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Truth or consequences in the diagnosis of substance use disorders

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Abstract

Aims—This commentary critically evaluates the use of substance-related negative psychosocial and health consequences to define and diagnose alcohol and other substance use disorders.

Methods—Narrative review.

Results—The consequences of substance use cause much suffering and are major public health and economic problems. However, there are a number of conceptual and measurement problems with using consequences as diagnostic criteria for substance disorders. Data indicate that substance-related consequences introduce systematic bias and degrade the validity of diagnostic systems.

Conclusions—Negative psychosocial and health consequences of substance use should play a fundamentally reduced role in modern diagnostic systems for, and definitions of, addictive disorders.

Keywords

Addiction; Alcohol Use Disorders; diagnosis; health consequences; psychosocial consequences; Substance Use Disorders

Introduction

The nucleus of modern diagnostic systems in psychiatry is the criterion set: the signs and symptoms that serve to illuminate the nature of a mental disorder and describe the ways in

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which its pathology manifests [1]. In this regard, it has long been recognized that it is important in psychopathology to distinguish ancillary features from what Bleuler [2] termed ‘fundamental’ and we call ‘core’ features. Core features describe the ‘whatness’ of a mental disorder [3], and can be defined as symptoms and constructs that index the internal dysfunction underlying pathology rather directly. Ancillary features do not directly index such internal dysfunction. Instead, they are correlates or sequelae of core features which tend to be non-specific, state-level phenomena, marking only some cases and illness episodes. It is important to consider whether negative substance-related psychosocial and health consequences are core or ancillary features of Alcohol and other Substance Use Disorders (AUDs and SUDs).

There is a long history of using consequences to characterize and diagnose AUDs, and of describing consequences largely as characteristics of an individual, rather than the products of complex interactions of a person's behavior with their environment. Benjamin Rush [4] described alcohol-related psychosocial and health consequences as prominent symptoms of the disease ‘intemperance’. Magnus Huss [5] emphasized the medical consequences of chronic heavy drinking in describing ‘alcoholismus chronicus’. E. M. Jellinek [6–8] described various symptoms of ‘alcoholism’, but it was the plethora of health and psychosocial consequences, more than 50 of them, that gave his framework its descriptive impact. Medical and psychosocial consequences were highly prominent in the World Health Organization's (WHO) 1952 diagnostic criteria for alcoholism [9]; in the first and second editions of the Diagnostic and Statistical Manual of Mental Disorders (DSM-I and DSM-II) [10,11]; and in the prominent research diagnostic criteria published by the National Council on Alcoholism [12] and by Feighner and colleagues [13]. Kettil Bruun [14] went further, and argued that treating the social and health harms experienced by drinkers largely obviated the need to appeal to the construct of addiction.

In stark contrast, Edwards & Gross [15] described an Alcohol Dependence Syndrome (ADS) that was not defined by consequences, but instead by ‘primary’ symptoms related to compulsive drinking, tolerance and withdrawal, and the incentive salience of alcohol. They stated (p. 1061) that the ADS should not be diagnosed by ‘reference to the secondary damage’ of consequences—although these were still cause for concern. Only the dependent drinker, and not the non-dependent drinker experiencing harm, was described as ‘ill’. The ADS was largely descriptive, but it helped set the stage for modern neurobehavioral theories of addiction, which emphasize neuroadaptations in the brain's reward, incentive salience and inhibitory control systems that lead to compulsive patterns of substance use [16–18].

The separation of consequences from other addiction constructs in the ADS and the notion of a consequence-free dependence syndrome were laudable conceptual developments. However, removing consequences from the dependence syndrome raised the idea that they could be partitioned into a separate dimension of substance disorders. Indeed, soon thereafter a WHO committee described a bi-axial framework in which the ADS and consequences comprised distinct dimensions of alcohol ‘disabilities’ [19]. The bi-axial framework influenced the diagnostic criteria for SUDs in the ninth edition of the International Classification of Diseases (ICD-9) [20], which described separate SUDs of Substance Dependence and Harmful Use. The latter disorder was defined as a pattern of

substance use that is causing damage to physical or psychological health in the absence of dependence. In a somewhat similar fashion, DSM-III [21] described separate SUDs of Substance Dependence and Substance Abuse, with the latter defined in part by consequences. The idea that consequences should form the basis of a separate illness category has proved to be highly problematic [22–24].

Health and psychosocial consequences have remained prominent in the field's diagnostic systems. ICD-10 [25] retained the SUD of Harmful Use. While the operational definition changed, a disorder of Substance Abuse defined partly by consequences was retained in DSM-III-R [26] and DSM-IV [27, 28]. In DSM-5 [29] the diagnosis of Substance Abuse was eliminated, a symptom that described substance-related legal consequences was removed and a craving symptom was added. Based on consistent results showing that AUD/SUD criteria form a single superordinate dimension [30], the remaining abuse and dependence criteria were collapsed into a single category of ‘Substance Use Disorder’ for each substance class; this SUD is diagnosed if a person has two or more of 11 symptoms.

Babor [31] and Edwards [32] expressed concern that with the removal of the substance abuse category, DSM-5 moved far away from a bi-axial framework. In contrast, we welcome the removal of the Substance Abuse diagnosis. We also agree with the decision to eliminate the conceptually and psychometrically problematic symptom of legal problems [30]. We also believe, however, that it is highly unfortunate that five of the 11 DSM-5 SUD symptoms are defined, in part, by consequences or risk for consequences: physically hazardous use; frequent intoxication leading to a failure to fulfill role obligations; reduced social activities in favor of substance use; continued use despite knowledge of social/interpersonal problems; and continued use despite knowledge of physical/psychological problems. (While the two symptoms that describe ‘continued use despite’ consequences can index compulsive substance use, they are conditioned upon individual differences in the occurrence of problems, problem recognition, and the attribution of a causal or exacerbating role to substance use.) The other six DSM-5 SUD symptoms do not reflect consequences: tolerance; withdrawal; using more or longer than intended; unsuccessful attempts or a persistent desire to quit or cut down; much time spent using; and craving.

Problems with Consequences

Clearly, substance use and AUDs/SUDs are associated with myriad negative psychological, interpersonal, social, educational, occupational, legal and health outcomes. Nevertheless, there are a number of problematic conceptual and measurement issues involved with using consequences to define and diagnose SUDs. We discuss how, far more than other addiction constructs, substance-related consequences: (i) are contextually bound; (ii) are multiply determined; (iii) are sometimes not caused or exacerbated by substance use; and (iv) sometimes can be applied to multiple diagnostic criteria. These problems illustrate why consequences have only modest sensitivity and specificity in their associations with heavy substance use and with other SUD symptoms, and why we believe they should be considered ancillary rather than core features of addictive disorders. Of course, there are conceptual and measurement difficulties with other SUD symptoms [33–35], and there may be cultural differences in the propensity to endorse queries about loss of control drinking

[36,37]. Nevertheless, consequences have particular problems when used as diagnostic criteria.

Cultural, Developmental and Contextual Dependence

Consequences tend to be contextually, culturally and developmentally bound, which can lead to systematic bias. A striking example is intoxicated driving, which risks physical and legal harm. This behavior is influenced by access to a motor vehicle, driving under the influence (DUI) enforcement and penalization, and behavioral norms and attitudes [24]. The DSM-5 hazardous use symptom (typically given due to intoxicated driving) performs differently in groups defined by socio-economic status (SES) [38], age [39], ethnicity [40] and gender [41]. Australians with hazardous use have much higher mean levels of alcohol problem severity than their American counterparts [42, 43], probably reflecting Australia's relatively strict DUI enforcement and penalization. Another example is that DSM-IV ‘legal problems’ was highly associated with younger age, male gender and minority ethnicity [39]. The DSM-5 symptom, ‘frequent intoxication leading to a failure to fulfill major role obligations’, is problematic when applied to those with few such obligations, such as retirees. Even among those with full-time employment, the degree of work flexibility, direct supervision and tolerance for deviance can all affect how much occupational difficulty a substance user will experience. DSM-5 ‘substance-related social or interpersonal problems’ will be more or less likely depending on one's social circumstances and friends. DSM-5 ‘reduced social or recreational activities in favor of substance use’ is influenced by the number and type of activities a person is originally engaged in, and whether these activities are compatible with drug use.

Physical problems caused or exacerbated by substance use, a component of the ICD-10 Harmful Use diagnosis and of a DSM-5 symptom, can reflect the accumulation of years of exposure rather than the severity of a current problem, and are far more likely to occur in older than younger substance users [44,45]. Data suggest that ICD-10 Harmful Use is rare in youth, because teens with the harmful use symptom tend to have other ICD-10 symptoms and therefore receive a diagnosis of Substance Dependence instead of Harmful Use. In a mixed sample of adolescent regular drinkers from clinical and community sources, life-time rates of ICD-10 Alcohol Dependence were almost 12 times greater than ICD-10 Harmful Use for alcohol (48.2 versus 4.1%) [46]. Overall, the influence of context seems far greater for symptoms that reflect consequences, compared to symptoms such as withdrawal or craving.

Multiple Determination

‘Substance-related’ psychosocial and health consequences are almost always multiply determined. Given a specific dose of a substance (for acute effects) or pattern of use (for chronic effects), the likelihood of experiencing a given consequence is highly conditioned upon a range of third variables that moderate the associations between substance exposure and consequences. These variables can be personal (e.g. genotype, personality, diet, preexisting psychological or organ function), situational (e.g. social pressure, provocation) and cultural (e.g. norms for drunken comportment). For example, heavy drinkers are more

likely than others to be reckless drivers even when sober [47]. This type of finding suggests that the co-occurrence of substance use and consequences is sometimes partly attributable to fixed or time-varying third variables (e.g. impulsivity, permissive situational contexts). DSM-5 acknowledges the issue of multiply determined outcomes, in that social and health problems can be 'caused or exacerbated' by substance use, but even in the case of exacerbation it is often impossible to determine the degree or type of influence alcohol has exerted, and it is not clear how much influence should be required to establish an exacerbating role. SUD symptoms that do not reflect consequences can also be multiply determined; but substance use arguably plays a more direct causal role, less conditioned on third variables, for symptoms such as tolerance, withdrawal and craving.

Lack of a Causal or Exacerbating Role

In some cases consequences are actually not caused or exacerbated by substance use. When a substance is 'on board' and an adverse outcome occurs, there is a strong tendency by clinicians and laypeople to attribute the outcome to the substance, but such attributions can be wrong. In some cases, the co-occurrence of drug use and a consequence can simply be coincidental. In yet other situations, the association of a drug with an outcome reflects instrumental substance use to achieve a desired goal. Some people will drink in order to facilitate a sexual encounter, as opposed to alcohol causing the encounter to occur. Similarly, as noted famously by Bernie Taupin and Elton John, 'Saturday night's alright for fighting [especially with] a belly full of beer' [48]. That is, fighting while intoxicated can reflect a drinker's a priori desire to get drunk and fight as opposed to impulsive aggression unleashed by alcohol. In a somewhat similar fashion, the association of substance use with consequences can reflect instrumental use to avoid opprobrium. A night of drinking followed by flunking an examination the next day does not necessarily connote causal influence. For some people, a negative outcome will be viewed less unfavorably if it is attributed to substance use. That is, substances can be used strategically in order to 'self-handicap' [49]—provide an excuse for anticipated failure—as this can be less damaging to one's self-concept than failure due to incompetence. Overall, from an assessment and measurement standpoint, determining whether a consequence is due to substance use to any meaningful degree often requires a great deal of detective work, and is often impossible to determine.

Consequences: How Do You Count Them?

Another problem is that the same substance-related consequence sometimes can be applied towards multiple diagnostic criteria. In these cases there are no established hierarchical decision rules for whether one symptom should take precedence and, if so, which one. Should multiple DUI arrests leading to a license suspension trigger both the hazardous use and the role impairment criteria? If someone reports that frequent intoxication has led to impairment in their familial role obligations because of reduced social activities with their family, should this count as one symptom or two? Given these quandaries, it is not surprising that some criteria are highly correlated. Using data from wave 2 of the National Epidemiologic Survey of Alcoholism and Related Conditions [50], we found that the association of the AUD symptoms of role impairment and reduced social activities was

exceptionally high (tetrachoric $r = 0.85$), in contrast with more moderate inter-correlations among other symptoms (e.g. tolerance and withdrawal $r = 0.55$; craving and tolerance $r = 0.57$) (unpublished data). This finding raises the possibility that multiple criteria can sometimes implicitly reference the same consequence, perhaps 'double-dipping' on symptom counts and jeopardizing the validity of diagnosis and of the assessment of severity via symptom counts.

Summary and Recommendations

Taken together, these conceptual and measurement problems—context-dependence, multiple-determination, frequent lack of actual causation and applicability to multiple diagnostic criteria—indicate important limitations in the use of consequences to define and diagnose SUDs, and help to explain why they have such modest sensitivity and specificity in their associations with heavy drinking and other addiction constructs. In modern neurobehavioral theory [16–18], one can be addicted without having significant social, interpersonal, legal or occupational consequences. It would be exceedingly rare or perhaps impossible to observe a truly addicted substance user who, for example, does not have some degree of an acquired increase in the incentive salience of alcohol or other drugs. However, this is not the case with consequences. Many people with heavy or compulsive substance use are often protected from negative outcomes because of their social, financial and occupational circumstances [51].

At the same time, many people who experience consequences are not addicted and do not have what would be considered an SUD in modern neurobehavioral theory. Indeed, the 'prevention paradox' [52] is that most consequences of drug use occur among people without a frank case of SUD. Risky and excessive behavior can reflect a general lack of caution in a variety of situations rather than any substance-specific pathology. If substance-related behavior simply reflects foolhardiness or poor judgement, it should not be considered as an indicator of psychiatric disorder [24]. That is, 'stupid substance use' should not be a diagnosable disorder.

We conclude that the role of negative consequences in diagnostic systems should be strictly limited. The field should move away from using particular consequences to define SUD symptoms, as is the case in DSM-5. Further, it is highly problematic when consequences are a central conceptual or definitional focus of SUDs themselves, as is the case for ICD-10 Harmful Use (and was the case for DSM-IV Substance Abuse). The only way in which consequences might play a limited role in diagnosis is as a measure of clinical significance. Many believe that psychiatric disorders should require the presence of clinically significant impairment or distress, denoting that a syndrome is causing some sort of harm[29,53,54]. One way that such harm can be observed is via substance-related consequences. However, it is important that the widest possible variety of consequences be considered in order to observe harm, rather than having a diagnostic system include some specific consequences and exclude others. Even with this limited use of consequences in a diagnostic system, consequences are not and should not be necessary to establish clinical significance, because impairment and distress can manifest in various other ways.

What are the alternatives to consequence-based symptoms? A prominent international group has taken the radical position that SUDs be defined and diagnosed only by heavy substance use that occurs over time, and not any other symptoms [36, 55–59]. In contrast, we believe that consumption alone cannot capture the essence of addiction. Instead, SUDs should be defined to reflect the core illness dimensions of heavy use [60, 61], compulsive use, the incentive salience of substance use and physiological features. SUD symptoms could include those DSM-5 and ICD-10 criteria that do not directly index consequences. Other potentially useful symptoms could reflect the ADS constructs of preoccupation, narrowing of the drinking repertoire and rapid reinstatement of the syndrome upon cessation of abstinence [15], as well as the development of allostasis [16]. There is also a need to define unrestrained heavy substance use as a type of pathological behavior that occurs among those who do not set any limits on their consumatory behavior.

Substance-related consequences are extremely important, and deserve clinical attention and public health action. They should be classified as conditions that require consultation, but they are not diseases or mental disorders. This distinction is critical for both research and treatment purposes. Consequences are ancillary to addiction, and SUDs should be defined and assessed using core illness dimensions. Adopting this perspective is not easy, as we are much better at asking whether something bad has happened than we are at assessing the adaptation in various brain and mind systems that directly underlies addiction. Measuring core features is a challenge for diagnosis, especially in population-based epidemiology; but if our diagnostic systems move away from consequences, they can better illuminate the central pathology of addiction, and distinguish disorder from its shadow.

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