THE CRAVING WITHDRAWAL MODEL FOR ALCOHOLISM: TOWARDS THE DSM-V.
IMPROVING THE DISCRIMINANT VALIDITY OF ALCOHOL USE DISORDER DIAGNOSIS

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Abstract — Aims: To compare the discriminant validity of the DSM-IV and the ICD-10 classification of alcohol use disorders (AUD) with an alternative classification, the craving withdrawal model (CWM). CWM requires craving and withdrawal for the diagnosis of alcohol dependence and raises the alcohol abuse threshold to two DSM-IV AUD criteria. Methods: Data were derived from The Netherlands Mental Health Survey and Incidence Study, a large representative sample of the general Dutch population. In the present study, only non-abstinent subjects were included (n = 6041). Three diagnostic systems (DSM-IV, ICD-10, and CWM) were compared using the following discriminant variables: alcohol intake, psychiatric comorbidity, functional status, familial alcohol problems, and treatment sought. Results: The year prevalence of CWM alcohol dependence was lower than the prevalence of ICD-10 and DSM-IV dependence (0.3% vs 1.4% and 1.4%). The year prevalence of abuse was similar for CWM and DSM-IV (4.7 and 4.9%), but lower for ICD-10 harmful use (1.7%). DSM-IV resulted in a poor distinction between normality and abuse and ICD-10 resulted in a poor distinction between harmful use and dependence. In contrast, the CWM distinctions between normality and abuse, and between abuse and dependence were significant for most of the discriminant variables. Conclusion: This study indicates that CWM improves the discriminant validity of AUD diagnoses. The predictive validity of the CWM for alcohol and other substance use disorders remain to be studied.

INTRODUCTION

Although the reliability and validity of the criteria of DSM-IV alcohol dependence have been demonstrated beyond reasonable doubt (Bucholz et al., 1995; Langenbucher et al., 1995; Rounsaville, 2002; Schuckit et al., 2002; Hasin et al., 2003), the DSM-IV conceptualization of alcohol abuse and dependence has several theoretical and empirical drawbacks. The main problems concern the validity of the abuse diagnosis and the absence of craving in the criteria of DSM-IV alcohol dependence.

In DSM-IV, abuse is a heterogeneous one-symptom disorder the validity of which is often criticized (Vinglis, 1989; Martin et al., 1996; Hasin et al., 1999, 2003; Rounsaville, 2002). It is based predominantly on the occurrence of substance-related adverse social consequences in order to separate it conceptually from dependence (Helzer, 1994). However, various authors hold that DSM-IV abuse reflects unwise or norm-breaking behaviour rather than a psychiatric disorder (Hasin, 1999; Rounsaville, 2002). Another argument against DSM-IV abuse is that it is the only mental disorder not widely associated with other psychiatric disorders or functional disabilities (Merikangas et al., 1998; Ravelli et al., 1998; Bijl and Ravelli, 2000; Graaf de et al., 2003). The ICD-10 harmful use diagnosis is different from DSM-IV abuse. It is also based on only one criterion, but this criterion is more robust and involves medical or psychological damage instead of a social problem (see Fig. 1).

Neurobiological research of alcoholism focuses on craving and withdrawal (Monti et al., 2000; Goldstein and Volkow, 2002; Koob, 2003). In DSM-IV, craving is not a criterion of the alcohol use disorders (AUD) diagnoses at all. The reasons probably are a lack of consensus about the definition of craving, inconclusive research on craving as a predictor of relapse, and inconclusive research on the association of craving with the severity of alcoholism (Van de Brink, 1997; McKay, 1999; Mezinskis et al., 2001). Withdrawal, when defined clearly, is associated with more severe forms and later stages of alcohol dependence (Bucholz et al., 1996; Schuckit et al., 1998, 2003; Hasin et al., 2000; O’Neill and Sher, 2000; Lejoyeux et al., 2001). In DSM-IV it is a dependence criterion but, contrary to DSM-III, the diagnosis can be made without its presence.

In this article we propose an alternative AUD classification, which was designed to overcome these problems, the craving withdrawal model (CWM). CWM was based on the ideas of Langenbucher et al., who proposed to use withdrawal as necessary and sufficient to diagnose alcohol dependence and to increase the threshold for diagnosing abuse (Langenbcher et al., 2000). The two validation studies of the Langenbucher model have produced promising results (Langenbcher et al., 2000; Alterman et al., 2002). However, the Langenbcher model still leaves two problems unresolved; dependence is a one-symptom diagnosis and craving is not considered in the alcoholism diagnosis.

In view of the concerns mentioned above, we suggest that the Langenbcher’s model be changed to the CWM. This latter model requires both craving and withdrawal for the diagnosis of alcohol dependence. Unlike many of the other alcohol problems, craving is not behaviourally based. It is often defined as an urge and an intention of behaviour (e.g. Anton, 1999). We use the ICD-10 criterion ‘strong desire or compulsion to drink alcohol’ as an approximation for craving, since the strong desire to drink alcohol and the obsessive-compulsive aspect are usually both considered important aspects of craving (Anton, 1999; Verheul et al., 1999). To
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<th>DSM-IV</th>
<th>ICD-10</th>
<th>CWM</th>
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**Dependence:**
*Three or more of the following seven criteria:*
1. tolerance
2. withdrawal:
   - a. characteristic withdrawal syndrome
   - or
   - b. drinking to relieve or avoid withdrawal
3. more / longer than intended
4. persistent desire / unsuccessful efforts to cut down
5. much time spent obtaining, using or recovering
6. important activities are given up or reduced
7. continuing despite physical or psychological harm

**Abuse:**
*One or more of the following four criteria:*
1. failure to fulfil major role obligations
2. recurrent use in hazardous situations
3. recurrent legal problems
4. continuing despite social or interpersonal harm

**Dependency:**
*Three or more of the following six criteria:*
1. tolerance
2. withdrawal:
   - a. characteristic withdrawal syndrome
   - or
   - b. drinking to relieve or avoid withdrawal
3. difficulties in controlling onset, termination or levels of use (DSM-IV 3+4)
4. neglect of alternative interests, increased time to obtain, use or recover (DSM-IV 5+6)
5. continuing physical or psychological harm
6. craving

**Harmful use:**
Alcohol use that has caused actual damage to the mental or physical health

**Abuse:**
*Two or more of the following ten criteria:*
1. tolerance
2. more / longer than intended
3. persistent desire / unsuccessful efforts to cut down
4. much time spent obtaining, using or recovering
5. important activities are given up or reduced
6. continuing physical or psychological harm
7. failure to fulfil major role obligations
8. recurrent use in hazardous situations
9. recurrent legal problems
10. continuing despite social or interpersonal harm

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Fig. 1. Alcohol use disorders according to DSM-IV, ICD-10, and CWM. Diagnoses in our analyses are based on the past 12 months.
strenthen the withdrawal concept, we required the presence of tremor, as in the DSM-III-R definition, because it is the most robust clinical and prognostic feature of withdrawal (Sellers et al., 1991; Hasin et al., 2000). For abuse diagnosis, we adopted the definition of Langenbucher: any two of the other DSM IV (abuse and dependence) symptoms (see Fig. 1 for comparison with DSM-IV and ICD-10 diagnoses). We have described our arguments for designing CWM more extensively in a previous study on CWM, in which we compared the discriminant validity of CWM with DSM-IV in male populations of treatment-seeking alcoholics, non-treatment-seeking heavy drinkers, and psychiatric patients (de Bruijn et al., 2004). CWM resulted in a better distinction between no diagnosis and abuse, and between abuse and dependence, while the total prevalence of AUD did not differ from DSM-IV.

This study aims to further validate CWM by comparing it with DSM-IV and ICD-10 in a large general Dutch population sample. The main discriminant validators are: alcohol intake, psychiatric comorbidity, functional status, familial alcohol problems, and seeking treatment.

METHOD

Subjects

The data were derived from The Netherlands Mental Health Survey and Incidence Study (NEMESIS). NEMESIS is a prospective study collecting data in three waves (1996, 1997, and 1999) from a national, multistage random sample (age 18–64) in The Netherlands. The analyses presented here are based on data from the first wave. A total of 7076 people were interviewed, the response rate was 69.7%. The respondents adequately reflected the Dutch population. For more detailed information on NEMESIS, see the earlier report (Bijl et al., 1998). Since the Composite International Diagnostic Interview (CIDI) section on AUD was only fully administered in subjects who drank ≥12 alcoholic units within one year at any time, the current study was restricted to the 6041 subjects (85.4%) who met this criterion.

Instruments

Diagnostic criteria. The CIDI 1.1 was used to assess criteria of alcohol use, mood, and anxiety disorders in the past 12 months. The CIDI 1.1 is a reliable, validated, fully structured diagnostic interview, enabling us to make diagnoses according to ICD-10 and DSM-III-R criteria (Cottler et al., 1991). The interviewers had been given a four day training course at the WHO-CIDI training centre of the Academic Medical Centre in Amsterdam. Based on the CIDI 1.1, ICD-10, DSM-III-R, DSM-IV, and CWM AUD diagnoses were made over the past 12 months. CIDI 1.1 was not designed to yield DSM-IV or CWM diagnoses. However, since DSM-IV uses the same AUD symptoms as DSM-III-R, we could make DSM-IV diagnoses based on the CIDI answers. In DSM-III-R a dependence diagnosis is based on three out of nine criteria. In DSM-IV, the two withdrawal criteria are merged, and the role obligation criterion is considered an abuse criterion, leaving seven dependence criteria (see Fig. 1). ICD-10 mostly uses the same dependence criteria, but the DSM-IV items concerning loss of control (DSM-IV dependence criteria 3 and 4) and the DSM-IV items regarding neglect of other interests and much time spent (DSM-IV criteria 5 and 6) are merged (see Fig. 1). Furthermore, in ICD-10 craving is a separate dependence criterion.

CWM dependence was diagnosed if craving and withdrawal (requiring tremor) were both present. CWM abuse was diagnosed if subjects met at least two of the other DSM-IV (abuse and dependence) criteria, without meeting the criteria for CWM dependence (see Fig. 1). For all diagnostic systems, a subject was only diagnosed as having either abuse or dependence when the subject met the full criteria. The subjects who had a past diagnosis and were partially remitted did not get a diagnosis. Subjects with a past dependence diagnosis, who met past year criteria for abuse only, were diagnosed as having abuse.

If statements are made about several of the diagnostic systems below, ICD-10 harmful use is considered an abuse category and is not always mentioned separately.

Discriminant variables. The following variables were selected to test the discriminant validity of CWM vs DSM-IV and ICD-10:

(i) Demographic variables e.g. employment status and being in a relationship.
(ii) Alcohol intake was assessed using the CIDI questions on drinking frequency and average number of drinks on a drinking day. From these answers, mean weekly alcohol drinking was calculated using the number of standard drinks or alcoholic units (AU). In The Netherlands a standard drink contains ~10 g of ethanol.
(iii) Comorbidity: The presence of mood and anxiety disorders according to DSM-III-R in the past 12 months was based on the CIDI.
(iv) Bed rest and absence from work: Respondents were asked how many days they had to stay in bed for at least 4 h between 10 AM and 4 PM owing to psychological or alcohol problems and how many days they were absent from work owing to psychological or alcohol problems in the past 12 months. The latter item was analysed for employed subjects only.
(v) Functional status was assessed using the Short Form Health Survey (SF-36). SF-36 is a well-validated self-report survey on physical and mental functioning (Chern et al., 2000). It has been translated and validated for Dutch-speaking residents of the Netherlands (Aaronson et al., 1998).
(vi) Familial alcohol problems and seeking treatment were assessed by asking respondents whether their biological parents or siblings had alcohol problems. Respondents were also asked whether they had sought treatment for addiction in the past 12 months.

Data analyses

Each respondent was diagnosed according to the CWM, DSM-III-R, DSM-IV, and ICD-10 criteria. Kappa coefficients were used to measure the agreement between the diagnostic systems.

For all diagnostic systems, the discriminant validity was established by comparing the mean scores of the discriminant validators for the groups with no diagnosis, abuse, and dependence. Continuous variables were compared using
ANOVA, in which age and gender were included as covariates. Because of the group size and variance differences, Kruskal–Wallis was subsequently performed if ANOVA showed a significant difference between the groups. Post hoc comparisons for continuous variables were performed using Mann–Whitney U. In situations where mood or anxiety disorders could act as confounders, this assumption was tested and the results were corrected using ANCOVA, in which age and gender were also included as covariates. Proportions were compared using a Chi-square test. If differences among the three groups were significant, post hoc comparisons were made between the no diagnosis group and the abuse group, and between the abuse group and the dependence group. In case of numbers <5, Fisher’s exact test was used.

Owing to the large number of comparisons \((k = 20)\), Bonferroni’s correction was applied and the two-sided significance level was set at \(P = 0.0025\). All statistical analyses were performed with Statistics Package for Social Sciences (SPSS for Windows, 12.0, 2003).

**RESULTS**

The 6041 subjects had a mean age of 41.2 (SD = 12.0), 51.3% of the subjects were male, 64.9% were employed. The mean alcohol use of the total sample was 9.5 AU/week (SD = 13.9), the mean number of drinking days per week was 2.9 (SD = 2.6).

**Concordance of the CWM and DSM-III-R, DSM-IV and ICD-10 diagnoses**

The agreement between DSM-IV and DSM-III-R was very high (kappa 0.9, Table 1). In the remainder of the manuscript, the results for DSM-III-R are not reported separately. Kappa between DSM-IV and CWM was 0.6; ICD-10 had a low agreement with DSM-IV and CWM (kappa 0.3), owing to the low agreement between the harmful use/abuse categories.

Table 1 also shows that CWM resulted in a lower year prevalence for dependence than the other diagnostic categories. The year prevalence of abuse was similar for CWM and DSM-IV, but lower for ICD-10 harmful use.

Of the 299 DSM-IV abuse subjects, 273 (91.3%) had this diagnosis based on only one abuse symptom, 202 of them (74.0%) had their diagnosis based on the item ‘drinking in situations in which it is hazardous’.

**Discriminant validity**

**Demographic variables.** There was no significant difference in employment status between the diagnostic categories. For CWM and ICD-10 abuse subjects were more often single than those with no diagnosis. The difference between dependence and abuse subjects was significant for CWM and DSM-IV (Table 2).

**Alcohol intake.** The difference in mean AU per week was significant between no diagnosis and abuse subjects, and between abuse and dependence subjects for all diagnostic systems. The same was true of drinking frequency, with the exception of the difference between ICD-10 harmful use and no diagnosis subjects (Table 3).

**Comorbidity.** CWM subjects with abuse more often had mood disorders than those with no diagnosis. The difference in mood disorder occurrence between dependence and abuse subjects was significant for CWM and DSM-IV. For anxiety disorders, the only significant differences were between abuse and dependence subjects according to CWM and DSM-IV (Table 4).

**Bed rest and absence from work.** All diagnostic systems showed a difference between no diagnosis and abuse subjects on the item days of bed rest owing to psychological or alcohol problems. Between dependence and abuse subjects, this difference was only significant for DSM-IV. After correction
Table 2. Demographic variables for diagnostic categories according to CWM, DSM-IV, and ICD-10 for 6041 subjects

<table>
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<th>CWM</th>
<th>DSM-IV</th>
<th>ICD-10</th>
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<tbody>
<tr>
<td></td>
<td>ND (n = 5738)</td>
<td>AA (n = 283)</td>
<td>AD (n = 20)</td>
</tr>
<tr>
<td>Employed</td>
<td>3740 (65.2)</td>
<td>172 (60.8)</td>
<td>10 (50.0)</td>
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<tr>
<td>Single</td>
<td>1060 (18.5)</td>
<td>86 (30.4)</td>
<td>14 (70.0)</td>
</tr>
</tbody>
</table>

ND, no diagnosis; AA, alcohol abuse; HU, harmful use; AD, alcohol dependence. Numbers displayed are number of subjects; numbers within brackets are percentages.

Table 3. Drinking behaviour for diagnostic categories according to CWM, DSM-IV, and ICD-10 for 6041 subjects

<table>
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<tr>
<th></th>
<th>CWM</th>
<th>DSM-IV</th>
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<tr>
<td></td>
<td>ND (n = 5738)</td>
<td>AA (n = 283)</td>
<td>AD (n = 20)</td>
</tr>
<tr>
<td>AU/week</td>
<td>8.4 (10.9)</td>
<td>26.5 (22.1)</td>
<td>93.7 (79.6)</td>
</tr>
<tr>
<td>Frequency</td>
<td>2.8 (2.6)</td>
<td>4.3 (2.5)</td>
<td>6.3 (1.8)</td>
</tr>
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</table>

ND, no diagnosis; AA, alcohol abuse; HU, harmful use; AD, alcohol dependence; AU/week, number of alcoholic units per week; frequency, number of drinking days per week. Numbers displayed are means; numbers within brackets are standard deviations.

Table 4. Comorbid mood and anxiety disorders for diagnostic categories according to CWM, DSM-IV, and ICD-10 for 6041 subjects

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<th>CWM</th>
<th>DSM-IV</th>
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<tbody>
<tr>
<td></td>
<td>ND (n = 5738)</td>
<td>AA (n = 283)</td>
<td>AD (n = 20)</td>
</tr>
<tr>
<td>Mood</td>
<td>406 (7.1)</td>
<td>42 (14.8)</td>
<td>9 (45.0)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>674 (11.7)</td>
<td>43 (15.2)</td>
<td>14 (70.0)</td>
</tr>
</tbody>
</table>

ND, no diagnosis; AA, alcohol abuse; HU, harmful use; AD, alcohol dependence. Numbers displayed are number of subjects; numbers within brackets are percentages. Mood, any mood disorder in the last 12 months; Anxiety, any anxiety disorder in the last 12 months.

Functional status. Table 6 shows the outcome on five of the eight items of the SF-36. The items physical functioning, role physical, and bodily pain did not differ significantly between the diagnostic groups (results not shown). CWM resulted in numerous significant differences between no diagnosis and abuse subjects and between abuse and dependence subjects. DSM-IV resulted in a similarly large number of significant differences between dependence and abuse subjects, but showed no significant differences between abuse and no...
Missed work

and dependence subjects. After correction for the influence of
subjects, but no significant differences between harmful use
diagnosis subjects. In contrast, ICD-10 resulted in many
missing values.

Table 6. Functional status for diagnostic categories according to CWM, DSM-IV, and ICD-10 for 6041 subjects

ND, no diagnosis; AA, alcohol abuse; HU, harmful use; AD, alcohol dependence. Numbers displayed are means; numbers within brackets are standard deviations. Bed rest, number of days of bed rest owing to psychological or alcohol problems in the last 12 months; Missed work, number of days not being able to work owing to psychological or alcohol problems in the last 12 months; ND-AA-AD corr, corrected for the influence of anxiety and mood disorders.
aKruskal Wallis.
bMann–Whitney U.
cANCOVA.
dNine missing values.
eOnly employed subjects (n = 3917) considered.
P < 0.0025.

Table 7. Days of bed rest and days missed at work owing to psychological or alcohol problems for diagnostic categories according CWM, DSM-IV, and ICD-10 for 6041 subjects

ND, no diagnosis; AA, alcohol abuse; HU, harmful use; AD, alcohol dependence; SF, social functioning; MH, mental health; RE, role emotional; VT, vitality; GH, general health. Numbers displayed are means; numbers within brackets are standard deviations. ND-AA-AD corr, corrected for the influence of anxiety and mood disorders.
aKruskal Wallis.
bMann–Whitney U.
cANCOVA.
dFive missing values.
eEight missing values.
fNine missing values.
g14 missing values.
P < 0.0025.
Table 7. Familial alcohol problems and help-seeking behaviour for diagnostic categories according to CWM, DSM IIIR, DSM IV, and ICD 10 for 6041 subjects (male: 3102 and female: 2939)

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<tr>
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<th>CWM</th>
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<th>DSIV</th>
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<th>ICD 10</th>
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<tr>
<td></td>
<td>ND  n = 5738</td>
<td>AA  n = 283</td>
<td>AD  n = 20</td>
<td>ND  n = 5659</td>
<td>AA  n = 299</td>
<td>AD  n = 83</td>
<td>ND  n = 5856</td>
<td>HU  n = 101</td>
<td>AD  n = 84</td>
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<tr>
<td>Parent</td>
<td>445 (7.8)</td>
<td>43 (15.2)</td>
<td>2 (10.5)</td>
<td>445 (7.9)</td>
<td>28 (9.4)</td>
<td>17 (20.7)</td>
<td>455 (7.8)</td>
<td>16 (15.8)</td>
<td>19 (22.9)</td>
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<tr>
<td></td>
<td>P &lt; 0.001*</td>
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<td>P &lt; 0.001*</td>
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<td>P &lt; 0.001*</td>
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<tr>
<td>Sibling</td>
<td>287 (5.3)</td>
<td>27 (10.0)</td>
<td>4 (22.2)</td>
<td>284 (5.3)</td>
<td>15 (5.3)</td>
<td>19 (24.4)</td>
<td>288 (5.2)</td>
<td>12 (12.4)</td>
<td>18 (22.2)</td>
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<tr>
<td></td>
<td>P &lt; 0.001*</td>
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<tr>
<td>Treatment</td>
<td>9 (0.2)</td>
<td>4 (1.4)</td>
<td>5 (25.0)</td>
<td>10 (0.2)</td>
<td>2 (0.7)</td>
<td>6 (7.2)</td>
<td>7 (0.1)</td>
<td>5 (5.0)</td>
<td>6 (7.1)</td>
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<tr>
<td></td>
<td>P &lt; 0.001*</td>
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<td>P &lt; 0.001*</td>
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<td>P &lt; 0.001*</td>
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ND, no diagnosis; AA, alcohol abuse; HU, harmful use; AD, alcohol dependence. Parent, at least one parent with alcohol problems. Sibling, at least one sibling with alcohol problems. Treatment, seeking treatment for addiction in the last 12 months. Numbers between brackets are percentages.

*Chi-square test for any differences between all three diagnostic categories.

*bChi-square test for differences between no diagnosis and abuse, or between abuse and dependence.

cIn case of numbers <5, Fisher’s exact test was used instead of Pearson Chi-square.

dChi-square test for any differences between all three diagnostic categories.

e287 missing values.

DISCUSSION

The present study corroborates our earlier results, showing an increase in the discriminant validity of CWM over DSM-IV in separating abuse from subjects with no alcoholism diagnosis. ICD-10 showed a clear difference between harmful use and subjects with no diagnosis, but the demarcation between harmful use and dependence subjects was very poor. In contrast, CWM showed a good separation between harmful use and subjects with no diagnosis. However, on their demographic variables, some SF-36 items, the family history and the help-seeking behaviour, scored more similar to the group without a diagnosis.

**DSM-IV abuse**

The only significant differences between DSM-IV abuse and no diagnosis were the drinking behaviour and the days of bed rest owing to alcohol or psychological problems. Even on items regarding possible social consequences (employment status, being in a relationship, absence from work, and the SF-36 item social functioning), DSM-IV abuse did not differ from...
the group with no diagnosis. This is not surprising since the diagnosis of most of these subjects was solely based on the item ‘drinking in situations in which it is hazardous’. These findings replicate the research on the poor validity of the DSM-IV abuse diagnosis (Hasin et al., 1999; Martin et al., 1996; Rounsaville, 2002).

ICD-10 harmful use

We found that ICD-10 harmful use exhibited a better discrimination from subjects with no diagnosis than DSM-IV abuse, but the harmful use group hardly differed from the dependence group.

A large proportion of the group with ICD-10 harmful use had no CWM diagnosis \((n = 70)\). These subjects were comparable in terms of drinking behaviour with the total group of subjects with no diagnosis according to CWM and ICD-10. They scored similar to CWM abuse on comorbidity, functional status, familial alcohol problems, and seeking help. One plausible explanation for these findings is that these subjects reduced their drinking in an effort to deal with the psychological or physical harm they experienced (ICD-10 harmful use criterion). If these subjects succeeded in reducing their drinking and did not meet other criteria, they had no alcoholism diagnosis according to DSM-IV or CWM. They may still experience disabilities owing to psychological or physical harm because these problems do not always disappear immediately after they reduce their alcohol intake.

Risks of CWM

The finding that CWM has theoretical and empirical advantages over DSM-IV and ICD-10 is relevant to the development of DSM-V. However, there are also some possible drawbacks to CWM. Contrary to our earlier findings, in this general population sample, CWM resulted in a lower overall prevalence of AUD compared with DSM-IV. The abuse group was of approximately the same size for CWM and DSM-IV, but the CWM dependence group was considerably smaller. The lower prevalence of CWM has the risk of leaving subjects with an alcohol problem without a diagnosis, thereby withholding them adequate treatment. The scores on the discordant cases, who did have a diagnosis according to either DSM-IV or ICD-10 but not according to CWM, mostly justified the diagnostic status according to CWM.

The craving item deserves further attention. Craving is a multidimensional concept that can be approached from different theoretical viewpoints. The subjective experience of craving and the objective signs are not strongly correlated (van den Brink, 1997). Therefore, it is questionable whether this item is the optimal criterion for linking up with neurobiological research.

Limitations to the study design

There are limitations to our study design. First, it is necessary to be cautious about interpreting CIDI items as DSM and ICD-10 criteria. Other interviews might yield different results. However, the risk seems to be fairly small since CIDI has been well validated against other structured interviews. Although for other psychiatric disorders, CIDI can be overly inclusive, this is not the case for AUD (Compton et al., 1996; Cottler et al., 1997; Pull et al., 1997; Ustun et al., 1997; Rounsaville 2002).

Second, our investigation was limited to those subjects meeting criteria in the last 12 months. The performance of CWM vs the other classification systems from a lifetime perspective is a topic that requires further examination, especially regarding the item of family history and on other items that we did not consider in the present analyses, like childhood trauma.

Furthermore, we did not consider biological markers. However, we did consider biochemical markers (CDT, MCV, and GGT) in our earlier study on CWM and found that the difference between the diagnostic categories was often far more significant for CWM than for DSM-IV (de Bruijn et al., 2004).

Further research

One of our intentions was to reduce the gap between neurobiological research and clinical addiction diagnoses. However, since some addictive substances do not have a clearly described physical withdrawal syndrome (e.g. cocaine and cannabis), this model might not be applicable to all addictions. This is why CWM should be studied with other substances, taking into account both physical and psychological signs and symptoms of withdrawal. Furthermore, the predictive validity remains to be studied. One could also hypothesize about differential treatment responses and neurobiological findings in these groups because of the emphasis on craving and withdrawal in CWM dependence. Research on these questions is necessary to further validate our diagnostic model.

DSM-V

Despite these limitations, this is the second study indicating that, by focusing more on craving and withdrawal in the alcohol dependence diagnosis and increasing the threshold for abuse to two AUD symptoms, CWM improves the discriminant validity of the AUD diagnoses. We hope these findings will be useful in the developmental process towards DSM-V.

REFERENCES


