2. Substance Use Disorders

2.1 Overview

Substance use disorders (SUDs), as described in DSM-IV, are part of a class of disorders (substance-related disorders) that are "related to the taking of a drug of abuse (including alcohol)" [1 p. 175]. Although the transition from DSM-IV to DSM-5 involves changes at multiple levels for SUDs, this basic definition remains unchanged [1,2]. However, changes have occurred at the class level (the specific disorders considered within the overall group of disorders), at the substance level (which substances are considered "drugs of abuse"), at the disorder level (the template of criteria that are applied, with some deviations, across all substances), and at the individual criteria level (the number and types of symptoms needed to meet criteria for a disorder). The following section delineates the specific changes from DSM-IV to DSM-5 and evaluates, to the extent possible given the available data, how these changes may affect the measurement of substance use disorders in the National Survey on Drug Use and Health (NSDUH) and the Mental Health Surveillance Study (MHSS). Table 2.1 provides a cross-cutting comparison of diagnostic criteria for both DSM-IV and DSM-5, which is important for framing the discussion of diagnostic changes across versions.

NSDUH SUD assessments map closely to the DSM-IV criteria; however, NSDUH diverges occasionally from DSM-IV. Changes discussed below note the differences in NSDUH from DSM-IV criteria and the changes from DSM-IV to DSM-5. Currently available literature focuses on changes from DSM-IV to DSM-5; thus, in places where NSDUH diverges from the DSM-IV criteria, the impact of DSM-5 criteria changes on NSDUH may be difficult to quantify. These limitations are noted, as are the limitations in the current literature overall.

2.2 Categorization Changes

A disorder "class" is the term used to describe groups of similar disorders in the DSM (e.g., anxiety disorders and mood disorders). The DSM-5 contains numerous changes in the classification system and one of these changes has been to the classification of SUDs. In DSM-IV, SUDs belonged to the class substance-related disorders, which included only substance/drug-based disorders. In DSM-5 this classification has been broadened to include gambling disorder, and the section has been renamed Substance-Related and Addictive Disorders. Although this change will have no impact on prevalence estimates for SUDs, ensuring precise language in Substance Abuse and Mental Health Services Administration (SAMHSA) documentation and reports will be important to avoid equating prevalence estimates for any substance use disorder with prevalence estimates of the broader category of substance-related and addictive disorders.

Table 2.1 Comparison of DSM-IV, DSM-5, and NSDUH Substance Use Disorder Assessment

Characteristic	DSM-IV	DSM-5	NSDUH
Disorder Class	Substance-related disorders, included only SUDs	Substance-related and addictive disorders class now includes SUDs and gambling disorder (formerly pathological gambling)	Same as DSM-IV
Disorder Types[1]	Abuse and dependence hierarchical diagnostic rules meant that people ever meeting criteria for dependence did not receive a diagnosis of abuse for the same class of substance	SUD, substance abuse and dependence have been eliminated in favor of a single diagnosis, SUD	Same as DSM-IV
Substances Assessed	11 classes of substances assessed, plus 2 additional categories	10 classes of substances assessed, plus 2 additional categories	Modules for 13 substances, plus 2 additional categories
	• Alcohol	• Alcohol	• Alcohol
	• Amphetamine and similar sympathomimetics	• Stimulant use disorder, which includes amphetamines, cocaine, and other stimulants	• Stimulants
	• Caffeine (intoxication only)	• Caffeine (intoxication and withdrawal)	• Not assessed
	• Cannabis (no withdrawal syndrome)	• Cannabis (with withdrawal syndrome)	• Cannabis (no withdrawal syndrome)
	• Cocaine	• Combined with other stimulants (e.g., amphetamines) under stimulant use disorder	• Cocaine
			• Crack
	• Hallucinogens • Phencyclidine and similar arylcyclohexylamines	• Separated into phencyclidine use disorder and other hallucinogen use disorder	• Hallucinogens
	• Inhalants (no withdrawal syndrome)	• Inhalants (no withdrawal syndrome)	• Inhalants
	• Nicotine (dependence only)	• Tobacco	• Cigarette dependence (measured by two non-DSM–based scales), other tobacco products (use only)
	• Opioids	• Opioids	• Heroin
			• Pain reliever
		• Merged with hallucinogens	
	• Sedatives, hypnotics, and anxiolytics	• Sedatives, hypnotics, and anxiolytics	• Sedatives
			• Tranquilizers
	• Other drug abuse/dependence	• Any other SUD	• Other drugs (use only)
	• Polysubstance dependence	• Dropped polysubstance use disorder	• Polysubstance dependence

(continued)

Table 2.1 Comparison of DSM-IV, DSM-5, and NSDUH Substance Use Disorder Assessment (continued)

	DSM-IV	DSM-5	NSDUH
Disorders Assessed	**Substance abuse: One or more symptoms**	**SUD: Two out of 11 criteria clustering in a 12-month period are needed to meet disorder threshold**	**Substance abuse: One or more symptoms in the past year**
	• Recurrent substance-related legal problems	• Dropped	• DSM-IV criterion assessed
	• Recurrent substance use in situations where it is physically hazardous	• Same	• Assessed
	• Recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home	• Same	• Assessed
	• Continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance	• Same	• Assessed
		• Added: Craving or a strong desire or urge to use the substance	• DSM-5 craving criterion not assessed
	Substance dependence: Three or more symptoms in the same 12-month period (or one symptom if dependence criteria have been met previously in the lifetime)		**Substance dependence: Three or more symptoms in the past year**
	• Substance is taken in larger amounts or over a longer period than was intended	• Same	• Assessed
	• There is a persistent desire or unsuccessful efforts to cut down or control substance use	• Same	• Assessed
	• A great deal of time is spent in activities necessary to obtain the substance, use the substance, or recover from its effects	• Same	• Assessed
	• Important social, occupational, or recreational activities are given up or reduced because of substance use	• Same	• Assessed
	• Substance use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by substance use	• Same	• Assessed

(continued)

Table 2.1 Comparison of DSM-IV, DSM-5, and NSDUH Substance Use Disorder Assessment (continued)

	DSM-IV	DSM-5	NSDUH
	• Tolerance, as defined by either: (1) a need for markedly increased amounts of substance to achieve intoxication or desired effect or (2) a markedly diminished effect with continued use of the same amount of the substance	• Same	• Assessed
	• Withdrawal, as manifested by either: (1) the characteristic withdrawal syndrome for the substance (excludes Cannabis, Hallucinogens, and Inhalants see Table 2.2) (2) the substance (or a similar substance) is taken to relieve or avoid withdrawal symptoms	• Withdrawal, as manifested by either: (1) the characteristic withdrawal syndrome for the substance (excludes Phencyclidine, Other Hallucinogens, and Inhalants; see Table 2.2) (2) the substance (or a closely related substance) is taken to relieve or avoid withdrawal symptoms Note: This criterion is not considered met for those taking opioids, sedatives, hypnotics or anxiolytics, or stimulant medications solely under appropriate medical supervision.	• Assessed, see Table 2.2 for variations from DSM-IV
Severity	No severity criteria	Severity is assessed in terms of the number of symptoms that meet criteria: Mild: two to three symptoms Moderate: four to five symptoms Severe: six or more symptoms	• No severity criteria assessed
Additional Specifications	With or without physiological dependence, early full remission, early partial remission, sustained full remission, sustained partial remission, on agonist therapy, and in a controlled environment	Early or sustained remission and if the person is in a controlled environment where access to the substance is restricted	• Not assessed

DSM-IV = *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition; DSM-5 = *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition; NSDUH = National Survey on Drug Use and Health; SUD = substance use disorder.

[1] Table does not include substance/medication-induced disorders with the exception of notations for withdrawal and caffeine intoxication.

2.3 Types of Substances

NSDUH contains 13 modules assessing specific substances and substance types (tobacco, alcohol, marijuana, cocaine, crack, heroin, hallucinogens, inhalants, prescription pain relievers [opioids], tranquilizers, stimulants, and sedatives) and 1 module assessing special substance use, which assesses primarily methods of use.[3] It also has the capacity to determine polysubstance dependence. The substances assessed vary somewhat from DSM-IV specified substances (see Table 2.1). Specific differences in NSDUH from DSM-IV include the following:

- Separate modules for assessing free-base (crack) cocaine and salt forms of cocaine (e.g., cocaine hydrochloride), which are combined in DSM-IV;
- Separate modules for heroin and prescription pain relievers, which are combined as opioids in DSM-IV;
- Assessment of only cigarette dependence, instead of nicotine dependence (NSDUH does assess use of alternate forms of tobacco, but does not assess dependence for these products); measured by non-DSM–based scales: the Nicotine Dependence Syndrome Scale (NDSS) [11]and the Fagerstrom Test for Nicotine Dependence (FTND) [12].
- Assessment of use of other drugs not specifically asked about in existing modules is done by using open respondent-provided options in the hallucinogens, inhalants, and all of the prescription drug modules (stimulants, pain relievers, sedatives, tranquilizers). However, NSDUH does not assess SUDs for substances listed in the open respondent-provided items (e.g., "bath salts"). Not assessing abuse and dependence for other illicit drugs and other forms of tobacco likely leads to a slight underestimate of these disorders at the population level.

Changes from DSM-IV to DSM-5 in the types of substances assessed have been minor, but some reclassification has occurred. Primarily, cocaine (including crack) and amphetamines have been combined with other stimulants (excluding caffeine) into a single stimulant class based on evidence that they have similar mechanisms of action (increasing synaptic dopamine), symptom profiles, consequences, and prognoses. NSDUH-based reports could provide the estimates of the newly combined categories in addition to substance-specific estimates (e.g., providing an estimate for amphetamine use disorder and providing the estimate for all stimulants combined) in the future to enable comparisons with other datasets, track trends for the new diagnostic categories, and improve consistency with DSM-5 conventions.

2.4 Criteria for Substance Use Disorders

NSDUH assesses substance abuse and substance dependence. DSM-IV and DSM-5 also assess substance intoxication, intoxication delirium, withdrawal syndrome, and withdrawal delirium for relevant substances. Because NSDUH does not assess those additional disorders, this report focuses only on changes to substance abuse and dependence criteria.

[3] In the current NSDUH questionnaire, the stimulants module includes questions on methamphetamine use. Beginning in 2015, questions on methamphetamine use will comprise a separate module in the NSDUH questionnaire.

2.4.1 Substance Abuse and Substance Dependence

A major change from DSM-IV to DSM-5 is the combination of substance abuse disorder and substance dependence disorder into a single SUD. The DSM-IV substance abuse diagnosis required the endorsement of one or more symptoms (out of four, at any time) and no history of substance dependence for that category of substances (see Table 2.1 for the specific criteria). The substance dependence criteria required the endorsement of three or more symptoms (out of seven) in a 12-month period. DSM-IV diagnostic hierarchy rules also specified that people who met criteria for both substance abuse and substance dependence for a particular substance were diagnosed as having substance dependence only. The purpose of this was to reflect the increased severity of dependence over the abuse diagnosis [13]. The DSM-5 has eliminated the distinct abuse and dependence disorders for several reasons: (1) the distinction provided little guidance for treatment; (2) the distinction created "diagnostic orphans" (individuals who endorsed two dependence symptoms and no abuse symptoms and therefore did not meet any diagnostic criteria); (3) the hierarchical structure did not follow the anticipated relationship between abuse and dependence (that abuse was largely a less severe prodrome[4] of dependence); and (4) the separation caused the abuse diagnosis to suffer from significant reliability problems [13,15-21]. The DSM-5 combines the abuse and dependence criteria under the new rubric substance use disorder, which requires 2 out of 11 criteria in a 12-month period for diagnosis. In addition, the DSM-5 has eliminated the abuse criterion related to recurrent substance-related legal problems (e.g., arrests for substance-related disorderly conduct [1]) and added a craving criterion. The legal problems criterion was dropped due to low endorsement, poor fit with other items, and the poor discrimination of this item (almost all people endorsing the legal criteria endorsed other criteria also) [13]. This was further verified by estimates using NSDUH data, discussed further in Section 2.5, Specific SUDs.

Under DSM-5 criteria, craving is defined as a "strong desire or urge to use the substance." DSM-5 text further adds that the phenomenon of craving "makes it difficult to think of anything else" and "often results in the onset" of use [2, p. 492]. Examination of general population studies indicated that craving, as an indicator of an SUD, did not add to the total information offered by other **dependence** criteria. That is, other dependence criteria (e.g., tolerance, withdrawal, and continuing use despite health problems) overlapped with craving so that the addition of craving identified very few people who did not already meet the threshold for a disorder through the other dependence criteria. However, the inclusion of craving with the **abuse** criteria added significantly to the diagnostic information and there is some indication that craving may become a target for biological treatments [22]. Notably, craving was already a component of the International Classification of Diseases, 10th revision (ICD-10), diagnostic system, which is used outside of the United States, and thus the DSM-5 craving addition improves consistency across classification systems.

NSDUH does not assess the craving criterion. If no changes were made to NSDUH questions and existing data were used to approximate the estimates by modifying the diagnostic algorithm, the impact would be seen on threshold-level cases (i.e., individuals who endorsed only one criterion). Data from other studies that assessed craving (such as the National

[4] A "prodrome" is "an early or premonitory symptom of a disease," according to *Stedman's Medical Dictionary*, 27th edition [14].

Epidemiologic Study of Alcohol and Related Conditions [NESARC] and the National Longitudinal Alcohol Epidemiologic Survey [NLAES]) could be used to impute the frequency of people who would reach diagnostic threshold if the craving criterion was present. Imputation could be done with the population-level estimates or at the individual level. However, the current data that would be used to generate these estimates are between 10 (NESARC) and 20 (NLAES) years old and do not include adolescents. Imputation could increase the chances of misclassification, which may bias statistical results, particularly in analyses involving a large number of people close to the diagnostic threshold. In addition, the prevalence and characteristics of people endorsing the craving criterion may vary by substance. This is discussed in more detail later in this report in the context of the individual substances.

2.4.2 Withdrawal Criteria

An additional criterion that has undergone some revisions in DSM-5 is the dependence criterion of withdrawal. Unlike other criteria, withdrawal symptoms are specific to the physiological effect of the substance (Table 2.2). In both DSM-IV and DSM-5, withdrawal is manifested by either (1) a person having the characteristic withdrawal symptoms for the substance, or (2) a person using the same or closely related substance to avoid the substance-specific withdrawal symptoms. DSM-IV and DSM-5 withdrawal criteria are unchanged for all substances except cannabis. Research conducted after the publication of the DSM-IV has identified a cluster of symptoms associated with cannabis withdrawal, and this new information has been included in the DSM-5 [2]. Cannabis withdrawal syndrome is defined by the presence of three or more symptoms developing within approximately 1 week of cessation of heavy and prolonged cannabis use. Symptoms can include (1) irritability, anger, or depression; (2) nervousness or anxiety; (3) sleep difficulties (e.g., insomnia or disturbing dreams); (4) decreased appetite or weight loss; (5) restlessness; (6) depressed mood; and (7) at least one physical symptom that causes significant discomfort (abdominal pain, shakiness/tremors, sweating, fever, chills, or headache).

NSDUH assesses withdrawal (except cannabis withdrawal) as one part of the dependence criteria. However, NSDUH departs from DSM-IV criteria in several ways. With respect to specific substances, NSDUH diverges in three cases (see Table 2.2). First, NSDUH does not assess tobacco withdrawal. Second, there are some deviations from the withdrawal criteria for sedatives, hypnotics, or anxiolytics. DSM-IV specifies two or more symptoms to meet criteria for sedative, hypnotic, or anxiolytic withdrawal, although the NSDUH instrument specifies only that one symptom is necessary. This particular deviation is addressed in the future redesign, planned for 2015, and to conform with DSM-IV and DSM-5 withdrawal criteria. Moreover, DSM-IV criteria for sedative, hypnotic, or anxiolytic withdrawal specify only the symptom of insomnia, but NSDUH includes insomnia or hypersomnia. These differences may have led to an overestimate of the number of people who met criteria for sedative, hypnotic, or anxiolytic withdrawal and therefore substance dependence. Third, NSDUH has not historically assessed tranquilizer withdrawal leading to a potential underestimate of tranquilizer dependence.

Table 2.2 DSM-IV to DSM-5 Withdrawal Symptom Comparison

Substance	Symptom	DSM-IV	DSM-5	NSDUH
Alcohol	Two or more symptoms	√	√	√
	Autonomic hyperactivity	√	√	√
	Increased hand tremor	√	√	√
	Insomnia	√	√	√
	Nausea or vomiting	√	√	√
	Transient visual, tactile, or auditory hallucinations or illusions	√	√	√
	Psychomotor agitation	√	√	√
	Anxiety	√	√	√
	Generalized tonic-clonic seizures (formerly grand mal seizures)	√	√	√
Cannabis	Three or more symptoms		√	
	Irritability, anger, or aggression		√	
	Nervousness or anxiety		√	
	Sleep difficulty (i.e., insomnia, disturbing dreams)		√	
	Decreased appetite or weight loss		√	
	Restlessness		√	
	Depressed mood		√	
	At least one of the following physical symptoms causing significant discomfort: abdominal pain, shakiness/tremors, sweating, fever, chills, or headache		√	
Cocaine	Dysphoric mood and two or more symptoms	√	(See Stimulant Use)	√
	Fatigued	√		√
	Vivid, unpleasant dreams	√		√
	Insomnia or hypersomnia	√		√
	Increased appetite	√		√
	Psychomotor retardation or agitation	√		√
Hallucinogens and Phencyclidine	No withdrawal diagnosis			
Inhalants	No withdrawal diagnosis			
Opioid	Three or more symptoms	√	√	√[1] √[2]
	Dysmorphic mood	√	√	√[1] √[2]
	Nausea or vomiting	√	√	√[1] √[2]
	Muscle aches	√	√	√[1] √[2]
	Lacrimation or rhinorrhea	√	√	√[1] √[2]
	Yawning	√	√	√[1] √[2]
	Pupillary dilation, piloerection, or sweating	√	√	√[1] √[2]
	Diarrhea	√	√	√[1] √[2]
	Fever	√	√	√[1] √[2]
	Insomnia	√	√	√[1] √[2]

(continued)

Table 2.2 DSM-IV to DSM-5 Withdrawal Symptom Comparison (continued)

Substance	Symptom	DSM-IV	DSM-5	NSDUH
Sedative, Hypnotic, or Anxiolytic	Two or more symptoms	√	√	
	One or more symptoms			√[3,4]
	Autonomic hyperactivity	√	√	√[4]
	Hand tremor	√	√	√[4]
	Insomnia	√	√	
	Insomnia or hypersomnia			√[4]
	Nausea or vomiting	√	√	√[4]
	Transient visual, tactile, or auditory hallucinations or illusions	√	√	√[4]
	Psychomotor agitation	√	√	√[4]
	Anxiety	√	√	√[4]
	Grand mal seizures	√	√	√[4]
Stimulant	Dysphoric mood and two or more additional symptoms	√	√	√
	Fatigue	√	√	√
	Vivid, unpleasant dreams	√	√	√
	Insomnia or hypersomnia	√	√	√
	Increased appetite	√	√	√
	Psychomotor retardation or agitation	√	√	√
Tobacco	Four or more symptoms	√	√	
	Irritability, frustration, or anger	√	√	
	Anxiety	√	√	
	Difficulty concentrating	√	√	
	Increased appetite		√	
	Increased appetite or weight gain	√		
	Restlessness	√	√	
	Depressed mood	√	√	
	Insomnia	√	√	
	Decreased heart rate	√		
Other Substance	A syndrome of substance-specific symptoms that causes clinically significant distress or impairment in social, occupational, or other areas of functioning	√	√	

DSM-IV = *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition; DSM-5 = *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition; NSDUH = National Survey on Drug Use and Health.

NOTE: Caffeine is not included in NSDUH assessments in any form and is therefore excluded from this table.

[1] Specifically asked for heroin.

[2] Specifically asked for pain relievers.

[3] This is being changed to two or more symptoms in the 2015 redesign.

[4] NSDUH assesses sedatives and tranquilizers in separate modules; withdrawal symptoms are not assessed for tranquilizers.

Conceptually, NSDUH diverges from DSM (IV and 5) withdrawal criteria in several ways (for all substances with a withdrawal component), which may lead to estimates that do not completely reflect DSM withdrawal criteria. Withdrawal criteria in DSM-5 consist of two items:

1. Criteria A and B from the specified characteristic withdrawal syndrome for the substance.

2. The substance (or a closely related substance) is taken to relieve or avoid withdrawal symptoms.

Criteria A and B differ slightly across substances but follow a general template. Criterion A specifies that the person has to have ceased (or reduced) heavy and prolonged use of the substance. Criterion B specifies that a certain number of symptoms, from a list provided (see Table 2.2) developed within several hours of a few days after the cessation (or reduction) from Criterion A. Deviations from this general pattern occur for sedative, hypnotic, or anxiolytics and stimulants, wherein the Criterion A specifies only prolonged use (not heavy), and cannabis, which specifies that the Criterion B symptoms develop within approximately 1 week of ceasing or reducing use.

In NSDUH, withdrawal is assessed with a series of questions that follow a unified template for all substances with withdrawal symptoms (except the new cannabis withdrawal). First, respondents have to answer affirmative to a question about having tried to cut down or quit before they are routed to the main withdrawal questions. This is potentially problematic because the DSM does not specify that the person had to intentionally try to go without the substance to meet withdrawal criteria (e.g. if a person runs out of their supply of a substance they may experience withdrawal even though they did not try to cut down or quit). This routing pattern may lead to an underestimate of the prevalence of withdrawal in NSDUH.

The second question for assessing withdrawal asks: "Please look at the symptoms listed below. During the past 12 months, did you have" # (varies by substance) "or more of these symptoms after you cut back or stopped using *substance*?" This is followed by a list of the specific withdrawal symptoms for that substance. If respondents answer affirmatively, then they receive another question about withdrawal that varies slightly from the previous: "Please look at the symptoms listed below. During the past 12 months, did you have # or more of these symptoms at the same time that lasted for longer than a day after you cut back or stopped" using *the substance*? Respondents are only considered to have met withdrawal criteria if they endorsed the second question. These questions have several points of potential deviation from DSM criteria.

- The question wording, in addition to the noted skip pattern and the question's proximity to questions asking about intentional reduction in use may lead to respondents believing that only intentional efforts to reduce or stop qualify for this question.
- The questions do not include the DSM description of stopping after heavy or prolonged use (they are asked of people who used at all in the past year).

- The items add an additional caveat that the symptoms happened "at the same time," which may be taken literally. This is not specified in the DSM-5 criteria, and withdrawal symptoms, while clustering in time, do not necessarily occur simultaneously.
- The NSDUH items also specify that the symptoms had to last longer than a day. This is not specified by DSM-5. Moreover, this question could be interpreted in two ways: the respondent may think that each of the specified number of symptoms had to last for longer than a day (so if the question specified two or more symptoms then at least two had to last for longer than a day); alternatively they may interpret it as meaning that the combined duration of the symptoms lasted at least a day.

The final deviation from DSM (IV and 5) criteria is that NSDUH does not assess the second part of the withdrawal item, which is taking the substance or a closely related substance to avoid withdrawal. This would likely lead to an underestimate of withdrawal symptoms because of missing individuals who preemptively avoided withdrawal symptoms by using the substance or a closely related substance.

With the potential for adding an assessment of cannabis withdrawal, these deviations should be considered since new items will need to be developed for cannabis and there is the opportunity to better map NSDUH to DSM criteria while other changes are being implemented. Because these deviations are specific to NSDUH, it is difficult to quantify the impact of their revision on prevalence estimates. Overall, it is probable that estimates would increase, but the magnitude of increase in unknown.

2.4.3 Severity Criteria

The DSM-IV did not specifically assess the severity of SUDs, although in general, dependence was considered more severe than abuse and people receiving the dependence diagnosis did not receive an abuse diagnosis even if the criteria for abuse were met [13]. DSM-5 has added a symptom count-based severity indicator, with two to three symptoms being classified as mild, four to five symptoms classified as moderate, and six or more symptoms being classified as severe. The severity index addition was driven by research, which suggested a simple symptom count was as effective at measuring severity as more complicated algorithms [23]. Calculation of severity using NSDUH could be accomplished with little effort if the craving criterion were added to the survey.

2.5 Specific SUDs

Thus far, changes in diagnostic criteria have been evaluated at the overall diagnostic level (the template applied to each substance, Table 2.1). However, criteria changes may not affect estimates for every substance equally and some substances deviate slightly from the general SUD template. This section discusses the impact of the DSM-5 revisions to each substance-specific SUD in terms of prevalence and measurement considerations.

2.5.1 Alcohol Use Disorder

Assessment of alcohol use disorder (AUD) aligns with the DSM-IV and DSM-5 SUD template discussed previously (i.e., DSM-IV assessed alcohol abuse [1 or more of 4 criteria] and

2.5.2 Caffeine Use Disorder

NSDUH and MHSS do not assess caffeine use; therefore, changes in diagnostic criteria are not discussed in depth. However, some changes between DSM-IV and DSM-5 are noteworthy. Caffeine use disorder is a new addition to DSM-5. DSM-IV diagnoses included only caffeine intoxication, caffeine-induced disorders (anxiety and sleep), and caffeine-related disorder not otherwise specified. First, caffeine withdrawal syndrome has been added as a substance-related and addictive disorder in DSM-5. Second, caffeine use disorder has been added to DSM-5 Section 3, Conditions for Further Study. The addition of caffeine use disorder to Conditions for Further Study was based on preliminary evidence indicating the clinical significance of withdrawal and dependence and concern over a rise in case reports of fatalities due to caffeine intoxication from energy drinks and diet pills, as well as concerns over the safety of caffeine–alcohol combination beverages that have drawn U.S. Food and Drug Administration (FDA) attention [13,29,32,33].

2.5.3 Cannabis Use Disorder

The DSM-IV assessed cannabis abuse and cannabis dependence, but no withdrawal syndrome was specified for dependence diagnosis [1]. This was based upon a lack of data identifying withdrawal symptoms. Since the DSM-IV's initial publication, however, research has identified symptoms of withdrawal that produce clinically significant impairment, and the revised DSM-5 recognizes these symptoms [34]. Criteria for DSM-5 cannabis withdrawal symptoms include three or more symptoms occurring within approximately 1 week of cessation of heavy and prolonged cannabis use, including irritability/anger/aggression; nervousness/anxiety; sleep difficulty, such as insomnia or disturbing dreams; decreased appetite or weight loss; restlessness; depressed mood; and at least one physical symptom that causes significant discomfort: abdominal pain, shakiness/tremors, sweating, fever, chills, or headache (Table 2.2).

Data from wave 1 of NESARC indicates that approximately 34.4 percent (weighted) of frequent cannabis using adults (≥ 3 times per week, n=2,613) reported three or more symptoms of cannabis withdrawal in their lifetime [34]. However, in the previously mentioned study of a sample of primarily substance users, Peer et al., reported a lower prevalence of lifetime cannabis withdrawal (18 percent) [25]. Only one study assessed the prevalence of past year cannabis use. Data from the NLAES, a household-based study of 42,862 adults in the United States, found that 7.4 percent of past year cannabis users met criteria for cannabis withdrawal [30].

Along with the addition of cannabis withdrawal in DSM-5, cannabis use disorder also underwent changes in diagnostic threshold, merging of cannabis abuse and dependence, removal of the legal criterion, and the addition of the craving criterion. Published comparisons suggest little overall difference in the prevalence of DSM-IV and DSM-5 cannabis use disorder despite criteria changes. In a sample of a primarily substance-dependent population, the prevalence of DSM-IV lifetime cannabis use disorder was 39.4 percent and for DSM-5 criteria was 41.0 percent [25]. In a more generalized sample in Australia, the prevalence of past year cannabis use disorder was lower using DSM-5 criteria (5.4 percent) compared with DSM-IV criteria (6.2 percent) [35].

The removal of the legal criterion is expected to have little effect on prevalence estimates of cannabis use disorder. The removal of this criterion was based on low endorsement rates and because repeated studies found that the criterion provided little information beyond what was captured by other criteria [17,35,36]. Examination of NSDUH data indicated an estimated 0.2 percent of respondents endorsed the legal criterion and less than 0.1 percent (Table 2.7, weighted) only endorsed the legal criterion.

Table 2.7 Marijuana Legal Criterion Endorsement among People Aged 12 or Older, by Demographic Characteristic: Weighted Percentages, Annual Averages Based on 2002-2012 NSDUHs

Demographic Characteristic	DSM-IV Legal Criterion Endorsement	Respondents Who Endorsed Only the DSM-IV Legal Criterion	Respondents Who Endorsed the DSM-IV Legal Criterion and One Other DSM-IV SUD Criterion
TOTAL	0.2	0.0	0.0
GENDER			
Male	0.4	0.0	0.0
Female	0.1	*	0.0
HISPANIC ORIGIN AND RACE			
Not Hispanic or Latino	0.2	0.0	0.0
White	0.2	0.0	0.0
Black or African American	0.4	0.0	0.1
American Indian or Alaska Native	0.6	0.0	0.1
Native Hawaiian or Other Pacific Islander	0.2	*	*
Asian	0.1	*	*
Two or More Races	0.4	0.0	0.0
Hispanic or Latino	0.4	0.0	0.0
AGE			
12-13	0.1	0.0	0.0
14-15	0.8	0.0	0.1
16-17	1.2	0.0	0.1
18-25	0.8	0.0	0.1
26-35	0.2	0.0	0.0
36-45	0.1	*	0.0
46-55	0.1	0.0	0.0
56-64	0.0	*	0.0
65 or Older	0.0	*	*

*Low precision; no estimate reported.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2002-2005, 2006-2010 (Revised 3/12), 2011-2012.

The impact of craving on DSM-5 cannabis use disorder prevalence is poorly understood because of a paucity of research. No studies were identified that quantified the number of people

meeting criteria only because they endorsed craving. The reduction in prevalence discussed above suggests that the impact of adding the craving criterion on prevalence estimates will be minor; however, the missing craving criteria may affect NSDUH prevalence estimates because of the fewer number of criteria available to meet requirements. Estimates from Compton et al. put the prevalence of past year craving of cannabis at approximately 13.9 percent [30]; however, studies of lifetime endorsement range from 2.5 to 18 percent, demonstrating an imprecision among existing studies (Table 2.8) [12,37]. Calculating the impact on NSDUH estimates of cannabis use disorder, specifically, is complicated by the fact that NSDUH does not assess cravings or the new withdrawal syndrome, which introduces two points of uncertainty leading to an inability to draw inferences with any degree of certainty.

Table 2.8 Prevalence of DSM-5 Cannabis Use Disorder Craving Criterion from Available Studies

Study *N*	Prevalence of Craving (Time Frame)	Study and Population	Item Wording
7,543	18% (lifetime)	Peer et al. (2013)[25] Subjects were aggregated from family-based and case-control genetic studies of substance dependence.	"In situations where you could not use [drug], did you ever have such a strong desire for it that you could not think of anything else?"
1,639	2.5% (lifetime)	Mewton, Slade, & Teesson (2013) [35]. Data are from the 2007 National Survey of Mental Health and Wellbeing, a stratified, multistage area probability sample of people aged 16 to 85 years living in private dwellings in Australia.	"Was there ever a time in your life when you often had such a strong desire to use [DRUG] that you couldn't stop using or found it difficult to think of anything else?"
42,862	13.9% (past year)	Compton et al. (2013)[30] The 1991-1992 National Longitudinal Alcohol Epidemiologic Survey, a nationally representative survey of noninstitutionalized adults (18 or older) in the United States.	"have a very strong desire or urge to use [drug]"

DSM-5 = *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition.

2.5.4 Phencyclidine Use Disorder and Other Hallucinogen Use Disorder

Disorder criteria for phencyclidine (PCP) use disorder and other hallucinogen use disorder vary slightly from the overall SUD template in that a withdrawal syndrome has not been identified for these substances. This is consistent in DSM-IV and DSM-5 and with NSDUH assessment. DSM-IV had separate diagnostic subcategories for phencyclidine use disorder, hallucinogen use disorder, and their respective substance-related diagnoses; however, the DSM-5 includes phencyclidine use disorder, other hallucinogen use disorders, and their respective substance-related disorders under one diagnostic subcategory, hallucinogen-related disorders. NSDUH combines phencyclidine and other hallucinogenic substance use into one assessment and diagnosis, which is more closely aligned with DSM-5's subcategory classification (hallucinogen-related disorders) than the DSM-IV; however, phencyclidine and other hallucinogens have separate SUD diagnoses. In order to be aligned with DSM-5, the NSDUH