both developmental and contextual perspectives. Special attention is paid to the links between substance use, trauma exposure, and traumatic stress. The Appendix contains useful information about some of the substances of abuse.
Tony’s Story

Tony was 15 when he saw his best friend, Curtis, get shot in the cross fire of gang-related violence in their neighborhood. He called 911; and after Curtis was attended to by the paramedics, Tony was allowed to ride in the ambulance to the hospital with Curtis. Curtis died in the ICU several hours later. Tony was devastated but believed that Curtis would have wanted him to stay strong. So he tried to get back to his daily routine as quickly as possible. Tony lived at home with his 14-year-old brother, Mikey, and his mom and stepfather, who frequently argued. Before Curtis’s death, Tony was doing pretty well in his classes and was on the school basketball team. However, he began to find it harder to focus in school and was having recurrent nightmares about Curtis’s death that were making it difficult for him to sleep.

At a basketball party one weekend, a teammate offered Tony some Vicodin for a game-related injury. Tony took a couple of extra pills to help him fall asleep. On the way home from the party he noticed that he no longer had that on-edge feeling he usually had while walking through his neighborhood. During the next week he discovered that the Vicodin made it easier for him to deal with his brother when he was getting on his nerves. But then he ran out of Vicodin, so he checked around for another source and found a teammate who knew someone who was selling painkillers. Tony soon started using these every day, sometimes skipping school when he’d sleep through his alarm. When the dealer offered him OxyContin he switched to buying that and liked the stronger effect that it had, but it cost a lot more money, so he started stealing from his parents. When the original amounts did not cause the same effect, he started crushing and snorting the pills for an even stronger effect, and he eventually tried injecting morphine.

He was placed on probation for missing so much school, and eventually the courts ordered drug counseling services. He went to an inpatient program for one month and then transitioned to a partial-day program. After being off drugs for some time, he started thinking more of his friend’s horrific death and started to experience survivor guilt. His nightmares and hyperarousal returned and felt so unbearable that he soon began using again to gain temporary relief.

While the specific ways in which adolescents are impacted by use will vary greatly for each individual, there are important facts to keep in mind when providing care to this population. As you read the pages that follow, think about cases like Tony and consider the following questions:

- **What are the signs of substance abuse and dependence common in adolescents?**
- **Does starting to use early in life have an impact on youth development?**
- **What are some of the reasons youth give about initiating and continuing to use substances?**
- **What are some of the reasons youth give about stopping using substances?**
- **Can substance abuse serve as a risk factor for trauma exposure?**
- **What are some of the characteristics of substances commonly abused by adolescents?**
Substance Use in Adolescents

About 1 in 4 adolescents experiment with illegal drugs by the time they finish 8th grade, and more than half by the end of high school (Johnston, O’Malley, & Bachman, 2003). Substance use is most common among adolescents and young adults. Prevalence estimates indicate that 11% of adolescents ages 12–17 have used illicit drugs within the past month, most often marijuana (Substance Abuse and Mental Health Services Administration, 2005). Alcohol, cigarettes, and marijuana are the substances most commonly used by adolescents, followed by inhalants and smokeless tobacco. Specific rates vary by age group: inhalants are more commonly used among younger teens; marijuana, alcohol, and tobacco are more common among older teenagers (Johnston, O’Malley, Bachman, & Schulenberg, 2006). Initiation of substance use tends to be at an early age. One national survey found that by age 13, approximately 1 in 3 youths had consumed alcohol, and 1 in 10 had used marijuana (Giaconia, Reinherz, Silverman, Pakiz, Frost, & Cohen, 1994). Rates of substance use are also high among homeless youth, even when compared to high risk youth seen in adolescent health clinics or those in juvenile detention centers (Baer, Peterson & Wells, 2004; Kipke, Montgomery, Simon & Iverson, 1997; Yates, MacKenzie, Pennbridge & Cohen, 1988).

The Role of Gender in Substance Use

Gender is an important factor in the use and effects of substances. Boys tend to have opportunities for use earlier in life and thus tend to initiate at younger ages (Van Etten, Neumark, & Anthony, 1999). However, once girls have the opportunity to experiment, they are just as likely as boys are to use (Van Etten & Anthony, 2001). Data from the 2005 Monitoring the Future survey (Johnston, O’Malley, Bachman, & Schulenberg, 2006) suggest that there are similar trends for substance use by boys and girls, but that boys are more likely to use marijuana, steroids, and smokeless tobacco; and girls are more likely to use amphetamines and methamphetamine. Rates of drug use for both genders have been converging over the past decade (Wallace, Bachman, O’Malley, Schulenberg, Cooper, & Johnston, 2003).

Research indicates that there are few differences in the type or amount of substances that male and female adolescents use; however, the effects of substances on their emotional and physiological health can vary. Substance abuse stemming from traumatic events and/or psychological problems is more common in females than in males. Additionally, female substance abusers are more vulnerable to some of the physiological effects and psychological difficulties that can result from substance use. Research has also shown that females have a greater chance of developing neurological problems associated with alcohol abuse (Brady & Ashley, 2005).

In addition to varying by gender, adolescent drug and alcohol use also tends to vary by population. According to a 2005 national survey American Indian/Alaska Native Youth reported the highest rates (Substance Abuse and Mental Health Services Administration, 2005). Additionally, a Massachusetts statewide survey indicated that lesbian-gay-bisexual youth reported higher rates than heterosexual youth (Hanlon, 2004).
Why Do Adolescents Use?

Why do teenagers start using, continue using, and in some cases, quit? Each teenager’s circumstances are unique—as are his or her reasons for using. It is important, therefore, to find ways to openly elicit youths’ perspectives during treatment. Researchers have tried to capture general categories of motivation. This section summarizes the research of Titus, Godley, & White (under review), and is based on information from 923 teenagers receiving outpatient and residential substance abuse treatment.

Motives for Initiating Drug Use

The two most common reason teens give for initiating substance use are social pressures and experimentation. They may use because they see “everyone else” doing it and want to blend in; because it’s a way of spending time with friends, of being accepted, of becoming popular, of enhancing social and other activities, or because they may fear that if they refuse, they might alienate potential friends. Many youths say that curiosity about substances and their effects leads to their first use—to “see what it’s like.” Others say that they decide to start after witnessing a parent or relative using. A significant minority (7%) cite using to “cope with difficulties,” and thus relieve stress, chill out, escape family problems, or deal with physical pain.

Motives for Continuing Drug Use

In contrast to adolescents’ reasons for initiating drug use, motives for continuing drug use seem to revolve around experience with use and the reinforcing effects provided by the substance itself:

• 29% of the adolescents reported continuing use because it feels good
• 23% indicated that using helped them cope with difficulties. For instance, many teens indicated that “being high or drunk feels good,” or that they like the taste, the buzz, or the confidence that they feel while intoxicated.
• Additionally, youth often note that drugs “take away problems” that are associated with adolescence such as difficulties with parents, peers, and school.

Among individuals experiencing traumatic stress, continued substance use may serve as a coping strategy to deal with stress, forget unpleasant experiences, avoid negative emotions, do away with worries, or feel numb or indifferent to the challenges of daily life or the reminders of past trauma. Using substances reportedly helps teens forget, get to sleep, or escape. Teens stated that in some situations, their drug use continued because they were bored and it “helped pass the time,” or because it helped them “celebrate special occasions.” A smaller percentage of adolescents (7%) cited addiction as a reason for continued use including craving and a desire to avoid withdrawal symptoms. Other teens reported not seeing any harm in continuing their use or not having a reason to stop.
Motives for Quitting Drug Use

Among the reasons reported by teens about why they quit using drugs were:

1. Substance use no longer fit in with their desired lifestyle (22%) because they:
   - Didn’t like the way it made them feel.
   - Got tired of the drug lifestyle, saying, “It was getting old.”
   - Wanted to “change their life.”
   - Wanted to please friends or family.
   - Had a change in their living situation such as having a baby.

2. Prolonged use might have adverse impacts on their anticipated future (21%) including fear:
   - That drugs would keep them from their life goals.
   - Of where they would “end up in life.”

3. Continued use might have negative physical and psychological effects (14%) including:
   - Possibility of long-term impact of drugs on their bodies and ability to think clearly.
   - In addition, other teens reported quitting after being “pressured” by outside influences such as jail time, probation, or drug testing.

Other possible factors include: demographic characteristics (e.g., age, gender, socioeconomic status), substance use patterns (e.g., types of drugs used, frequency, number of drugs abused, stage of involvement with drugs), and personal characteristics (e.g., psychosocial maturity, co-occurring conditions).

Understanding youth incentives for initial and continued use, as well as the reasons for stopping will be very useful when delivering substance abuse interventions. It is important, therefore, to find ways to openly elicit youth perspectives during treatment. More research is needed to evaluate reasons for initiating, continuing, and stopping use given by adolescents who have experienced trauma. Among adults with cocaine dependence, for example, studies show that individuals with PTSD are more likely to use following negative experiences (such as unpleasant emotions and physical discomfort) when compared with those without PTSD (Waldrop, Back, Verduin, & Brady, 2007). It appears that in the absence of alternative coping strategies to manage distress associated with trauma, individuals with substance abuse problems may be more likely to use.
When drugs and alcohol are introduced into the body, many physical and mental reactions may occur. Different substances produce different acute responses. Table 1 below outlines some of the body’s acute responses to different substances of abuse.

### Table 1: Acute Responses to Substances

<table>
<thead>
<tr>
<th>Substance</th>
<th>Acute Response</th>
<th>Substance</th>
<th>Acute Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalants</td>
<td>• Reduced inhibition&lt;br&gt;  • Excitement&lt;br&gt;  • Confusion and disorientation&lt;br&gt;  • Drowsiness&lt;br&gt;  • Flu-like symptoms&lt;br&gt;  • Nausea</td>
<td>Steroids</td>
<td>• Nausea/vomiting/diarrhea&lt;br&gt;  • Joint/muscle pain or weakness&lt;br&gt;  • Weight loss&lt;br&gt;  • Fever&lt;br&gt;  • Headache and fatigue&lt;br&gt;  • Low blood pressure</td>
</tr>
<tr>
<td>Heroin &amp; Other Opioids</td>
<td>• Intense pleasure and sense of wellbeing&lt;br&gt;  • Confusion&lt;br&gt;  • Pain relief&lt;br&gt;  • Slowed breathing&lt;br&gt;  • Decreased blood pressure&lt;br&gt;  • Constricted pupils&lt;br&gt;  • Dry mouth&lt;br&gt;  • Suppressed cough reflex&lt;br&gt;  • Reduced sexual urges&lt;br&gt;  • Drowsiness&lt;br&gt;  • Slurred and slow speech&lt;br&gt;  • Reduced coordination&lt;br&gt;  • Nausea and vomiting</td>
<td>Hallucinogens</td>
<td>• Distorted sense of time and space&lt;br&gt;  • Distorted body image&lt;br&gt;  • Dilated pupils&lt;br&gt;  • Rapid heart rate&lt;br&gt;  • Increased blood pressure&lt;br&gt;  • Relaxation&lt;br&gt;  • Nausea&lt;br&gt;  • Chills, flushing&lt;br&gt;  • Shaking&lt;br&gt;  • Paranoia and/or confusion&lt;br&gt;  • Rapid breathing&lt;br&gt;  • Acute panic&lt;br&gt;  • Abdominal discomfort&lt;br&gt;  • Poor coordination</td>
</tr>
<tr>
<td>Cannabis</td>
<td>• Relaxation&lt;br&gt;  • Loss of inhibition&lt;br&gt;  • Increased appetite&lt;br&gt;  • Affected perception of color, sound&lt;br&gt;  • Impaired coordination&lt;br&gt;  • Affected thinking and memory</td>
<td>GHB “Date-Rape Drug”</td>
<td>• Euphoria&lt;br&gt;  • Increased libido&lt;br&gt;  • Memory lapses&lt;br&gt;  • Drowsiness&lt;br&gt;  • Sleep&lt;br&gt;  • Dizziness and headache&lt;br&gt;  • Tremor&lt;br&gt;  • Decreased blood pressure&lt;br&gt;  • Nausea&lt;br&gt;  • Diarrhea&lt;br&gt;  • Urinary incontinence</td>
</tr>
<tr>
<td>Methamphetamine</td>
<td>• Speeding up of bodily functions&lt;br&gt;  • Increased energy, alertness&lt;br&gt;  • Reduced appetite&lt;br&gt;  • Irritability</td>
<td>Nicotine</td>
<td>• Stimulation of and then reduction in nervous system activity&lt;br&gt;  • Enhanced alertness&lt;br&gt;  • Mild euphoria&lt;br&gt;  • Relaxation&lt;br&gt;  • Increased blood pressure&lt;br&gt;  • Decreased blood flow to extremities&lt;br&gt;  • Dizziness&lt;br&gt;  • Decreased appetite and sense of smell</td>
</tr>
<tr>
<td>Cocaine/Crack</td>
<td>• Arousal&lt;br&gt;  • Anxiety&lt;br&gt;  • Decreased hunger&lt;br&gt;  • Poor concentration&lt;br&gt;  • Indifference to pain&lt;br&gt;  • Enlarged pupils&lt;br&gt;  • Sexual arousal&lt;br&gt;  • Feeling of great physical strength</td>
<td>Ecstasy</td>
<td>• Increased confidence&lt;br&gt;  • Feeling of well-being&lt;br&gt;  • Anxiety&lt;br&gt;  • Dilated pupils&lt;br&gt;  • Jaw clenching&lt;br&gt;  • Increased heart rate&lt;br&gt;  • Nausea&lt;br&gt;  • Loss of appetite</td>
</tr>
<tr>
<td>Alcohol</td>
<td>• Relaxation&lt;br&gt;  • Reduced concentration&lt;br&gt;  • Slower reflexes</td>
<td>Alcohol</td>
<td>• Relaxation&lt;br&gt;  • Reduced concentration&lt;br&gt;  • Slower reflexes</td>
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</tbody>
</table>
When Substance Use Leads to Long Term Problems

Substance abuse refers to the use of drugs in a manner that is illegal or harmful to the individual and causes significant adverse consequences, such as accidents or injuries, blackouts, legal problems and risky sexual behavior. Substance dependence involves continued substance abuse despite significant substance-related problems, and usually includes tolerance of the drug (requiring higher doses to achieve the same effect) and withdrawal, symptoms experienced when use of the drug is discontinued (American Psychological Association, 2000; National Institute on Drug Abuse, 2005). Symptoms in adolescents who are using substances include:

- Failing to fulfill major obligations at home or school;
- Use of substances when it is physically hazardous;
- Legal, social, or interpersonal problems;
- Tolerance, withdrawal symptoms, problems cutting back on consumption; or other indications of severe substance abuse, which may warrant a diagnosis of substance dependence (American Psychological Association, 2000).

Signs that an adolescent has developed substance use problems include:

- Frequent Intoxication
- Difficulty sleeping
- Depression
- Anxiety
- Changes in peer group or failing to introduce peers to parents
- Changes in physical appearance or poor hygiene
- Dropping out of activities
- Disruptive behavior
- School avoidance
- Decline in academic performance
- Rapid Changes in mood or hostile outbursts
- Secretive behaviors such as sneaking out, lying, and locking doors

Estimates of the prevalence of lifetime substance use problems (e.g., meeting DSM-IV criteria for substance abuse or dependence) in adolescents range from 10 to 32% (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993; Reinherz, Giaconia, Lefkowitz, Pakiz, & Frost, 1993). One study concluded that 9% of adolescents met criteria for having a substance use disorder within the year prior to the study (Substance Abuse and Mental Health Services Administration, 2005). Several epidemiological studies indicated that substance use disorders tend to onset in middle-to-late adolescence and early adulthood (Centers for Disease Control and Prevention, 2000; Segal & Stewart, 1996; Weinberg, Rahdert, Colliver, & Glantz, 1998). One cross-cultural study found that the lifetime risk for having a substance use disorder is relatively high in European Americans and relatively low among African Americans (Roberts, Roberts, & Xing, 2006).
Regular users of alcohol and drugs may eventually develop tolerance and need larger amounts of the substance to achieve the same effect. When the body adjusts to having the substance present, users may feel emotionally and physically ill when they discontinue use (withdrawal). Substance use initially may serve as a means to find pleasure or relief from emotional distress, but once physiological dependence develops, substance use becomes a way to manage cravings and withdrawal symptoms (see Table 2 below). Although all psychoactive substances work on the brain’s pleasure center, they are associated with specific affective states and they influence the body in different ways (see Appendix).

### Table 2: Common Withdrawal Symptoms

<table>
<thead>
<tr>
<th>Substance</th>
<th>Common Withdrawal Symptoms</th>
<th>Substance</th>
<th>Common Withdrawal Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inhalants</strong></td>
<td>• Hand tremors • Excess sweating • Constant headaches • Nervousness</td>
<td><strong>Steroids</strong></td>
<td>• Nausea/vomiting/diarrhea • Joint/muscle pain or weakness • Weight loss • Fever • Headache and fatigue • Low blood pressure</td>
</tr>
<tr>
<td><strong>Heroin &amp; Other Opioids</strong></td>
<td>• Nausea/vomiting • Insomnia • Diarrhea • Irritability • Loss of appetite • Shaking • Tremors • Panic • Chills or profuse sweating</td>
<td><strong>Hallucinogens</strong></td>
<td>• No known withdrawal symptoms</td>
</tr>
<tr>
<td><strong>Cannabis</strong></td>
<td>• Irritability • Anxiety and physical tension • Decreases in appetite and mood</td>
<td><strong>GHB “Date-Rape Drug”</strong></td>
<td>• Profuse sweating • Anxiety attacks • High blood pressure and pulse • Hallucination • Rapid pulse</td>
</tr>
<tr>
<td><strong>Methamphetamine</strong></td>
<td>• Irritability • Moderate-to-severe depression • Psychotic reactions • Anxiety</td>
<td><strong>Nicotine</strong></td>
<td>• Irritability/aggression • Depression • Poor concentration • Increased appetite • Light-headedness • Restlessness • Night-time awakenings • Craving</td>
</tr>
<tr>
<td><strong>Cocaine/Crack</strong></td>
<td>• Agitation/irritability • Depression and/or anxiety • Intense cravings • Angry outbursts • Lack of motivation, fatigue • Nausea/vomiting • Shaking</td>
<td><strong>Ecstasy</strong></td>
<td>• Depression or rapid pulse • Increased hand tremor • Nausea/vomiting • Physical agitation • Anxiety • Insomnia • Visual, tactile, auditory hallucinations • Grand mal seizures</td>
</tr>
<tr>
<td><strong>Ecstasy</strong></td>
<td>• Depression • Anxiety, including panic attacks • Depersonalization/derealization • Paranoid delusions • Sleeplessness</td>
<td><strong>Alcohol</strong></td>
<td></td>
</tr>
</tbody>
</table>

The Development of Withdrawal
Much research has been devoted to identifying common risk and protective factors associated with adolescent substance use. Table 3 below outlines some of these factors that are associated with various domains of an adolescent’s life.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Risk Factors</th>
<th>Protective Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>• Aggressive behavior&lt;br&gt;• Inherited genetic vulnerability&lt;br&gt;• Low self-esteem&lt;br&gt;• Academic failure&lt;br&gt;• Risk-taking propensity&lt;br&gt;• Impulsivity</td>
<td>• Self-control&lt;br&gt;• Positive relationships with adults (e.g., parents, teachers, doctors, law enforcement officers, etc.)&lt;br&gt;• Involvement in extracurricular activities&lt;br&gt;• Positive future plans</td>
</tr>
<tr>
<td>Family</td>
<td>• Lack of parental supervision&lt;br&gt;• Family member with a history of alcohol or other drug abuse&lt;br&gt;• Lack of clear rules and consequences regarding alcohol and other drug use&lt;br&gt;• Family conflict/abuse&lt;br&gt;• Loss of employment</td>
<td>• Parental monitoring&lt;br&gt;• Close family relationships&lt;br&gt;• Education valued and encouraged; parents actively involved&lt;br&gt;• Clear expectations and limits regarding alcohol and other drug use&lt;br&gt;• Shared family responsibilities including chores and decision making&lt;br&gt;• Nurturing family members who support each other</td>
</tr>
<tr>
<td>Peer</td>
<td>• Substance abuse&lt;br&gt;• Ties to deviant peers/gang involvement&lt;br&gt;• Inappropriate sexual activity among peers</td>
<td>• Academic competence&lt;br&gt;• Involvement in substance-free activities&lt;br&gt;• Negative view of alcohol and other drug use among peers</td>
</tr>
<tr>
<td>School</td>
<td>• Drug availability&lt;br&gt;• Students lack commitment or sense of belonging at school&lt;br&gt;• High numbers of students who fail academically at school&lt;br&gt;• Parents and community members not actively involved</td>
<td>• Antidrug use policies&lt;br&gt;• Positive attitudes toward school and regular school attendance promoted&lt;br&gt;• Goal-setting, academic achievement, and positive social development encouraged&lt;br&gt;• Tutoring made available&lt;br&gt;• Leadership and decision-making opportunities for students provided&lt;br&gt;• Substance-free events sponsored</td>
</tr>
<tr>
<td>Community</td>
<td>• Poverty&lt;br&gt;• Alcohol and other drugs readily available&lt;br&gt;• Laws and ordinances unclear or inconsistently enforced&lt;br&gt;• Norms unclear or encourage use of drugs&lt;br&gt;• Lack of sense of connection to community&lt;br&gt;• High unemployment&lt;br&gt;• Youths’ activities not monitored</td>
<td>• Laws and ordinances consistently enforced&lt;br&gt;• Norms and policies encourage nonuse of drugs&lt;br&gt;• Strong sense of connection to neighborhood&lt;br&gt;• Jobs and other resources (e.g., housing, healthcare, childcare, community service opportunities, recreation; religious organizations) available</td>
</tr>
</tbody>
</table>
More on Risks and Protective Factors

Paying attention to the risk and protective factors outlined in Table three could play a role in preventing the onset of substance use among adolescents, as well as reducing the likelihood of developing abuse and dependence. Some of these factors are further discussed below.

**Individual factors:**

Paying attention to these risk and protective factors could play a role in preventing the onset of substance use among adolescents, as well as reducing the likelihood of developing abuse and dependence. The way teenagers cope with difficulties can have an impact on their future outcomes. For example, studies have shown that adolescents who tend to use positive coping strategies such as good decision-making skills, assertiveness, and cognitive mastery, are less likely to use substances or engage in delinquent behavior (Griffin, Botvin, Scheier, Doyle, & Williams, 2003). On the other hand, adolescents who tend to engage in avoidant stress coping and have difficulty in managing temptations are more likely to use drugs and alcohol (Wagner, Myers, & McIninch, 1999).

**Family factors:**

When faced with external pressures, adolescents with a stronger sense of attachment to their parents are less likely to engage in risky behaviors such as drug and alcohol use (Kostelecky, 2005). Parental attitudes about substance use and their expressed disapproval of antisocial behavior have also been associated with decreased use among teenagers (Bahr, Hoffmann, & Yang, 2005; Herrenkohl, Tajima, Whitney, & Huang, 2005).

**School environment:**

Bonding with school and having a strong commitment to doing well have been associated with decreased substance use rates (Kumpfer & Turner, 1990-1991; O’Donnell, Hawkins & Abbott, 1995).

**Peer influences:**

Numerous studies have documented the negative influence of associating with substance-using peers on adolescent substance use patterns (Bahr, et al., 2005; Kuntsche & Jordan, 2006; Oetting & Beauvais, 1986; Brook, Brook, Arencibia-Mireles, Richter, & White- man, 2001; Griffin, et al., 2003; Stormshak, Comeau, & Shepard, 2004).

**Community factors:**

Limited availability of needed services or quality educational and recreational opportunities can lead to youth participation in risky activities and substance use (McIntosh, MacDonald, & McKeiganey, 2005).
Why are the risks associated with substance use greater for adolescents?

Although recreational alcohol and drug use are more common in adults, youth are at greater risk for lifelong negative consequences due to use – especially when they start using at a young age. Here’s why:

• Since the teenage brain is still growing and changing, alcohol and drug use at an early age has a greater potential to disrupt normal brain development. The most affected brain regions include 1) the hippocampus, which is related to learning and memory, and 2) the prefrontal cortex, responsible for critical thinking, planning, impulse control, and emotional regulation (DeBellis, Narasimhan, Thatcher, Keshavan, Soloff, & Clark, 2005; Nagel, Schweinsburg, Phan, & Tapert, 2005; Zeigler, Wang, Yoast, Dickinson, McCaffree, Robinowitz, et al., 2005).

• Drug and alcohol use interferes with many physiological processes and can destabilize mood. Thus, adolescent substance use is associated with higher rates of depression, aggression, violence and suicide (Diamond, Panichelli-Mindel, Shera, Dennis, Tims, & Ungemack, 2006).

• Because teens’ decision-making abilities are not fully developed, they are more likely to engage in risky behavior such as driving while under the influence (CDC, 2000; Windle, 1994).

• The earlier onset the age of first drinking, the greater the risk for a lifetime alcohol abuse or dependence (DeWit, Adlaf, Offord, & Ogborne, 2000).
Many researchers and providers point to the self-medication hypothesis to explain the connection between trauma exposure and substance abuse, suggesting that youth develop substance abuse problems in an attempt to cope with traumatic stress or reminders of loss. Although there is much evidence to support this pathway, it is also true that substance abuse can increase the risk for trauma exposure and traumatic stress symptoms.

**High Risk Behaviors:**

Adolescents having problems with substance use may be more likely to engage in risky activities that could lead to experiencing trauma. Several epidemiological studies have found that for some adolescents (45–66%) Substance Use Disorders (SUDs) precede the onset of trauma exposure (Clark, Lesnick, & Hegedus, 1997; Giaconia, Reinherz, Hauf, Paradis, Wasserman, & Langhammer, 2000; Perkonigg, Kessler, Storz, & Wittchen, 2000). Adolescents with SUDs are significantly more likely than those without SUDs to have experienced traumas that are more likely to result from engaging in risky behavior such as traumas involving harm to themselves and traumas that entail witnessing harm to others (Clark et al., 1997; Giaconia et al., 2000; Perkonigg et al., 2000). Studies have also shown a direct link between alcohol use and engaging in risky behaviors in which adolescents may get hurt (Giaconia et al., 2000) such as hitchhiking, walking in unsafe neighborhoods, and driving after using alcohol or drugs (Centers for Disease Control and Prevention, 2000).

**Increased Susceptibility:**

The presence of substance use disorders may decrease youths’ ability to appropriately cope with distressing and traumatic events, thus leading to the increased likelihood of developing PTSD. In a study by Giaconia et al. (2000), investigators found that after controlling for exposure to trauma, adolescents with SUDs continued to be at greater risk (two times more likely) for developing PTSD following trauma than were their peers without SUDs. Researchers suggested that the extensive psychosocial impairments found in adolescents with SUDs were associated with their lack of skills needed to cope with trauma exposure.

A likely explanation for the link between traumatic stress and substance abuse is offered by studies that examine levels of craving in substance abusers. Research with adults in this area suggests that substance use craving increases among populations with co-occurring trauma and substance abuse when exposed to cues of the traumatic event (Coffey, et al., 2002; Saladin, et al., 2003). This suggests that for individuals with both types of problems, trauma and loss reminders can serve as triggers for future substance use. In the absence of coping strategies to manage distress associated with trauma, individuals with substance abuse problems may be more likely to use.
Appendix – Common Drugs of Abuse

Adolescents who have experienced trauma and have a co-occurring substance use disorder suffer many common difficulties. Substance use is often one of several avoidant coping strategies used by teenagers to manage the intense outpouring of negative emotions associated with trauma. However, each drug or psychoactive substance may have a unique impact on individuals who have experienced traumatic events. Several research studies have examined the unique relationship between traumatic stress and use of different substances of abuse. For example:

• Among youth who have experienced trauma, the risk for developing PTSD varies by type of substance use disorder (Kilpatrick, Acierno, Saunders, Resnick, Best, & Schnurr, 2000). When adolescents with substance abuse or dependence were compared with teens who were not substance abusing or dependent for likelihood of PTSD, those with alcohol abuse or dependence were four times more likely, those with marijuana abuse or dependence six times more likely, and those with hard drug abuse or dependence were nine times more likely.

• A substance use disorder is more likely to precede trauma or onset of PTSD among adolescents abusing hard drugs than among adolescents abusing alcohol (Perkonigg, et al., 2000).

• Individuals with co-occurring alcohol dependence and PTSD evidence higher levels of craving to substance cues than do those having co-occurring cocaine dependence and PTSD (Coffey, et al., 2002; Saladin, et al., 2003). This is consistent with findings that alcohol tends to decrease some PTSD symptoms, whereas cocaine tends to exacerbate PTSD symptoms (Bremner, Southwick, Darnell, & Charney, 1996). This would suggest that since alcohol is more often used to manage the symptoms of PTSD, craving among alcohol-dependent individuals is greater in the face of trauma cues compared to those dependent on cocaine.

The sections that follow list information about each commonly abused substance in terms of the incentives and the negative consequences associated with its use.
Alcohol

General Information

Generally, alcohol is rapidly ingested and absorbed into the bloodstream. In its purest form, alcohol is tasteless, colorless, and odorless. One unit—which is the typical amount of alcohol found in a 12 oz. can of beer, a 5 oz. glass of wine, or a 1.5 oz. shot of liquor—is the equivalent of 8 grams of pure alcohol and contains 80 calories. The amount of alcohol in liquor varies according to the type of spirit and is measured according to “proof” (a spirit’s proof is double the percentage of alcohol, e.g., 40 proof = 20% alcohol).

Prevalence among Teenagers

Alcohol use among adolescents is a prominent health problem. Adolescents use alcohol more frequently than they do all other drugs combined. A survey conducted in 2002 yielded the following results (Johnston, O’Malley, & Bachman, 2003):

- 19.6% of 8th graders, 35.4% of 10th graders, and 48.6% of 12th graders report using alcohol in the preceding 30 days.
- 78% of high school seniors report having tried alcohol at least once.
- 6.7%, 18.3%, and 30.3% of 8th, 10th, and 12th graders, respectively, reported having been drunk in the preceding 30 days.

In 1999, 20% of all alcoholic beverages purchased were consumed by underage drinkers (The National Center on Addiction and Substance Abuse at Columbia University, 2003).
Incentives for Use

 Teens may use alcohol for a number of reasons including wanting to fit in (and other peer pressures), to enhance social or other pleasurable experiences, and to cope with negative affect. In social situations, a teen might use to feel less inhibited in his/her actions and speech, more at ease, happy, and elated. Alcohol may numb emotions (such as anxiety in social settings). Alcohol use can also serve as an escape for teenagers who are experiencing anxiety and depression. Younger adolescents report drinking to relieve tension; older adolescents say they drink primarily for the euphoric effects and altered social behaviors.

Negative Consequences of Use

 There are many negative consequences associated with alcohol use. Alcohol acts as a depressant on the body. It can have a multitude of harmful short-term effects, including but not limited to, headaches, slowed reflexes, sluggish mental processing, impaired perception, lack of coordination, loss of consciousness, blackouts, and memory lapses. Long-term effects of alcohol include cirrhosis of the liver, ulcers, miscarriages, cancer of the mouth and throat, hypertension, hypoglycemia, dependence, and death. Research shows that teens who drink are more likely to be victims of crimes, particularly violent crimes. They often become sexually active at a younger age and have poor sexual decision-making skills, leading to an increased risk of pregnancy and sexually transmitted diseases (STDs). They are more likely to have significant difficulties with their schoolwork and are more prone to problems with conduct. Teens who use alcohol are twice as likely as adults to be involved in a fatal traffic accident. Research has demonstrated that individuals who start using alcohol as a teen are four times more likely to become dependent on alcohol than are individuals who start as an adult (Grant, 1998).

† Information in this section provided courtesy of the National Institute on Alcohol Abuse and Alcoholism (NIAAA) via http://www.niaaa.nih.gov or the Leadership to Keep Children Alcohol Free via http://www.alchoholfreechildren.org/.
Cannabis

General Information

Cannabis, which is derived from the hemp plant, is the most commonly used illegal substance in the United States. The form of cannabis most often used is marijuana, which consists of the dried leaves, stems, seeds, and flowers of the plant. Marijuana contains various levels of a psychoactive substance known as tetrahydrocannabinol (THC), typically 2–5%, but the amount of THC can be as high as 14%. Hashish is a stronger form of cannabis, derived from the resin of the flowers, and contains, on average, 8–14% THC. Hash oil, a black or red oily substance, is a purified form of hashish that typically contains 15–50% THC.

Street Names:

weed, pot, grass, herb, blunt, Mary Jane, spliff, shwag, boom, and chronic.

Marijuana is most often smoked after being rolled into the shape of a cigarette (“joint”) or cigar (“blunt”). It is also smoked through wooden pipes or water pipes (“bongs”). When smoked, the THC in marijuana quickly enters the bloodstream through the lungs, causing an immediate effect that can last up to two hours. The odor of marijuana smoke is similar to that of burning leaves. Marijuana is less often consumed orally. When eaten, the body more slowly absorbs the THC in marijuana, resulting in a less intense, but more long-lasting effect. Hashish is shaped into small rocks that can be smoked or orally ingested. Hash oil may be added to tobacco or heated in a pipe.

Prevalence among Teenagers

According to the 2004 Monitoring the Future Survey, researchers found:

• 46% of 12th-graders reported using marijuana at some point in their lives, while 21% reported using marijuana in the month prior to the study.
• 35% of 10th-graders and 16% of 8th-graders reported using marijuana at least one time.
• 16% of 10th-graders and 6% of 8th-graders reported marijuana use in the month prior to the survey.
• There was a slight decrease in use compared with prevalence in 2003 and a statistically significant decrease compared with peak levels of use in 1996.

Cannabis use is associated with higher rates of mental health and academic problems. The most frequent emotional and behavioral problems associated with cannabis use are conduct disorder, ADHD, and internalizing disorders. Among a psychiatric inpatient population of adolescents, 60% of those with mood disorders, 63% of those with anxiety disorders, and 80% of those with schizophrenia also met criteria for substance abuse, most often marijuana abuse.
Incentives for Use

Adolescents who use marijuana report that they feel euphoric or relaxed (“high” or “stoned”), and that it enhances pleasurable experiences (such as listening to music, tasting food, and having sexual intercourse). Marijuana use can also cause people to feel more sociable (at least temporarily). Other reasons adolescents might use marijuana include feeling pressured by their peers and because it makes them feel more popular. Marijuana and cannabis use can also serve as an escape for teenagers who are experiencing anxiety, depression, or other negative affect. While marijuana’s effect on the immune system has not been fully evaluated, the discussion of the drug’s possible health benefits can make the drug more enticing for some adolescents. The effects of marijuana vary widely, depending on a number of factors including the potency of the drug, the user’s previous experience with marijuana, how it is consumed, and whether other substances (such as alcohol) have also been used.

Negative Consequences of Use

There are many negative consequences associated with cannabis use. Some teens report increased anxiety and paranoia after using marijuana. Adolescents with a family history of schizophrenia, depression, or other mood disorders run a greater risk of developing these disorders, are sometimes more susceptible to experiencing these negative effects, and often do so at doses tolerated well by others without such family histories. Other effects include increased hunger and sleepiness. Short-term effects may also include impairment in memory and attention, alterations in perception (such as blurry vision), loss of motor coordination, and rapid heart rate. As inexperienced drivers, adolescents may experience additional impairment relative to adults in motor, cognitive, and perception abilities. The effects can also interfere with other daily activities, such as playing sports and focusing on schoolwork. Memory impairments caused by marijuana use can last days or weeks after the acute effects have worn off, which may also have a deleterious effect on adolescents’ academic performance.

Because marijuana use can lead to impaired judgment, adolescents who use marijuana may engage in risky sexual behavior, which makes them vulnerable to teen pregnancy and sexually transmitted diseases (such as HIV/AIDS). Chronic use of marijuana may increase the risk of lung cancer and/or other respiratory problems. Marijuana may suppress the immune system, causing the user to be more susceptible to illness. Legal consequences of using marijuana are significant including arrest, probation, suspension of driver’s license, and incarceration. Regular use of marijuana in adolescence has shown to increase the risk of marijuana dependence, other illicit drug use, depression, suicidal ideation and suicide attempts, and violent or property crimes occurring in young adulthood.

† Information in this section provided courtesy of the National Institute on drug abuse (NIDA) via http://www.nida.nih.gov/Infofacts/marijuana.html or the Drug Enforcement Agency (DEA) via http://www.usdoj.gov/dea/concern/marijuana.html unless otherwise noted.
Cocaine or Crack†

General Information

Cocaine is a powerfully addictive stimulant drug. Stimulant drugs are often referred to as “uppers” and reverse the effects of both mental and physical fatigue. The powdered, hydrochloride salt form of cocaine can be snorted or dissolved in water and injected. Crack is cocaine that has not been neutralized by an acid to make the hydrochloride salt. This form of cocaine comes in a rock crystal that can be heated and its vapors smoked. The term “crack” refers to the crackling sound heard when it is heated. Cocaine is a strong central nervous system stimulant that interferes with the reabsorption process of dopamine, a chemical messenger associated with pleasure and movement. The buildup of dopamine causes continuous stimulation of “receiving” neurons, which is associated with the euphoria commonly reported by cocaine abusers.

The duration of cocaine’s immediate euphoric effects—which include hyperstimulation, reduced fatigue, and mental clarity—depends on the route of administration: the faster the absorption, the more intense the high. On the other hand, the faster the absorption, the shorter the duration of action. The high from snorting may last 15 to 30 minutes, while that from smoking may last only 5 to 10 minutes. Smoking allows extremely high doses of cocaine to reach the brain very quickly and brings an intense, immediate high, thus increasing the likelihood of addiction.

Prevalence among Teenagers

Cocaine is the second-most commonly used illicit drug (following marijuana) in the United States. In June 2000, the Centers for Disease Control and Prevention (CDC) reported that in a study of 15,349 students in grades 9 to 12, 4% reported cocaine use at least once in the month prior to the study. According to the National Survey on Drug Use and Health (NS-DUH), in 2005, 33.9 million Americans aged 12 and over reported lifetime use of cocaine, and 8.4 million of these reported using crack. This survey also reported that 0.4% of 8th graders, 2.2% of 10th graders, and 3.9% of 12th graders had used cocaine in the year prior to the survey and 0.2% of 8th graders, 0.6% of 10th graders, and 1.1% of 12th graders had used cocaine in the month prior to the survey. The Monitoring the Future survey (Johnston et al, 2006) from the same year found slightly higher results: 2.2% of 8th graders, 3.5% of 10th graders, and 5.1% of 12th graders had used cocaine in the year prior to the survey and 1.0% of 8th graders, 1.5% of 10th graders, and 2.3% of 12th graders had used cocaine in the month prior to the survey.

Street Names:
- blow
- coke
- nose candy
- rock
- snow
- snowball
- tornado
- wicky stick
- freebase
- and white.
Incentives for Use

Cocaine and crack cocaine, like all stimulant drugs, stimulate the action of the central nervous system, speeding up activity in the brain and spinal cord. This, in turn, can cause the heart to beat faster, and both blood pressure and metabolism to increase. Stimulants often influence a person to feel more alert and have more energy. Users of cocaine or crack cocaine often become more talkative and can feel exhilarated and euphoric. This rush of pleasurable sensations exceeds the sensations felt as a result of naturally occurring pleasurable human experiences, which explains in part why drug seeking eventually becomes a priority for adolescents. Users also experience increased self-confidence, heightened alertness, and increased sex drive. Another side effect is a loss of appetite, which can cause weight loss.

Negative Consequences of Use

Cocaine is one of the most powerfully addictive drugs of abuse. Some cocaine users report restlessness, irritability, and anxiety. Complications (some very serious) associated with cocaine use include disturbances in heart rhythm and heart attacks, chest pain and respiratory failure, strokes, hallucinations, seizures and headaches, and gastrointestinal complications such as abdominal pain and nausea. Paranoia is a classic result of cocaine intoxication, and hallucinations and violent behavior may also occur. Because cocaine has a tendency to decrease appetite, many chronic users become malnourished. About 60% of cocaine users report psychiatric problems related to drug use. Cocaine seems to be related to suicide risk, especially among younger African American and Hispanic users. Different means of taking cocaine can produce different adverse effects. Regularly snorting cocaine, for example, can lead to loss of sense of smell, nosebleeds, problems with swallowing, hoarseness, and a chronically runny nose. Ingesting cocaine can cause severe bowel gangrene due to reduced blood flow. People who inject cocaine can experience severe allergic reactions and, as with any injecting drug user, are at increased risk for contracting HIV/AIDS and other blood-borne diseases. Users can experience a heart attack or stroke, which could result in sudden death.

Cocaine use in combination with alcohol is especially dangerous because it causes the production of a secondary substance in the body, cocaethylene, which is more toxic than cocaine alone.

† Information in this section provided courtesy of the National Institute on drug abuse (NIDA) via http://www.nida.nih.gov/Infofacts/cocaine.html or the Drug Enforcement Agency (DEA) via http://www.usdoj.gov/dea/concern/cocaine.html unless otherwise noted.
Ecstasy

General Information

Methylenedioxymethamphetamine (MDMA), aka Ecstasy, acts as both a stimulant and a hallucinogen. Stimulants prevent mental and physical fatigue, and hallucinogens have the ability to alter perception and, in some cases, produce euphoria. Ecstasy is a synthetic drug that is commonly referred to as a “club drug” because it is often found at nightclubs and underground parties called raves. Ecstasy is typically taken orally in the form of a capsule or tablet (available in different colors or imprints, “brands”). It is also available in a powder and is sometimes snorted or occasionally smoked but rarely injected. The effects of Ecstasy last 3 to 6 hours.

Ecstasy’s primary effects are in the brain on neurons that use the chemical serotonin to communicate with other neurons. The serotonin system regulates mood, aggression, sexual activity, sleep, and pain sensitivity.

Prevalence among Teenagers

Ecstasy is among the most frequently reported club drugs. According to the 2005 Monitoring the Future survey (Johnston, et al, 2006):

• 6.5% of 12th-graders, 4.5% of 10th-graders, and 2.5% of 8th-graders reported a lifetime prevalence of Ecstasy.

• Within the year prior to the survey, 4.1%, 2.8%, and 1.4% of 12th-, 10th-, and 8th-graders, respectively, had used Ecstasy; 1.3%, 1.2%, and 0.7%, respectively, had used within the month prior to the survey.

• Perceived availability of Ecstasy reportedly decreased from 30.2% in 2005 to 27.4% in 2006, according to a sample of 10th-graders.
Ecstasy

Incentives for Use

Ecstasy produces feelings of euphoria and love, as well as a loss of inhibition and boundaries. Senses are heightened (e.g., visual perceptions are intensified) and perception of time and spatial relations is altered. One of the reasons it is often used during dance parties and raves is because of the enhancement of the overall social and musical experience. Ecstasy increases a user’s desire to interact with others and makes him/her feel more confident and accepted. Ecstasy may also instill a sense of calm or well-being, and can increase positive emotion and decrease negative emotion.

Negative Consequences of Use

Negative effects associated with Ecstasy use include mental slowing, decreased desire to do mental or physical tasks, increased heart rate and body temperature, anxiety, dry mouth, dehydration, bruxism, and occasionally nausea. In the short term, depression may occur in the 48 hours after use. With increased use, the perceived benefits of Ecstasy may be harder to attain, and users report fatigue and decreased euphoria. The negative morning-after effects may intensify with increased use as well. Research shows that Ecstasy may have long-lasting effects on the brain that can alter memory function and motor skills. Ecstasy can also cause arrhythmia. Long-term effects can include depression, paranoid or confused thoughts, trouble sleeping, and anxiety.

† Information in this section provided courtesy of the National Institute on drug abuse (NIDA) via http://www.nida.nih.gov/Infofacts/ecstasy.html or the Drug Enforcement Agency (DEA) via http://www.usdoj.gov/dea/concern/mdma.html unless otherwise noted.
GHB or “Date Rape Drug”†

General Information
Gamma hydroxybutyrate (GHB) was first synthesized in 1960 and used as an anesthetic. Most use of GHB in the United States is illicit. GHB began being abused widely in the early 1990s in the United States. Its over-the-counter sale was banned in 1993 in the U.S. after a form of it was readily available at health food stores in the 1980s and early 1990s. In 2000, GHB became classified as a Schedule 1 Controlled Substance in the United States, and it is now illegal to obtain it as a supplement. GHB is used in select research trials in order to test its effectiveness in decreasing drowsiness in patients with narcolepsy.

GHB is often abused by young and predominantly white partygoers in combination with various other drugs or alcohol at raves and other gatherings. It has been used in a number of sexual assaults and, like the drug Rohypnol (flunitrazepam), is known as a “date-rape drug” because of its ability to sedate and impair the memory of potential assault victims. Because it metabolizes quickly, there are often no traces of it in a victim’s bloodstream by the time the assault is remembered. GHB generally comes mixed with water or in its pure powder form. It is commonly sold in small bottles (the size of complimentary shampoo containers supplied by hotels), which are generally inexpensive and contain about 10 “hits.”

Prevalence among Teenagers
GHB use has greatly increased in recent years, with the most prevalent use observed in the southeastern and western United States. In the 2005 Monitoring the Future survey (Johnston, O’Malley, & Bachman, 2006), researchers found that 0.5% of 8th graders, 0.8% of 10th graders, and 1.1% of 12th graders reported using GHB at least once within the year prior to the study. Of the people presenting to hospital emergency departments with GHB ingestion 94% are of European ethnicity, 79% are male, and approximately 66% are between 18 and 25 years old (SAMHSA, 2004). The DAWN Report: Club Drugs, 2002 Update reported that in 2000, GHB-related emergency department visits peaked at 4,969 visits (SAMHSA, 2004).
Incentives for Use

 Teens who take GHB in a club setting reportedly use it for its euphoric and relaxing properties and its tendency to cause amnesia. Typically, a person who has taken GHB experiences a short period of euphoria followed by a rapid and profound decline in the level of consciousness. The fact that GHB was available in health food stores has likely added to the perception of GHB as a “safe drug.” Some bodybuilders have taken GHB for its purported growth-enhancing properties; no studies have demonstrated increased muscle growth associated with GHB use.

Negative Consequences of Use

The use of GHB can result in the following: drowsiness, nausea, vomiting, headache, loss of consciousness, loss of reflexes, seizures, coma, and death. Withdrawal effects include increased heart rate, restlessness, feelings of anxiety and agitation, delirium, and sleep disruptions. Death from GHB often occurs after combining use with alcohol. The combination of inconsistent purity and potency of individual doses of GHB, along with the need for increasingly higher doses to achieve the desired effects, increases the potential for overdose. Combining GHB with other central nervous system depressants increases the chance of death. Individuals who report to emergency departments for GHB intoxication usually present with a decreased level of consciousness or even coma. The drug produces tolerance and dependence with severe and potentially lethal withdrawal symptoms.

† Information in this section provided courtesy of the National Institute on drug abuse (NIDA) via http://www.nida.nih.gov/Infofacts/RohypnolGHB.html or the Drug Enforcement Agency (DEA) via http://www.usdoj.gov/dea/concern/ghb_factsheet.html unless otherwise noted.
General Information

Hallucinogens are a class of illicit drugs that alter perception and, in some cases, produce euphoria. Some hallucinogens include LSD (lysergic acid diethylamide), ketamine, psilocybin, mescaline) and DXM (dextromethorphan). PCP (Phencyclidine) is not a hallucinogen in the chemical sense; however its effects are the same as other hallucinogens, so it is typically included in this class of drugs. LSD is the primary drug that makes up the hallucinogen class and is also the most potent. It is often taken by mouth—in small tablets or via squares of absorbent paper or gelatin laced with the drug. The effect of an oral dose can last up to 12 hours.

PCP and ketamine were initially developed as general anesthetics for surgery. They produce perceptual distortions and dissociation, not hallucinations, and are thus known as “dissociative anesthetics.” PCP is typically snorted, ingested, or smoked. In order to smoke PCP, it can be combined with herbs (such as parsley or mint) or tobacco and rolled into a cigarette, used as a dip on cigarettes (“sherm sticks”), mixed with marijuana (“wicky stick” or “donk”), or sprayed on a tobacco-like substance (“mint leaf” or “love leaf”). Ketamine is available in pill, powder, or liquid form. It may be injected intravenously, snorted, smoked, or mixed into beverages. Ketamine is increasingly being used as a club drug. DXM is available over the counter as a cough suppressant found in many cough and cold remedies, and is also illegally sold as a white powder packaged in clear, unmarked capsules. DXM can produce effects similar to PCP and ketamine when taken in high doses.

Mescaline, a derivative of the peyote cactus, has been used for centuries in natural medicines and religious ceremonies. Mescaline can be smoked, brewed in tea, chewed, and incorporated into food. Typically, the cactus is cut into thick slices and dried, producing “mescal buttons” that are chewed and eventually swallowed. Mescaline is also produced synthetically in a saltlike crystal but may produce different effects from peyote in this form. Psilocybin is found in mushrooms native to North America and has also been used in religious rituals by Native Americans.

Prevalence among Teenagers

Hallucinogen use is generally rare in the population, although higher among teens and young adults. According to the 2005 Monitoring the Future survey (Johnston et al, 2006):

- The lifetime prevalence of LSD use in 2004 among 8th-, 10th-, and 12th-graders was 1.8%, 2.8%, and 4.6%, respectively, with 2005 use reflecting a decline for 10th- and 12th-graders compared with previous years.
- Lifetime prevalence of PCP among high school seniors in 2004 was 1.6%.
- In the year prior to the survey, 0.6% of 8th graders, 1.0% of 10th graders and 1.6% of 12th graders had tried ketamine.
Incentives for Use

Hallucinogens produce profound changes in sensory perceptions while allowing the user to maintain a relatively clear level of consciousness. The subjective effects of LSD use may include euphoria, labile mood, visual and auditory hallucinations, dissociation, and depersonalization. For example, intensification or alteration in colors and sound are perceived (synesthesia), common objects appear novel or fascinating, and perception of time and space distortion frequently occurs. Psilocybin is much less potent than LSD but produces similar effects. Mescaline also often produces visual hallucinations. Neither PCP nor ketamine produce true hallucinations, but in small doses, they cause a dreamy, floating feeling of distancing from one’s environment and body into an alternate reality, a sense of relaxation, tingling, numbness, distortions of body image, and euphoria. Easy access to some hallucinogens such as DXM in cough suppressants also may serve as an incentive for use.

Negative Consequences of Use

Hallucinations generally intensify whatever mood the user is in at the time the drug is taken and can amplify negative feelings, causing a dysphoric experience or a “bad trip.” A bad trip (hallucinogen delusional disorder) is often characterized by a temporary episode of paranoia, panic, and/or fear of imminent insanity. Flashbacks may also occur. Hallucinogen persisting perceptual disorder (HPPD) is rare but does occur. Many adolescents report decreased involvement in daily activities, decreased school performance, and lack of social interaction. Behavioral toxicity may occur (e.g., accidents that occur while the user is driving, other bizarre behavior such as jumping off a building), sometimes leading to death.

Negative effects associated with ketamine use may include excitability, clumsiness, confusion, rapid shifts in emotion, and irrational behavior. Higher doses make it difficult to move; very high doses may cause a person to become anaesthetized or to lose consciousness. Some people may not remember their experiences. At higher doses of PCP, some individuals develop a psychotic-like state, including depersonalization, confusion, and intense anxiety, which may last several days. It is easy to become injured under the influence of PCP or ketamine because the user is relatively anesthetized to pain, agitated, and/or irrational. Some users will not respond to being subjugated or subdued because they perceive they have “superhuman strength.” Ketamine has been labeled a “date-rape drug” because a user may become more vulnerable to attack, both because it can be easily added to one’s drink without one’s knowledge and because it can render the unsuspecting user unable to move. Chronic use of ketamine/PCP may lead to dependence, disruptions in consciousness, dulled thinking and reflexes, loss of impulse control, lethargy, and depression.

† Information in this section provided courtesy of the National Institute on Drug Abuse (NIDA) via NIDA Research Report – Hallucinogens and Dissociative Drugs: NIH Publication No. 01-4209, Printed March 2001 or the Drug Enforcement Agency (DEA) via http://www.usdoj.gov/dea/concern/hallucinogens.html unless otherwise noted.
Heroin and other Opioids†

General Information

Opioids are derived from opium, which is found in the seed of some poppy plants. Opioids are the most powerful known pain relievers, and their analgesic and euphoric effects have been known since 4000 BC. There are three classes of opioids: 1) direct derivatives of opium, 2) partially synthetic derivatives of morphine, and 3) synthetic compounds. Direct derivatives of opium include morphine and codeine. Partially synthetic derivatives of morphine include heroin and prescription pain medication that can be dangerous if used inappropriately including oxycodone HCl (OxyContin), oxymorphone, and hydrocodone (Vicodin). Synthetic opioids include fentanyl, alfentanil, levorphanol, meperidine (Demerol), methadone, bitartrate, propoxyphene, acetaminophen (Tylenol, Percocet), and thebaine.

Most opioids can be administered in multiple ways, including sniffing, smoking, oral administration, and injection. Death from opioid use is disproportionately high compared with death from intravenous drug use. Signs of use include drowsiness, nausea, vomiting, itchiness, contracted pupils, loss of appetite, sleep disruption, slowed breathing, sexual dysfunction, constipation, inflamed nasal mucosa (if drug is snorted), and needle marks (if drug is injected).

Prevalence among Teenagers

Heroin use has increased over the last decade, particularly among adolescents; however, overall heroin use remains low. A 2005 survey (Johnston et al, 2006) reported that 1.5% of 8th-graders, 10th-graders, and 12th-graders reported using heroin at least once in their lifetime. The same survey found that 0.8% of youth in each of these grades reported using heroin in the year prior to the survey. The abuse of prescription painkillers—particularly those containing opiates (narcotics), including Vicodin, OxyContin, Percocet, Demerol, and Darvon—have risen dramatically in the United States (SAMHSA, 2007). The overall incidence of emergency department visits related to narcotic abuse has been increasing in the U.S. since the mid-1990s and more than doubled between 1994 and 2001 (SAMHSA, 2007). According to emergency department data, in 2005 nearly 50,000 youth ages 12-17 presented to the emergency department because of non-medical uses of prescription painkillers (SAMHSA, 2007). Nationally, an estimated 14% of high school seniors have used prescription drugs for nonmedical reasons at least once in their lifetime, making prescription drugs the second-most commonly abused illegal substance by teenagers, after marijuana (SAMHSA, 2006).
Incentives for Use

Teens may turn to opioids to cope with stress, relieve physical or emotional pain, forget unpleasant experiences, and avoid negative emotions. The effects of heroin appear soon after a single dose and disappear in a few hours. Opioids create feelings of warmth and detachment, while providing almost instantaneous anxiety relief. Opioids also induce feelings of euphoria and analgesia (users may feel sedated); and body functioning is slowed down.

Negative Consequences of Use

Negative side effects of opioids are often present from first use. These include nausea, vomiting, itchiness, sleep disruption, sexual dysfunction, respiratory depression, low blood pressure, urinary retention, and constipation. Opioids have very high addictive potential, putting users at high risk for long-term consequences after just one use. Chronic use can result in tolerance (taking higher doses to achieve the same initial effects), which sometimes becomes more than the body can handle. Heroin is often used in combination with other drugs, increasing the risk of dangerous interactions and overdose. Consequences of opioid dependence include depression, sleep disturbance, lack of interest in daily activities, selflessness, suicidal ideation, poor coping skills, delirium, coma, and death. In adolescents, school performance, family relations, and social functioning decline significantly as the drug takes priority.

Long-term use can also lead to physical dependence and addiction, causing withdrawal symptoms if use is reduced or stopped. Symptoms of opioid withdrawal include flulike symptoms, fever, vomiting, tachycardia, profuse sweating, stomach cramps, high blood pressure, overall body pain, diarrhea, runny nose, hot and cold flashes, goose bumps, sleeplessness, depression, restlessness, and irritability. Opioid users are more likely to engage in antisocial behaviors putting users at risk for incarceration.

Sharing needles or using dirty needles to inject opioids can spread deadly infectious diseases such as HIV and Hepatitis B and C. Injecting drugs and/or sharing needles can contribute to other serious and life-threatening diseases and conditions including endocarditis, embolism, botulism, tetanus, flesh-eating bacteria, or abscesses (a painful skin inflammation that may result in blood poisoning).

Inhalants

General Information

Inhalants are breathable chemical vapors that produce psychoactive effects. Initial use causes a feeling of stimulation, but repeated inhalation causes a loss of inhibitions, a feeling of less control, and possible loss of consciousness. Sniffing inhalants is often referred to as “huffing.” Inhalants can also be used by placing the inhalant in a bag and then sniffing into the bag or putting the bag over the head (“bagging”). They are very easy to find, are not illegal, and are less expensive than most drugs. Inhalants can be obtained from many common products found in the household and workplace. Listed below are the categories of inhalants:

Volatile solvents (vaporize at room temperature)
- Paint thinners, paint removers (e.g., nail polish remover), degreasers, dry-cleaning fluids, gasoline, glue, correction fluids, felt-tip-marker fluid, contact lenses cleaners

Aerosols and gases (sprays that contain propellants and solvents)
- Butane lighters, propane tanks, aerosols/dispensers (e.g., whipped cream [“Whippets”], refrigerant gases, vegetable cooking spray, spray paint, hairspray, deodorant sprays, fabric-protector sprays, aerosol computer cleaning products), medical anesthetic gases (e.g., ether, chloroform, halothane, nitrous oxide [“laughing gas”])

Nitrites (Nitrites do not work directly on the central nervous system to alter mood like other inhalants do; rather, they dilate blood vessels and relax muscles, and they are often used as sexual enhancers)
- Organic nitrites (“poppers” or “snappers”), cyclohexyl, butyl, and amyl nitrites (often sold in small brown bottles and labeled “video head cleaner,” “room odorizer,” “leather cleaner,” or “liquid aroma”)

Prevalence among Teenagers

Inhalants are most likely to be used by children and adolescents because they are easy to obtain. About 6% of children in the United States have tried inhalants by the 4th grade (NIDA, 2007). Survey data from 2005 indicates that 12.2% of teens in grades 9–12 had used an inhalant in their lifetime, while 1% of those teens had used an inhalant in the month prior to the survey (SAMHSA, 2006). A similar survey found slightly higher results with lifetime prevalence rates of 17.1% of 8th graders, 13.1% of 10th graders, and 11.4% of 12th graders; as well as last month prevalence rates of 4.2%, 2.2%, and 2.0%, respectively (Johnston et al, 2006). In 2002, more females (9.6%) than males (7.7%) in 8th grade used inhalants, but there were more male (5.2%) than female (2.9%) users in 12th grade (Johnston et al, 2003). Males appear to be more likely to exhibit sustained abuse of inhalants (NIDA, 2007). Furthermore, among young adolescents, inhalant use is more prevalent than is marijuana use (SAMHSA, 2006). Inhalant use is also more frequent for boys living in adverse socioeconomic conditions (SAMHSA, 2006).
Incentives for Use

When asked why they sniff inhalants, children typically report that it is fun and that they enjoy the feeling of intoxication. Inhalants can cause altered perception, disorientation, and a slight buzz. They work like anesthetics, slowing down the body’s functions and causing a brief (few minutes) feeling of intoxication upon first inhalation. Repeatedly breathing in inhalants can cause this feeling to last for several hours. Nitrates in particular have a stimulant rather than depressant effect and are often used to enhance sexual activity.

Negative Consequences of Use

Inhalant use can cause a host of short- and long-term medical, psychological, social, and neurological problems. In the short term, inhalant intoxication is similar to alcohol intoxication, producing anxiety relief and feelings of relaxation and disinhibition. Increased intoxication leads to slurred speech, impairments in balance and fine motor movements, and eventually loss of consciousness and even coma. Combining inhalant use and strenuous activity often results in impaired cardiac function and arrhythmias. The use of inhalants can result in headache, muscle weakness, abdominal pain, nausea, fatigue, nosebleeds, severe mood swings, and violent behavior. It can have long-term negative effects on sensory abilities including numbness and tingling of hands and feet, decrease or loss of sense of smell, and hearing loss. Chronic use can cause severe damage to internal organs and systems including the liver, lungs, kidneys, and central nervous system (including the brain). Chronic use is also associated with hepatitis and peripheral neuropathy. Sniffing highly concentrated amounts can cause rapid heart failure and death, even in a first-time user. Suffocation, asphyxiation, and choking (on vomit) are possible. Abusers can exhibit cognitive deficits, from mild impairments of attention to severe dementia. The chronic abuse of solvents can break down the protective sheath surrounding nerve fibers in the brain, causing symptoms similar to those found in multiple sclerosis (NIDA, 2005).

† Information in this section provided courtesy of the National Institute on drug abuse (NIDA) via http://www.nida.nih.gov/Infofacts/inhalants.html or the Drug Enforcement Agency (DEA) via http://www.usdoj.gov/dea/concern/inhalants.html unless otherwise noted.
Methamphetamine

General Information

Methamphetamine is classified as a stimulant. Stimulants ("uppers") can reverse the side effects of mental and physical fatigue. Methamphetamine is an addictive stimulant closely related to amphetamine; however, methamphetamine has longer lasting and more toxic effects on the central nervous system. Methamphetamine was originally used in nasal decongestants and bronchial inhalers. Methamphetamine is often made in small, illegal laboratories called “meth labs,” using relatively inexpensive over-the-counter ingredients. Methamphetamine is taken orally, intranasally (snorting the powder), by needle injection, or by smoking.

Prevalence among Teenagers

During 2005, 10.4 million people age 12 or older in the United States population reported trying methamphetamine at least once in their lifetime, with highest rates of use among older adolescents and young adults (SAMHSA, 2006). According to the 2005 Monitoring the Future survey 4.5% of 12th-graders reported a lifetime prevalence of methamphetamine abuse, declining from 6.2% in 2004 (Johnston et al, 2006). In the same survey, 1.8% of 8th and 10th graders and 2.5% of 12th graders reported using methamphetamine in the year prior to the survey (Johnston et al, 2006).
Incentives for Use

Like all stimulant drugs, methamphetamines stimulate the action of the central nervous system, speeding up activity in the brain and spinal cord. This, in turn, can cause the heart to beat faster and an increase in blood pressure and metabolism. Stimulant users often become more talkative and can feel exhilarated and euphoric. Methamphetamine is known for enhancing mood and body movement. It can be used as an appetite suppressant for weight loss, and to enhance performance during sports or other activities that require endurance.

Negative Consequences of Use

Methamphetamine is made in illegal laboratories and has a high potential for abuse and addiction. Negative effects include propensity toward anxiety, violence, irritability, paranoia, psychosis, convulsions, aggression, and malnutrition due to suppression of appetite. Methamphetamine is particularly addictive and has a neurotoxic effect, damaging brain cells. Over time, methamphetamine can result in heart problems and symptoms like those of Parkinson’s disease. Methamphetamine users may experience unpredictable mood swings as well as tooth decay caused by dry mouth and excessive tooth grinding. Users commonly have the sensation that insects are crawling on their skin, and many users will scratch themselves raw, causing lacerations on their face and arms.

† Information in this section provided courtesy of the National Institute on drug abuse (NIDA) via http://www.nida.nih.gov/Infofacts/methamphetamine.html or the Drug Enforcement Agency (DEA) via http://www.usdoj.gov/methawareness/ unless otherwise noted.
Nicotine

General Information

Nicotine is one of the most frequently used addictive drugs. It is a clear liquid that turns brown when burned. The tobacco smell occurs when it interacts with air. Nicotine enters the bloodstream through absorption in the nose and mouth or by inhalation in the lungs. It increases dopamine levels in the reward circuits, which activates feelings of pleasure. When inhaled via cigarettes, nicotine is absorbed through the lungs and reaches the brain within 20 seconds of each puff.

Nicotine addiction in the United States is primarily accounted for by cigarette smoking. Most American cigarettes contain 10 mg or more of nicotine, 1–2 mg of which is inhaled, on average. Chewing tobacco and cigars are other common ways that individuals use nicotine.

Prevalence among Teenagers

In 2005 4.1 million Americans aged 12–17 were smokers, making up 17% of this age group (SAMHSA, 2006). Another study found the percentage of use of nicotine in the month prior to the study by adolescents to be (Johnston, 2006):

- **Cigarettes**: 9.3% of 8th graders, 14.9% of 10th graders, and 23.2% of 12th graders.
- **Smokeless**: 3.3% of 8th graders, 5.6% of 10th graders, and 7.6% of 12th graders

Such high prevalence rates may be accounted for by research which suggests that adolescents are more susceptible to rapid development of nicotine addiction, with measurable symptoms of dependence observable after only a few weeks of casual use (NIDA, 2006). Although prevalence rates are still quite high, cigarette smoking appears to be on the decline in the last 5 years (Johnston et al, 2006). For example, between 2000 and 2005, daily smoking of less than a half-pack per day decreased from 7.4% to 4% in 8th graders, from 14% to 7.5% in 10th graders, and from 20.6% to 13.6% in 12th graders; daily smoking of a half-pack or greater showed similar decreases.

Information from a NIDA report indicates that there are significant gender differences in regards to smoking (NIDA, 2006). Women are more likely to smoke fewer cigarettes per day and inhale less deeply. These smoking habits may indicate that women have a greater sensitivity to nicotine than do men. In addition, women are less likely than men are to quit smoking, which is due to several factors; they are less likely to initiate quitting, find nicotine replacement methods less effective (replacements do not reduce craving as much as they do for men), appear to experience more intense withdrawal symptoms, and are more likely to gain weight.
Incentives for Use

Using tobacco is associated with enhanced concentration, improved attention to task performance, quicker reaction time, and better problem solving. Smokers also report improved mood including enhanced pleasure and reduced anger, tension, depression, and stress. Because of the unique delivery system of nicotine—with one puff being the equivalent of one hit—beginner smokers are able to individualize and control their intake in a way not possible with other drugs. Young people often begin smoking as a result of influence from peers or admiration for an adult who smokes.

Negative Consequences of Use

Using tobacco can lead to addiction, heart problems, cancer, bronchitis, respiratory problems such as emphysema and asthma, and problems during pregnancy. Less serious consequences include stained fingers and teeth; halitosis; aging of the skin resulting in premature wrinkles; and lingering smell on hair, skin, and clothing.

† Information in this section provided courtesy of the National Institute on drug abuse (NIDA) via http://www.nida.nih.gov/infofacts/tobacco.html
Steroids

General Information

Anabolic steroids are human-made substances related to male sex hormones. Originally developed in the late 1930s to treat hypogonadism (a condition in which the testes do not produce sufficient testosterone for normal growth, development, and sexual functioning), steroids are legal by prescription but are often abused. In addition to treating conditions that occur when the body produces lower-than-normal levels of testosterone (such as delayed puberty and some types of impotence) anabolic steroids are used to treat body wasting in patients with AIDS and other diseases that result in loss of lean muscle mass. Steroids are a performance-enhancing drug.

Anabolic steroids are taken orally or injected, usually in weekly or monthly cycles. They may also be applied to the skin in the form of gels and creams. Some commonly abused oral steroids include Anadrol (oxymetholone), Oxandrin (oxandrolone), and Winstrol (stanozolol). Injectable steroids include Deca-Durabolin (nandrolone decanoate), Depo-Testosterone (testosterone cypionate), and Tetrahydrogestrinone (THG). Steroids are often sold at gyms, at competitions, and by mail order. Most illegal steroids are obtained outside the United States from countries that do not require a prescription for the purchase of steroids.

Prevalence among Teenagers

Anabolic steroid use among athletes is estimated at 1–6%. According to the 2005 Monitoring the Future survey, most anabolic steroids users are male (Johnston, 2006). Among male students, use of steroids prior to the study year was reported by 1.1% of 8th-graders, 1.3% of 10th-graders, and 1.5% of 12th-graders. Adolescents may be more likely to abuse anabolic steroids if they have experienced muscle dysmorphia, a history of physical or sexual abuse, or a history of engaging in high-risk behaviors (NIDA, 2000).
Incentives for Use

One of the main reasons an individual abuses anabolic steroids is to increase athletic performance or to improve physical appearance by increasing muscle size and decreasing body fat. Steroids are often seen as a quick fix for undesirable bodily characteristics. Steroids may also speed recovery time from an injury. Pleasurable effects of steroid use may also include euphoria, a heightened self-esteem, increased energy levels, and an increased sex drive.

Negative Consequences of Use

Steroid use is associated with many adverse side effects. For adolescents using anabolic steroids, growth may be halted prematurely through premature skeletal maturation and accelerated puberty changes. This means that if an adolescent takes steroids before the typical adolescent growth spurt, he/she runs the risk of remaining short for the rest of his/her life. Other major side effects may include liver tumors and cancer, kidney tumors, high blood pressure, increases in LDL (bad cholesterol), decreases in HDL (good cholesterol), jaundice, fluid retention, severe acne, and trembling. Steroid users also show increased aggressiveness with extreme mood swings or other psychiatric side effects. Halting steroid use may result in depression, encouraging a continuance of steroid use. In addition, people who inject steroids are at risk of contracting HIV/AIDS or hepatitis.

† Information in this section provided courtesy of the National Institute on drug abuse (NIDA) via http://www.nida.nih.gov/Infofacts/Steroids.html or the Drug Enforcement Agency (DEA) via http://www.usdoj.gov/dea/concern/steroids.html unless otherwise noted.