

Substance dependence and non-dependence in the *Diagnostic and Statistical Manual of Mental Disorders (DSM)* and the *International Classification of Diseases (ICD)*: can an identical conceptualization be achieved?

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ABSTRACT

Background This review summarizes the history of the development of diagnostic constructs that apply to repetitive substance use, and compares and contrasts the nature, psychometric performance and utility of the major diagnoses in the *Diagnostic and Statistical Manual of Mental Disorders (DSM)* and *International Classification of Diseases (ICD)* diagnostic systems. **Methods** The available literature was reviewed with a particular focus on diagnostic concepts that are relevant for clinical and epidemiological practice, and so that research questions could be generated that might inform the development of the next generation of DSM and ICD diagnoses. **Results** The substance dependence syndrome is a psychometrically robust and clinically useful construct, which applies to a range of psychoactive substances. The differences between the DSM fourth edition (DSM-IV) and the ICD tenth edition (ICD-10) versions are minimal and could be resolved. DSM-IV substance abuse performs moderately well but, being defined essentially by social criteria, may be culture-dependent. ICD-10 harmful substance use performs poorly as a diagnostic entity. **Conclusions** There are good prospects for resolving many of the differences between the DSM and ICD systems. A new non-dependence diagnosis is required. There would also be advantages in a subthreshold diagnosis of hazardous or risky substance use being incorporated into the two systems. Biomedical research can be drawn upon to define a psychophysiological 'driving force' which could underpin a broad spectrum of substance use disorders.

Keywords Alcohol abuse, alcohol dependence, classification, diagnosis, drug dependence, substance abuse, substance use disorders.

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INTRODUCTION

This paper has a threefold purpose. The first is to examine the various historical conceptualizations of substance use disorders, in particular as they are represented in the *Diagnostic and Statistical Manual of Mental Disorders (DSM)* and the *International Classification of Diseases (ICD)*. The second is to appraise how the core substance use disorders currently listed in these two systems perform psychometrically and in terms of clinical utility. The third is to explore to what extent the needs of a clinically oriented system such as DSM can be reconciled with the requirements of systems that primarily serve the fields of epidemiology, health service management and morbidity

and mortality analysis, and suggest a research agenda for this purpose.

BACKGROUND

Systems of diagnosis and classification are based optimally upon an understanding of the symptomatology, pathophysiology and natural history of human conditions, which allows us to identify discrete disorders that can be distinguished to a fair degree from others. In the fields of mental health and substance use disorders, our understanding has not advanced to the stage that this can be achieved. In all current diagnostic and classification systems these disorders are defined and delineated on

a phenomenological basis. In the substance use disorders field, there is the additional difficulty that there have been many alternative, indeed competing, schools of thought as to the nature of these conditions.

Before presenting the recent history of diagnostic and classification systems that cover substance use disorders, this paper will briefly summarize the history of the competing conceptualizations. In retrospect, these different philosophies may be seen to contribute a piece of understanding as to the nature of these conditions. However, the interpretation of proponents of a particular tradition is often that it represents the totality of our understanding. This has been a cause of controversy and a significant limitation to a broadly based understanding of substance use disorders, and to the development of a common language for communication. Hence, the history of conceptual developments in this field can be seen as a series of parallel pathways of thought, with little attempt at synthesis until recent years.

DIFFERENT CONCEPTUALIZATIONS

In the 19th century the popular conception of alcoholism was that it represented a failure of morals or character [1]. In early formulations of the DSMs alcoholism and drug addiction were, as will be described below, grouped within the personality disorders. A different tradition saw these problems as reflecting a disease process, which was biologically determined, resulted in the individual having some type of idiosyncratic reaction to alcohol or a drug and had a relatively predictable natural history. This conceptualization influenced and was subsequently embraced by the self-help movements, such as Alcoholics Anonymous. The concept of an underlying disease reached its apotheosis with the work of Jellinek in the 1940s and 1950s, although in his later work he increasingly recognized the role of environmental influences [2].

A third tradition may be described as the epidemiological and public health one. This envisaged alcohol- and drug-related problems occurring fundamentally because of the overall level of use of a psychoactive substance in society, as enunciated by Ledermann [3]. The level of use was, in turn, influenced by cultural traditions, the availability of that particular substance, its ease of manufacture and distribution and its price. Inherent in these conceptualizations was that individual pathology was considered of secondary importance and there was no special phenomenology of pathological substance use. The social constructionist school viewed substance use problems as, essentially, being disaggregated, with no special relationship among them. This school of thought was concerned about the stigma attributable to diagnostic labels and the potential of treatment as a form of social control [4].

The 1970s saw the rise of social cognitive theory [5] as an influential paradigm to explain the development and resolution of alcohol and drug problems. This school of thought taught that the (many) influences that determined any behaviour applied to the uptake of substance use and the development of disordered use. A positive consequence would encourage repeated use, a negative outcome the opposite. Patterns of substance use behaviour could become entrenched in this way but, equally, repetitive substance use could be 'unlearned'. This led to the development of a range of cognitive-behaviour therapies, which included some aimed at moderated or 'controlled' substance use [6,7].

During the 1960s and 1970s, the concept that substance use disorders might represent a disease process was dismissed by many observers. Similarly, the role of genetic predisposition was thought to be inconsequential. Kessel & Walton stated firmly that 'alcoholism is passed on in the same way that money is inherited, not in the way that, say, eye colour is' [8]. This created a huge gulf between many professionally trained therapists (including those from the socio-cognitive school) and those, many of whom were members of the self-help movement, who understood these disorders to be biologically driven.

Perhaps the major recent development in our understanding of the basis of substance use disorders has been the burgeoning of knowledge about neurobiological processes and findings from associated genetic research. Briefly, there is increasing evidence that psychoactive substance use activates mesolimbic dopamine reward pathways, which in turn results in reinforcement of such use [9]. Dopamine release leads to neuronal plasticity that underpins learning and a set of feelings (such as craving) and memories that perpetuate substance use and favour the development of dependence. Thus, dependence may be construed as an 'internal driving force' that results from repeated exposure to a psychoactive substance and which leads in turn to repetitive substance use which is self-perpetuating and typically occurs even in the face of harmful consequences. A recent publication on the neuroscience of addiction by the World Health Organization (WHO) summarizes the key developments in biomedical research over this period [10].

THE DEPENDENCE SYNDROME

The needs of many groups—practitioners, health service administrators and policy makers, for example—were not well served by these competing models of substance use. Could substance use disorders be defined in a practically useful and empirically supported way? A pivotal development was the publication in 1976 of a 'provisional description' of the 'alcohol dependence syndrome'

by Edwards & Gross [11]. This depicted a syndrome in which certain experiences, behaviours and symptoms related to repetitive alcohol use tended to cluster in time and occur repeatedly. Unlike many previous conceptualizations, it was essentially descriptive in nature rather than aetiological. This offered an advantage over previous models, which were based predominantly on particular theoretical concepts or represented the influence of a particular school of thought.

The concept of the dependence syndrome has been adopted successively for most other psychoactive substances that have the potential for reinforcement of use. These include benzodiazepines [12–14], illicit and prescribed opioids [13–15], cannabis [13,16,17], inhalants [18], psychostimulants such as cocaine [13] and the amphetamines and their derivatives [19,20], nicotine [21], caffeine [22] and anabolic steroids [23]. It may also apply to repetitive behaviours that do not involve self-administration of a psychoactive substance. These include pathological gambling, compulsive shopping and compulsive exercise [24].

The dependence syndrome concept has formed the basis of the classification system of psychoactive substance use disorders in the tenth revision of the ICD (ICD-10), published in 1992 [25] and in recent revisions of DSM, namely DSM-III-R [26], published in 1987, and DSM-IV [27], which appeared in 1994.

DEPENDENCE IN CONTEXT

In the work undertaken by a WHO expert group in the late 1970s and early 1980s, the dependence syndrome was complemented by four other conditions that also reflected repetitive substance use [28]. These were termed 'unsanctioned use', 'dysfunctional use', 'hazardous use' and 'harmful use', and may be regarded as forms of

repetitive substance use which do not fulfil the criteria for the dependence syndrome but which nonetheless may result in significant harm to the individual or to society. These terms are defined in Table 1. In summary, unsanctioned use is defined as substance use that does not conform to traditional practices or societal mores. Dysfunctional use is repetitive use that causes social problems. Hazardous use is repetitive substance use that confers the risk of harmful consequences. It has been operationalized for alcohol consumption in several countries, for example in Australia, as the repeated daily consumption of more than 40 g of alcohol for a man or more than 20 g for a woman [29]. However, its operationalization for other substances has lagged behind. Harmful substance use is repeated use that has actually caused adverse physical (medical) and/or mental health consequences.

There was also a set of conditions termed substance-related disabilities or substance-related problems that were conceptualized as the consequences of repetitive substance use. These include substance-induced psychotic disorder, substance-induced amnesic syndrome, substance-induced mood disorders and a raft of physical complications.

THE DSM

The need to respond to major public health problems (largely infectious diseases) in the late 19th century spawned the development in the United States of systems of disease coding and classification. In the mental health field there was an additional requirement, to ensure that patients admitted to institutions were there for legitimate medical reasons and to allow uniform statistics to be collected. In 1917 a standardized nomenclature for mental disorders was developed. It was adopted by the American

Table 1 WHO nomenclature and definitions of repetitive substance use [28].

Unsanctioned use

Use of a substance that is not approved by a society or by a group within that society. The term implies that this disapproval is accepted as a fact in its own right, without the need to determine or justify the basis of the disapproval

Dysfunctional use

Substance use that is leading to impaired psychological or social functioning, for example loss of employment or marital problems

Hazardous use

A pattern of substance use that increases the risk of harmful consequences for the user. Some would limit the consequences to physical and mental health (as in harmful use); some would also include social consequences. In contrast to harmful use, hazardous use refers to patterns of use that are of public health significance despite the absence of any current disorder in the individual user. The term is used currently by WHO but is not a diagnostic term in ICD-10

Harmful use

A pattern of psychoactive substance use that is causing damage to health. The damage may be physical (e.g. hepatitis following injection of drugs) or mental (e.g. depressive episodes secondary to heavy alcohol intake). Harmful use commonly, but not invariably, has adverse social consequences; social consequences in themselves, however, are not sufficient to justify a diagnosis of harmful use. [Harmful use] supplanted 'non-dependent use' as a diagnostic term

Psychiatric Association [30], which also contributed to the development of an International Standardized Nomenclature of Diseases.

The first edition of DSM was published in 1952 [31] and included a standard nomenclature, definitions of terms and a statistical classification. Substance use disorders were grouped under personality disorders, where alcoholism was defined as 'well established addiction to alcohol without recognized underlying disorder'. Drug addiction was not defined specifically but there was a statement that 'Addiction is usually symptomatic of a personality disorder. The proper personality classification is to be made as an additional diagnosis.' Alcohol intoxication was called a 'non-diagnostic term', in the same league as being a boarder in an institution or a malingeringer.

The second edition, published in 1968 [32], still had substance use disorders classified within the personality disorders. There were no specific definitions or criteria and little description of the conditions was provided. For alcoholism there was a statement that 'the best direct evidence for alcoholism is the appearance of withdrawal symptoms'. The diagnosis of drug dependence required 'evidence of habitual use or a clear sense of a need for the drug'.

The third edition, DSM-III [33], represented a major advance. For the first time diagnostic criteria were included, an expanded description of the disorders given and a multi-axial approach to evaluation was employed. This reflected what was considered to be the growing importance of diagnosis in clinical practice and research, and the need for clinicians and researchers to have a common language. Clear definitions of diagnostic terms were provided, and consistency with research findings was considered of paramount importance, together with field-testing of diagnostic concepts and criteria.

Substance use disorders were, for the first time, classified separately. In developing descriptions of the various disorders, the authors of DSM-III adopted a generally atheoretical perspective, believing that basing a system on one conceptual model would impede its use by clinicians of different theoretical orientations. A distinction was made between substance abuse and dependence. Substance abuse had three criteria: a pattern of pathological use, impairment in social or occupational functioning, and duration of one month or more. Dependence for most substances had only one criterion, namely evidence of tolerance or withdrawal. However, the criteria for alcohol and cannabis also had impairment in social or occupational functioning and a pattern of pathological use.

The next revision, DSM-III-R [26], was published in 1987. The central syndrome of dependence was influenced strongly by the Edwards & Gross conceptualization. The definition was broadened considerably, indeed to an extent that it was thought it might incorporate the entire

spectrum of repetitive damaging substance use. Prior to publication, the diagnostic term 'substance abuse' was restored, but it was regarded as a residual diagnosis that would be applied only to individuals who did not fulfil even this broad definition of dependence.

The next edition, DSM-IV [27], refined and to some extent narrowed the definition of the dependence syndrome. This narrowing might have led to dependence being based on physiological criteria, namely a mandatory requirement for tolerance and/or withdrawal symptoms. However, the data analyses did not support restricting dependence to this extent, although there is a fifth-digit specifier that indicates whether or not there are physiological features. The lack of insistence on a physiological component was considered to accommodate more readily dependence syndromes on substances where withdrawal is not prominent or had been difficult to define, such as the hallucinogens, psychostimulants, cannabis and the inhalants. Overall, DSM-IV dependence has proved as least as robust a diagnosis and it captures more people than the corresponding DSM-III version [34].

In DSM-IV, substance abuse is understood as a less severe condition than dependence. The two diagnoses cannot coexist in the same time period, as substance abuse is pre-empted by a diagnosis of dependence. Substance abuse is defined as repeated substance use that leads to one or more social or occupational problems. It is envisaged as one axis of a bi-axial conceptualization of substance use disorders, which separates the inner core syndrome (dependence) from the consequences (abuse). Substance abuse is therefore related orthogonally to dependence, rather than being a *forme fruste* of it. The extent to which the bi-axial relationship applies remains controversial, with some studies finding a one-factor solution that covers the spectrum of abuse and dependence being the optimal one [17,35,36].

THE ICD

The ICD is the principal international coding system of diseases, injuries and causes of death. It is overseen by the WHO, which is mandated to issue periodic revisions. The ICD has its origins in the International List of Causes of Death, which was developed in the mid-19th century. It was extended to cover causes of hospitalization, and then to causes of morbidity in the general population. By the mid-20th century, there were several competing national disease classification systems, and in 1946 WHO was entrusted with preparing a revision that would be suitable for all countries, irrespective of their level of economic development and the nature of their health care system. The 9th and 10th Revisions, published in 1978 [37] and 1992 [25], respectively, represented substantial revisions. The aim of the 10th Revision was to produce a

'stable and flexible' classification system that would serve the needs of morbidity and mortality statistical systems worldwide for 10–20 years. Presently the WHO is mandated to publish the next revision, the 11th, in 2011. Mental health disorders are listed in Chapter V of the ICD, and are allocated codes in the form FXx.x. Substance use disorders are in the second section of Chapter V, and are coded F1x.x. Thus alcohol dependence is F10.2. Fifth-digit codes are used for subtypes of disorder or as course specifiers.

ICD-10, influenced strongly by the work of the WHO Expert Committee, accepted the dependence syndrome as the central diagnosis [25, 38]. It has six criteria compared with DSM-IV's seven, and includes a cognitive item (craving) which does not appear in DSM-IV. While complementary non-dependence conditions were considered for inclusion, only one, 'harmful use', survived to appear in ICD-10. Hazardous use appeared in early drafts of ICD-10 but was omitted from the published version following the results of field trials that revealed an inter-rater reliability (kappa) coefficient of only 0.4 [39]. Because of the difficulty in operationalizing it, the diagnosis was considered to be open to misuse. The decision to omit hazardous substance use was also influenced by doubts as to whether it represented a disease process, in many people's minds a prerequisite for inclusion in a classification system of diseases.

For epidemiological and public health purposes, having a term that defines various levels or patterns of substance use as conferring risk is advantageous. At the same time, to examine relationships between use patterns and consequences without considering whether a diagnosable substance use disorder is present is limiting. The reduction in all-causes mortality among people with moderate levels of alcohol consumption is not seen in those who have had a previous diagnosis of alcohol dependence [40]. In support of including hazardous use in a diagnostic system is the evidence that it can be defined and it responds to therapy, the evidence base for the effectiveness of interventions for hazardous alcohol consumption being particularly strong [41]. Thus, in a comprehensive diagnostic system, there are grounds for having a dependence category, a non-dependence disorder that is of clinical consequence, and a 'subthreshold' disorder that indicates risk to individuals and populations.

EXPERIENCE WITH DSM-IV SUBSTANCE USE DIAGNOSES

The dependence syndrome in DSM-IV (see Table 2) has proved to be a robust and clinically useful construct, applicable to a range of psychoactive substances [13], arising from a distinct set of predisposing factors

[21, 42–44], and having a symptom profile and a natural history that is more severe and progressive than substance abuse and other forms of repetitive substance use [45–47]. Dependence syndromes tend to be chronic disorders with a relatively severe course [46]. A subdiagnosis suggested in DSM-IV, dependence with physiological features, has a worse natural history, being associated with more alcohol (and drug) problems over a 5-year follow-up [48].

Substance abuse is a less severe disorder than substance dependence and is characterized essentially by recurrent use that leads to social problems. Psychometrically, it performs less well than DSM-IV dependence, with kappa reliability coefficients of around 0.6–0.7 [49, 50]. When subjects who fulfil the criteria for dependence are excluded, the diagnosis of alcohol abuse is uncommon in some populations [51], but this may be an artefact of the hierarchical exclusion rules. In some populations it appears to be part of a continuum with dependence [51, 52]. When considered separately, alcohol abuse is a more heterogeneous condition than dependence, at least in young people [53]. It is associated less commonly with mental health disorders, suicidal behaviour, being assaulted, malnutrition or treatment-seeking than dependence [42]. How persistent it is depends partly on the demographics of the population studied. In young people remission is more common than persistence of the diagnosis or progression to dependence [36]. In older age groups it tends to persist, with more than one-third fulfilling the diagnosis at a 5-year follow-up [54]. The extent to which alcohol abuse represents a prodromal phase of alcohol dependence is controversial [55, 56]. In two recent studies 10% or fewer of respondents diagnosed with alcohol abuse had developed alcohol dependence over 3- and 5-year follow-up periods [46, 54]. Substance abuse applied to other drugs is also generally less severe than dependence, but on factor analysis is less clearly distinguished from it [17]. For alcohol and cannabis it may be a prodromal condition, but less so for opiates and cocaine, possibly because dependence on these substances develops more rapidly [57].

A key question is whether dependence accompanied by substance abuse affects different people or has a natural history or treatment response that is different from dependence without abuse. In a recent analysis, the latter was found to be more common in women and in ethnic minorities [58].

A third category, termed 'diagnostic orphans', has been the subject of recent investigations. These are substance users who report some symptoms of DSM-IV dependence but do not meet diagnostic criteria for either dependence or substance abuse. In a sample of young men, 16% were labelled as diagnostic orphans for alcohol use, compared with 15% who were alcohol-dependent,

Table 2 Dependence criteria for ICD-10 and DSM-IV, with corresponding elements from Edwards and Gross' original description of the syndrome, [11] and sample questions from the CIDI 1.1. alcohol and drug sections.

ICD-10 [25] (Flx.2)	DSM-IV [27]	Edwards & Gross [11]	Sample questions
Evidence of tolerance, such that increased doses of the psychoactive substance are required in order to achieve effects originally produced by lower doses	Tolerance, as defined by either of the following: (a) a need for markedly increased amounts of the substance to achieve intoxication or desired effect (b) markedly diminished effect with continued use of the same amount of substance	Increased tolerance to alcohol	Found that you began to need to [use] much more than before to get the same effect? Found that [using] your usual amount began to have less effect on you?
A physiological withdrawal state when substance use has ceased or been reduced, as evidenced by: the characteristic withdrawal syndrome for the substance or use of the same (or a closely related) substance with the intention of relieving or avoiding withdrawal symptoms	Withdrawal, as manifested by either of the following: (a) the characteristic withdrawal syndrome for the substance (b) the same (or a closely related) substance is taken to relieve or avoid withdrawal symptoms	Repeated withdrawal symptoms Relief or avoidance of withdrawal symptoms by further drinking	Did stopping or cutting down on your [use] ever cause you problems such as ... [list withdrawal symptoms]? Ever [used substance] to keep from having problems or to make any of these problems go away?
A strong desire or sense of compulsion to take the substance	No equivalent criterion. Mentioned in text	Subjective awareness of compulsion to drink, incorporating 'loss of control'	Felt such a strong desire or urge to [use substance] that you could not resist it? Wanted to stop or cut down on your [use] but couldn't? More than once try unsuccessfully to stop or cut down on your [use]?
No equivalent criterion, but text states that 'the subjective awareness of compulsion to use drugs is most commonly seen during attempts to stop or control substance use'	There is a persistent desire or unsuccessful efforts to cut down or control substance use		

Table 2 *Cont.*

<i>ICD-10 [25] (Flx.2)</i>	<i>DSM-IV [27]</i>	<i>Edwards & Gross [11]</i>	<i>Sample questions</i>
Difficulties in controlling substance-taking behaviour in terms of its onset, termination or levels of use	The substance is often taken in larger amounts or over a longer period than was intended		Used much more than you expected to when you began, or for a longer period of time than you intended to? Started [using] and found it difficult to stop before you became [intoxicated]?
Progressive neglect of alternative pleasures or interests because of psychoactive substance use	Important social, occupational or recreational activities are given up or substance use reduced because of substance use	Salience of drink-seeking behaviour	[Given up or greatly reduced important activities in order to [use] ... like sports, work or associating with friends and relatives?
Increased amount of time necessary to obtain or take the substance or to recover from its effects	A great deal of time is spent in activities necessary to obtain the substance, use the substance or recover from its effects		A period when you spent a great deal of time [using substance] or getting over the effects of [substance]?
Persisting with substance use despite clear evidence of overtly harmful consequences. Efforts should be made to determine that the user was actually, or could be expected to be, aware of the nature and extent of the harm	The 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 the substance		Has [substance use] ever caused you any physical/psychological problems? If yes, ... Did you continue to [use] after you realized that it caused [state problem]?
No equivalent criterion. Mentioned in text	No equivalent criterion	Narrowing of the drinking repertoire	[Using substance] became so regular that you would not change when you [used] or how much you [used], no matter what you were doing or where you were?
No equivalent criterion. Mentioned in text	No equivalent criterion	Reinstatement after abstinence	

18% who had alcohol abuse and 51% who had no diagnosis [59]. The diagnostic orphans had a natural history that fell between those with a dependence syndrome and those with no alcohol use disorders. They were most similar to those with alcohol abuse [60], although had fewer alcohol-related problems at follow-up [59]. Cannabis users who were diagnostic orphans reported use patterns that were more similar to those who fulfilled the criteria for cannabis abuse [61]. However, they did not have higher rates of illicit drug use or mental health disorders than non-cannabis users.

EXPERIENCE WITH ICD-10 SUBSTANCE USE DIAGNOSES

Although the ICD is the world's primary disease coding system, and large-scale surveys using ICD-10 substance use diagnostic criteria have been undertaken, the number of published studies that report on the validity and usefulness of ICD-10 diagnoses is, to date, much less than for DSM-IV. Given that the ICD-10 definition and criteria for dependence are almost identical to those in DSM-IV (Table 2), it may be assumed that the same comments apply, and indeed it proves to be a psychometrically robust diagnosis [49,62] that defines a relatively severe disorder that is persistent. In a large study that formed part of the WHO–National Institutes of Health Joint Project, Üstün and colleagues found that test–retest reliability of ICD-10 dependence for a variety of psychoactive substances was high (kappa coefficients of 0.7–0.9) [49]. Validity against clinical data was also high.

ICD-10 harmful use, on the other hand, has proved to be much less reliable psychometrically [49,50,62,63]. In the original field trials, the test–retest reliability coefficient was only 0.3–0.4 [39], and in the Joint Project study both reliability and validity were substantially lower than for dependence [49]. Similarly, in a sample of probands and relatives from the Collaborative Study on the Genetics of Alcoholism (COGA), kappa coefficients for harmful use rarely exceeded 0.10 [62]. It also seems to be an uncommon condition: in an analysis of US population data, Grant found negligible rates of harmful alcohol use, excluding those who also fulfilled the criteria for dependence [64]. Concordance with DSM-IV substance abuse is essentially non-existent [65].

SUMMARY OF THE ISSUES

1 The DSM-IV and ICD-10 dependence syndromes hold up well. They are both psychometrically robust, and the differences are minimal. The main conceptual difference is that ICD-10 dependence includes craving, whereas DSM-IV does not. These diagnoses represent the majority of contacts for treatment service providers.

There is a clear distinction between the natural history of substance dependence (whether defined by DSM-IV or ICD-10) and non-dependence. There are clear differences in family history and early childhood experiences between those with a dependence syndrome and those with non-dependent substance use disorders.

- 2 In aggregate, the non-dependence substance use disorders in DSM-IV and ICD-10 represent less severe conditions. Progression to dependence occurs in the minority of cases, the level of substance use is more variable and the condition tends to be intermittent. They are less psychometrically robust conditions than dependence, and indeed it may be argued that the very constructs are unsatisfactory. ICD-10 harmful substance use (where there is no concurrent diagnosis of dependence) performs poorly as a diagnostic entity and is rare both in clinical and general population samples. DSM-IV substance abuse is more satisfactory, at least in North American populations, but has the disadvantage of being defined essentially by social criteria, which are highly culture-dependent.
- 3 There exists a substantial proportion of people in the general community who have some dependence symptoms but who are not captured by either of these diagnoses ('diagnostic orphans').
- 4 There also exists a large section of the general community whose repetitive substance use puts them at risk of harm, be it physical, mental or social. They are not embraced by either diagnostic system.

LOOKING AHEAD

At the time of writing, DSM-V is expected to be published in 2012–14. The WHO is mandated to publish the 11th edition of ICD by 2011. This period provides an opportunity for the two systems to develop in parallel, as was achieved to a great extent for DSM-IV and ICD-10. No other international disease classification and coding systems are contemplated to the best of the author's knowledge, although national and regional systems may emerge.

While the process by which ICD-11 will be developed will become clear shortly, it is useful to examine the comparative needs of a clinically orientated system such as DSM and an international system of morbidity and mortality statistics. This leads naturally to the identification of a research agenda to underpin the development of the two systems.

In summary:

- 1 A simple conceptualization of substance use disorders would be helpful in portraying the nature of these conditions. The concept of an acquired underlying 'driving force' to continued substance use (without the need for external reinforcement) might serve such a role. At the

more severe end of the spectrum, this would be represented by the dependence syndrome.

- 2 The dependence syndrome provides a sufficient foundation for the years ahead. The differences in current DSM and ICD formulations are small and could probably be reconciled. The comparative performance of the respective diagnostic criteria in data sets derived from different populations is a key research question.
- 3 The less severe end of the substance use disorder spectrum would encompass repetitive forms of substance use leading to adverse consequences but where the course is less predictable, and emotional or environmental triggers are important in perpetuating the condition.
- 4 Whatever conceptualization of non-dependent substance use disorders is adopted, there has to be a clear rationale for subdividing it. Whether harmful use and substance abuse can be combined should be subjected to empirical testing. Minimum criteria for non-dependent use need to be established.
- 5 There remains the issue of enhancing the value of the classification systems for epidemiological and public health purposes. Describing repetitive patterns and levels of substance use that confer risk is necessary for epidemiological and public health purposes. A condition termed 'hazardous' or 'risky' use would fulfil these requirements and could be subtyped according to whether it represented periodic intoxication, exposure to continual high levels of psychoactive substance, or other patterns. The psychometric performance of hazardous substance use and its various subtypes is a key part of the research agenda. Whether hazardous use should be included in a clinically orientated diagnostic system such as DSM will need to be debated.
- 6 Examining to what extent concepts used to describe substance use disorders apply to other repetitive behaviours will form an additional challenge. Candidate conditions include pathological gambling, internet addiction, compulsive shopping and potentially certain eating disorders.
- 7 Although not the focus of the present paper, it will be important to delineate addictive disorders from those disorders characterized by repetitive behaviours but with ego-dystonic thoughts.
- 8 Within the realm of dependence, there is a particular need for:
 - Defining the role of family history and genetic factors in the delineation of subtypes of the dependence syndrome.
 - Defining whether there are sufficient commonalities in the psychophysiological mechanisms of the dependence syndrome that such criteria could form part of the diagnostic criteria for dependence.

- Defining whether subtypes based on other than family history and genetic factors can be identified and whether they are sufficiently useful for understanding the natural history of different types of dependence and their response to intervention.

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