IMPACT OF CRAVING ON ALCOHOL RELAPSE DURING, AND 12 MONTHS FOLLOWING, OUTPATIENT TREATMENT

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INTRODUCTION

The effectiveness of treatment approaches for alcohol use disorders has clearly been demonstrated in the past decades but relapse after treatment is still common (Miller et al., 2003). Current research focuses on a better understanding of the nature of relapse in order to improve treatment of alcohol-dependent patients.

Relapse is a multi-factored phenomenon and most likely to result from a combination of various factors. Variables involved in relapse include the individual characteristics of the patient, the drug and environmental reinforcers (Miller and Hester, 1995). One feature noted before relapse in some abstinent patients is craving or urge for alcohol. This urge may contribute to the risk of relapse. Higher levels of craving assessed in role play and cue reactivity are known as a risk factor for a worse outcome in alcoholism (Monti et al., 1990; Miller et al., 1996; Cooney et al., 1997). O’Connor et al. (1991) have reported a higher dropout rate during alcohol withdrawal among outpatient patients with an increased craving. Underlying phenomena associated with craving are the subject of research. Behavioral models attempt to explain the nature of craving although no single model accounts for all aspects of craving. The reinforcement model postulates that alcohol can improve mood or reduces unpleasant mental states such as anger, frustration or stress. In alcoholics an unconscious learning process (reinforcement) can lead to alcohol drinking in order to re-experience the positive mental state (Singleton and Gorelick, 1998). According to the cognitive processing model, alcohol use becomes a habit that requires little conscious effort or attention. Craving represents the effort involved in mobilizing conscious problem-solving skills needed to block the automatic drinking behaviour (Tiffany, 1999).

Modell et al. (1992a) suggested that some aspects of alcohol craving (obsessive, recurrent and persistent thoughts about alcohol and compulsive drive to consume alcohol) have a phenomenological overlap with the obsessive-compulsive syndrome. Modell et al. (1992b) modified the Yale–Brown Obsessive Compulsive Scale (Goodmann et al., 1989) for use in alcohol-dependent patients. On this basis Anton et al. (1995) developed the Obsessive Compulsive Drinking Scale (OCDS) as a self-rating instrument for quantifying cognitive aspects of alcohol craving with a good reliability, consistency and validity. Anton et al. (1995) differentiated in a dichotomous model between the obsessive and the compulsive subscale. They found that the OCDS score was predictive of future total alcohol consumption during a treatment period of 12 weeks if obtained during a period of relative abstinence (Anton et al., 1996).

More recently Kranzler et al. (1999) evaluated the factor structure of the OCDS in 127 outpatient alcohol-dependent patients residing in a 12-week outpatient facility, and its predictive validity for drinking outcome 3 months later. Principal components analysis indicated three factors best describing its structure: obsessions, drinking control and consequences, and alcohol consumption. Kranzler et al. (1999) did not find a significant correlation between OCDS scores at the end of treatment and future drinking status when assessed over a 3 month follow-up period. Likewise, Roberts et al. (1991) ascertained the factor structure underlying responses to the OCDS and assessed whether subscale scores were distinctive, internally consistent and predictive of future drinking. Alcohol-dependent patients residing in a 12-week outpatient treatment were assessed and OCDS data were collected at up to 15 assessment points during the study. The authors suggested three primary factors and each of the OCDS

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subsidiary scores predicted the hazard for heavy relapse in the following week of treatment.

The aim of this study is to evaluate the relationship between craving and relapse during, and 12 months after, completion of an intensive outpatient treatment. In this study we assessed subjective craving during abstinence. We decided to use the OCDS for the measurement of a dimension of alcohol dependence that might be best described as the cognitive correlate of craving as suggested by Anton et al. (1996). To our knowledge there are no studies investigating the role of craving measured by the OCDS in relapse among abstinent alcoholics treated in an outpatient facility for a follow-up period of more than 3 months. As Kranzler et al. (1999) were the first to evaluate the relation between OCDS scores at the end of an outpatient treatment and drinking status at a post-treatment follow-up visit we decided to use this factor structure in order to compare our results with their results. Our primary hypothesis is that patients with higher craving scores measured by the OCDS at the beginning of the treatment (using the total OCDS score and the three-factor model by Kranzler et al., 1999) would relapse more often during treatment. Secondly we assume that higher OCDS scores at the end of treatment would predict heavy relapse 12 months after completion of the treatment.

METHODS

Study design

During 12 months, 103 consecutively recruited alcohol-dependent patients were included in a prospective study into the efficacy of an outpatient treatment programme. The outpatient facility offers a high-structured, intensive two-phase treatment model. An initial 12-week motivational phase is followed by the 6–9-month rehabilitation phase.

The therapeutic concept of the rehabilitation phase is an integrative, eclectic one and includes different psychotherapeutic methods and approaches. The therapy programme comprises 80–120 therapy sessions, mostly group therapy, but also individual therapy, including behavioral/cognitive, psychodynamic and systemic oriented therapy sessions. Basic elements are depth psychology, behavioral/cognitive therapy and therapeutic conversation according to Rogers. During the 6–9 (average 8) month rehabilitation phase the patient is seen 2–3 times/week, which includes behavioral oriented therapy groups (100 min), an alternate ‘theme centered group’ (cognitive therapy, 100 min) and a ‘problem oriented group’ (psychodynamic oriented, 100 min), plus individual therapy and up to 12 family therapy sessions are offered. During the entire treatment, abstinence is checked by repeated breath analyzer tests as well as blood laboratory tests.

Patients included in the study fulfilled the ICD-10 criteria for alcohol dependence and gave their written informed consent to participate in the study. Exclusion criteria were comorbid drug dependence (except for nicotine and benzodiazepines), severe organic, psychiatric and mental disorders (e.g. decompensated liver cirrhosis, acute psychosis, suicidal tendencies, Korsakoff syndrome). Patients neither received any psychopharmacologic treatment nor disulfiram or anti-craving medication like acamprosate. All patients were Caucasian and had good knowledge of the German language.

One male patient died 2 months after initiation of therapy (not alcohol related) and was excluded from statistical analyses, and 74 patients (72%) terminated the outpatient treatment completely. Of the 28 patients (28%) who only continued irregular attendance, 18 (18%) dropped out due to relapse, and 10 patients (10%) due to familial or professional reasons.

Assessment of patients

The assessment of sociodemographic and alcohol-related data followed the guidelines of the German Society for Addiction Research and Therapy (Deutsche Gesellschaft für Suchtforschung und Suchttherapie, 1992) and using the EuropASI (McLellan et al., 1992; for German version see Gsellhofer et al., 1999). In addition, the patients completed the OCDS (Anton et al., 1995; for German version see Mann and Ackermann, 2000). The intention of the present study was to investigate the relation of relapse and craving measured by the OCDS. Thus, the assessment of the association of craving and relapse during the outpatient treatment phase required administration of OCDS at the beginning of the treatment (pre-test) and the OCDS was administered again at the end of the treatment phase (post-test). Only patients who completed the treatment programme were included in the analysis of the latter to avoid measuring craving in patients in relapse. None of the patients was in relapse right before the OCDS was collected.

With the exception of the OCDS which was self-rated, assessment of patients was carried out by trained research assistants in a structured, face-to-face interview. At the time of their first assessment at the beginning of the treatment programme, patients had been abstinent for at least 30 days (range 1–8 months). Thus an influence of a prolonged withdrawal syndrome on the assessed variables can be excluded. Assessments of patients were carried out at the end of the outpatient treatment, and 6 and 12 months later (follow-up).

Definition of outcome criteria

Relapse during the treatment period was defined as any alcohol intake. Recurrent relapses (more than two relapses) or refusing to participate in the treatment programme led to a disciplinary early discharge.

Outcome description at the 12 month follow-up was based on the classification proposed by Feuerlein and Küfner (1989) and patients were classified as: Abstinent: no subjective reports or objective indications of alcohol consumption; Improved: no more than three drinking periods, and periods of drinking lasting less than a week (lapses) and less than 30 g (female) or 60 g (male) alcohol per day on a regular basis, with no signs of pathological drinking, and neither physical nor psychiatric disorders nor inpatient treatments due to alcohol consumption; Relapse: more than three lapses or regular consumption of more than 30/60 g alcohol per day, alcohol-related disorders or inpatient treatments.

At 6 and 12 month follow-up 72 patients (97%) of the patients who completed the treatment programme were successfully located and personally interviewed. Two patients (3%) refused to participate or could not be located. According
to the worst-case scenario, patients without follow-up information were judged as relapsed.

**Data analysis**

Statistical analyses were carried out using the SPSS 11.0 software for Windows. Group differences for continuous variables were compared by using the t-test. Group differences for all categorical variables were evaluated using the chi-square statistic. A P-value of <0.05 (2-tailed) was considered as statistically significant. Analysis of variance (ANOVA) was used to compare the three subject categories based on drinking status (abstinent/improved/relapse) 12 months after treatment completion, with OCDS total scores and each subscale score from the three-factor model by Kranzler et al. (1999) as the dependent measures.

**RESULTS**

**Patients’ characteristics**

The total of 102 patients consisted of 61 male and 41 female comparatively socially well-integrated alcohol dependents. The youngest was 24 and the oldest was 67, at study entry. Further sociodemographic and alcohol-related data are shown in Table 1. Mean duration of the treatment was 6.7 (SD ± 2.6) months for all patients and 7.4 (SD ± 2.3) months for the completers. The duration of treatment did not affect the amount of craving. Relapse occurred in 32 patients (31%) during the treatment phase. As presented in Table 1 there were no differences between abstainers and relapers concerning baseline sociodemographic variables. Concerning baseline alcohol-related variables, relapers had a slightly higher alcohol intake in the months before treatment begin (P < 0.07) and they had undergone significantly more treatments for alcohol dependence in the past (P < 0.005).

**Association between craving and relapse during the treatment phase**

Using the t-test, relapers (n = 32) had a significantly higher total OCDS score (7.03 ± 4.8) at the beginning of the treatment phase than abstainers (n = 70) (3.64 ± 3.2) as shown in Fig. 1 (P < 0.005). Testing the ‘obsessions’ and ‘control and consequences’ subscales separately, the result was still statistically significant (obsession subscale P < 0.01; control and consequences subscale P < 0.05). The ‘alcohol consumption’ subscale showed no statistical differences between relapers and abstainers.

**Association between craving and outcome 12 months after completion of the treatment phase**

The treatment programme was completed by 74 patients. For the total 12 month follow-up period 53 patients were abstinent (72%), 9 patients improved (12%) and 12 patients relapsed (16%). OCDS Total Score: relapers had shown the highest

<table>
<thead>
<tr>
<th>Study sample n = 102</th>
<th>Abstinent n = 70</th>
<th>Relapse n = 32</th>
<th>Significance (t-test, Chi-square)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>45 (±8)</td>
<td>44 (±8)</td>
<td>46 (±9)</td>
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<tr>
<td>Gender (%)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Male</td>
<td>60% (n = 61)</td>
<td>64% (n = 45)</td>
<td>50% (n = 16)</td>
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<tr>
<td>Female</td>
<td>40% (n = 41)</td>
<td>36% (n = 25)</td>
<td>50% (n = 16)</td>
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<tr>
<td>Marital status</td>
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<td>Married</td>
<td>59% (n = 60)</td>
<td>61% (n = 43)</td>
<td>53% (n = 17)</td>
</tr>
<tr>
<td>Never married</td>
<td>15% (n = 15)</td>
<td>17% (n = 12)</td>
<td>10% (n = 3)</td>
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<td>Divorced</td>
<td>24% (n = 25)</td>
<td>19% (n = 13)</td>
<td>37% (n = 12)</td>
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<td>Widowed</td>
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<td>3% (n = 2)</td>
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<tr>
<td>Partnership</td>
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<td></td>
<td></td>
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<tr>
<td>Single</td>
<td>23% (n = 23)</td>
<td>23% (n = 16)</td>
<td>22% (n = 7)</td>
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<tr>
<td>Partnership</td>
<td>77% (n = 79)</td>
<td>77% (n = 54)</td>
<td>78% (n = 25)</td>
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<td>Employment Status</td>
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<td>Unemployed</td>
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<td>17% (n = 12)</td>
<td>22% (n = 7)</td>
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<tr>
<td>Regularly employed</td>
<td>82% (n = 83)</td>
<td>76% (n = 53)</td>
<td>72% (n = 23)</td>
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<tr>
<td>Alcohol related variables</td>
<td></td>
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<td></td>
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<tr>
<td>Alcohol intake (g/d) prior treatment</td>
<td>193 (±103)</td>
<td>177 (±72)</td>
<td>229 (±143)</td>
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<tr>
<td>Age of onset</td>
<td>29 (±11)</td>
<td>29 (±10)</td>
<td>28 (±11)</td>
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<tr>
<td>Duration of alcohol dependence</td>
<td>15 (±9)</td>
<td>14 (±9)</td>
<td>16 (±10)</td>
</tr>
<tr>
<td>Prior treatment</td>
<td>35% (n = 36)</td>
<td>24% (n = 17)</td>
<td>57% (n = 17)</td>
</tr>
<tr>
<td>Number of prior treatments</td>
<td>0.57 (± 0.95)</td>
<td>0.3 (± 0.7)</td>
<td>1.1 (± 1.2)</td>
</tr>
</tbody>
</table>

Fig. 1. Total OCDS score, drinking obsession subscore (DO) and control and consequences (CC) subscore in abstainers (n = 70) and relapers (n = 32) during the treatment period. *P < 0.05.
end-of-treatment, mean OCDS total score of 6.25 (SD ± 4.7); abstainers had scored 2.13 (SD ± 2.4); and improvers 1.67 (SD ± 1.8). The difference between abstainers and relapers was significant ($P < 0.0001$), as was the difference between improved and relapers ($P < 0.005$). Between abstainers and improved, the difference was not statistically significant. Obsessions factor: relapers had shown significantly higher scores on the obsessions factor than abstainers ($P < 0.005$) and improvers ($P < 0.05$). Between abstainers and improvers there was no significant difference. Drinking control and consequences factor and alcohol consumption factor: there were no significant differences between the outcome groups on this factor.

**DISCUSSION**

Those patients who completed an intensive outpatient treatment programme tended to have favorable outcomes: 12 months after treatment 72% of the completers had been continuously abstinent. The patients in this programme were fairly well integrated socially, compared to those in some other treatments programmes, and the abstinence rate is higher than in some previous studies (e.g. Marlatt and Gordon, 1985). Of the whole cohort who entered the programme, including patients who dropped out of treatment, the continuous abstinence rate for the 12 months after treatment was 57% (Soyka et al., 2003). Patients who relapsed during the treatment phase had had significantly higher OCDS craving scores at entry to treatment. Using the model by Kranzler et al. (1999) relapers scored higher in the ‘obsessions’ and ‘control and consequences’ subscale.

Further, we found that craving measured by the OCDS total score at the end of the treatment was a predictor for relapse in the 12 months after treatment completion. Relapers showed higher OCDS total scores than improvers and abstainers. Of the empirically derived factors by Kranzler et al. (1999) only the ‘obsessions’ factor was predictive for outcome while the ‘control and consequences’ and the ‘alcohol consumption’ factor failed to predict relapse during the follow-up period. As the ‘alcohol consumption’ factor measures the actual alcohol intake, it cannot be suitable in investigating abstinent patients who do not drink alcohol. Nevertheless, we conclude that the OCDS is useful to identify alcohol-dependent patients at risk for relapse. The most important predictive factor is ‘obsessions’.

In comparison to other studies, OCDS total scores were rather low in this sample. As mentioned, all patients first took part in an initial 12-week motivational phase that was followed by the 6–9 months rehabilitation phase. Therefore patients already had a period of abstinence (minimum 1 month, range 1–8 months) and treatment at the beginning of the rehabilitation phase. Thus craving may have declined over time, but even patients successfully engaged in treatment continued to have low-grade obsessive-compulsive alcohol thoughts influencing the course during and after treatment.

In line with our results, other authors found that craving measured by the OCDS differentiated alcohol-dependent patients as defined by their drinking outcome (abstinent/slip/relapse) during treatment (Anton et al., 1996; Kranzler et al., 1999; Flannery et al., 2001).

Kranzler et al. (1999) further evaluated the predictive power of three empirically derived factors, and found only ‘alcohol consumption’ to be a significant predictor of mean daily drinks during the 3 month follow-up period after a 12-week treatment. Neither the ‘obsession’ factor nor the ‘control and consequences’ factor predicted mean daily drinks during the follow-up period. In contrast to our results, the total OCDS score only showed a nonsignificant trend to predict subsequent alcohol consumption during the 3 month follow-up period. The two studies differed in the definition of the outcome status. While Kranzler et al. (1999) defined the outcome criteria dimensionally (mean daily alcohol consumption), in our study outcome was defined categorically (abstinent vs improved vs relapsed). Further, Kranzler et al. (1999) assessed a 3 month follow-up period in contrast to a 12 month follow-up in our study. This may have affected the different results of the studies. As in our study, Kranzler et al. (1999) recruited patients who were abstinent longer than 28 days before study entry. Thus, the differences in outcome between our study and the study by Kranzler cannot be explained by differences in duration of abstinence before study entry.

Roberts et al. (1999) collected the OCDS data on a weekly basis from 132 alcohol-dependent outpatients. They found each of the OCDS subscale scores predicted the hazard for heavy relapse in the following week of treatment. To our knowledge there are no published data about further course after treatment and the prediction of relapse after a longer follow-up period.

Anton et al. (1996) assessed OCDS in 41 alcohol-dependent outpatients and collected the data on a weekly basis. OCDS scores obtained during week 3 of the treatment predicted future total alcohol consumption during a 12-week treatment. In the present study, a long period of evaluation has occurred after the OCDS was collected and the prediction of future drinking status 12 months after treatment completion was investigated. Thus, we assume that the OCDS may also predict future drinking status.

There are several limitations for our findings. First, the sample is rather small and patients are selected with a stable social background. Second, we have not analysed biological markers (CDT or γGT) nor collected reports of collateral informants, but we consider that the patients’ self-reports are valid. All patients were personally interviewed and all patients were well known by the interviewer. Several studies have shown a high validity and high reliability of self-report data of alcohol-dependent patients in treatment compared to toxicologic analyses of blood or collateral informant reports (Brown et al., 1992; Mundle et al., 1999; Babor et al., 2000).

Results of our study indicate that measurement of craving with the OCDS can be a useful tool to predict subsequent drinking during outpatient treatment, and may be useful in monitoring patients during treatment to identify individuals at risk for relapse. Relapse during the treatment phase occurred in 32 patients and more than half of them dropped out due to relapse. We have found that patients with increased craving measured by the OCDS dropped out significantly more often during the treatment phase (Soyka et al., 2003). As a consequence, patients with increased craving should be treated more intensively by using additional relapse
prevention approaches which may help the patient to recognize cues that lead to drinking. Patients should develop strategies to cope with high-risk situations such as negative emotional states and interpersonal conflicts (Marlatt et al., 1999).

Higher OCDS total scores at the end of the treatment predict relapse in the following 12 months. Maybe those patients with elevated craving scores who are at a higher risk for relapsing would benefit from intensified aftercare and of additional anticingrating medication such as acamprosate (Boening et al., 2001; Soyka and Chick, 2003).

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REFERENCES


