AN INTERVENTION PROGRAM FOR UNIVERSITY STUDENTS WHO HAVE PARENTS WITH ALCOHOL PROBLEMS: A RANDOMIZED CONTROLLED TRIAL

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Abstract — Aim: To study the effects of alcohol and coping intervention among University students who have parents with alcohol problems. Methods: A total of 82 university students (56 women and 22 men, average age 25) with at least one parent with alcohol problems were included. The students were randomly assigned to one of three programs: (i) alcohol intervention program, (ii) coping intervention program, and (iii) combination program. All programs were manual based and individually implemented during two 2-h sessions, 4 weeks apart. This assessment contained both a face-to-face interview and six self-completion questionnaires; AUDIT, SIP, EBAC, coping with parents’ abuse questionnaire, SCL-90 and ISSI. Follow-up interviews were conducted after 1 year. Results: All participants finished the baseline assessment, accepted and completed the intervention, while 95% of the students completed the 12-month follow-up assessment. The two groups that received alcohol intervention improved their drinking pattern significantly more than the group that did not receive alcohol intervention [change of standardized scores –0.27 (CI –0.53 to –0.03)]. The groups receiving coping intervention did not differ from the group not receiving coping intervention concerning their ability to cope with their parents’ alcohol problems. Nor did they differ regarding changes in their own mental health or in their social interaction capacity. Conclusion: The intervention improved drinking patterns in adult children of alcoholics.

INTRODUCTION

There is a consensus in the research literature that adult children of alcoholics (ACOA) run a greater risk of developing personal alcohol problems than do other children (Vanicelli, 1989; Windle and Searles, 1990; Sher et al., 1991; Chassin et al., 1993; Schuckit and Smith, 1996; Finn et al., 2000; Barnow et al., 2002). Adoption studies, twin studies, and studies of high-risk subjects for alcoholism have shown that the increased vulnerability to alcoholism is based on a complex interplay of genetic and environmental factors (Kaij, 1960; Goodwin et al., 1973; Hrubec and Omenn, 1981; Kaprio et al., 1987; Pickens et al., 1991; McGue et al., 1992; Knop et al., 1993; Schuckit and Smith, 1996).

When it comes to mental symptoms and adaptation disorders in ACOA the situation is unclear, but some studies (Sher, 1997; Knop et al., 1993; Johnson and Leff, 1999) have shown that ACOA run a greater risk of developing psychiatric disorders (including adjustment disorders) as adults, while other research did not show any increase in that area (Schuckit and Smith, 1996).

In studies comparing children from families with only dysfunctional problems and children from families with dysfunctional problems plus alcohol problems, no significant differences regarding frequency or type of psychological problems have been found. Stress is the strongest contributor to causing harm to children (Earls et al., 1988; Harter, 2000; Preuss et al., 2002). The increased frequency of psychiatric problems among children of alcoholics (COA) that some studies have found, is possibly related to the higher frequency of dysfunctional problems in alcoholic families and not specifically caused by alcohol abuse (Anda et al., 2002).

One important area of research examines families’ coping strategies

In the research literature on coping strategies and coping behaviour there are certain differences regarding how the term ‘coping’ is used. It is normally used either to describe a personality trait (Maggs et al., 1997) or to describe different strategies for handling specific problematic situations. In the present study, coping is specifically related to how the students handle difficult situations related to their parents’ abuse.

In the literature, a correlation between alcohol and coping behaviour has been described (Wilson and Orford, 1978). With the abuse in the family comes a risk of dysfunctional coping strategies that may lead children to use drinking as an adaptive behaviour (Wilson and Orford, 1978; Wolin et al., 1980; Schor, 1996).

Strong correlations between coping behaviour and drinking problems have been found in other groups as well (Schuckit, 1998; Ham and Hope 2003). Students who show deficiencies in coping skills, are more likely to use alcohol as a coping device (Moos et al., 1990; Kassel et al., 2000). Studies have also shown that there is a correlation between coping strategy and mental health, and students who rely upon avoidance coping have shown increased depressive symptoms (Penland et al., 2000).

In the present study we have focused on ACOA studying at university. Drinking patterns vary throughout life. Research has shown that the age group 18–25 is important for several reasons. In this age group alcohol consumption is high and there is also a high occurrence of episodic drinking (Naimi et al., 2003). The relationship between heavy drinking and negative consequences among college students is well established (Abbey et al., 1998; Wechsler et al., 2000; Wood et al., 2000).

Do students with a positive family history of alcoholism drink more than other students? Some cross-sectional studies suggest a greater risk (Perkins and Berkowitz, 1991; Sher et al., 1991), while others do not show any increase in that...
area (Alterman et al., 1989; George et al., 1999). A prospective study (Jackson et al., 2001) reported that individuals with a family history of alcoholism were less likely than others to grow out of high-risk drinking (for a review, see Jackson et al., 2005).

Several studies have also reported the importance of intervention in this age group. Among adults, brief motivational interventions have emerged as a potentially effective method of reducing alcohol use in non-dependent adult drinkers (Bien et al., 1993; Wilk et al., 1997). For high-risk drinking among young adults, a brief intervention has been reported to be successful (Grossberg et al., 2004).

Published studies with college students as the target group indicate that brief motivational intervention leads to reduced drinking and alcohol-related problems (Baer et al., 1992, 2001; Borsari and Carey, 2000; Larimer et al., 2001; Murphy et al., 2001). One important intervention program in a student population is the cognitive-behavioural and motivation enhancement programme, Alcohol skills training program (ASTP) (Fromme et al., 1994). This program teaches students the basic principle of moderate drinking and how to cope with high-risk situations for excessive alcohol consumption. The ASTP is designed for group administration.

From the ASTP a brief individual intervention called BASICS, Brief Alcohol Screening and Intervention for College Students (Dimeff et al., 1999), was developed. BASICS consists of two individual sessions, and some components are based on motivational interviewing. High-risk drinkers who participated in the BASICS program significantly reduced both drinking problems and alcohol consumption rates, compared with control group participants, at both the 2-year (Marlatt et al., 1998) and 4-year outcome assessment periods (Baer et al., 2001). BASICS has also been found to be clinically significant in an analysis of the changes in individual student drinking over time (Roberts et al., 2000).

In contrast to the positive results of intervention in high-risk drinking, the results of interventions in psychosocial dysfunction are inconclusive (Deckro et al., 2002; Gaab et al., 2003). In the present study, the objectives were to test one intervention program with the purpose of decreasing alcohol consumption and one coping intervention program with the purpose of improving coping behaviour. BASICS (Dimeff et al., 1999) was used as the active intervention for the alcohol program, while intervention for dysfunctional coping was used as the control intervention. A manual, developed at the Department of Clinical Alcohol Research, Lund University, was used as active intervention for the coping program. The alcohol intervention program (BASICS) was used as control. This way, we had an active intervention method for the control condition too.

In order to study both the effects of the individual interventions and the combined intervention, a three group design was used. Our first hypothesis was that intervention on alcohol drinking, but not on dysfunctional coping, should have an effect on the student’s own drinking pattern. Our second hypothesis was that coping intervention, but not alcohol intervention, should have an effect on dysfunctional coping, and that the combination program should have an effect on both drinking pattern and dysfunctional coping.

Participants

Eligibility criteria. The target group for the study was young adults who study at university and have grown up in an environment where one or both parents have or have had alcohol problems according to the opinion of the participants. Subjects who had never drunk alcohol were excluded from the study.

Setting

This study was conducted at Lund University, Malmö, Sweden. The intervention programs took place at the Student Health Organization, Lund University.

Patient enrolment

Several methods were used for recruitment. On two occasions, autumn term 2000 and spring term 2001, an information booklet was sent out to all students at Lund University. We also advertised twice per term in a daily newspaper and three different student magazines. In all written material it was explained that we were looking for students who grew up in a family with alcohol problems, and who had been affected by these experiences to the extent that they felt a need for support and help.

Interventions

The study started with an individual 1 h baseline assessment. This assessment contained both a face-to-face interview and self-completion questionnaires. The students were then randomly assigned to one of the following three programs, which continued at the same session. The randomization procedure is presented as follows:

(i) The alcohol intervention program.
(ii) The coping intervention program.
(iii) A combination of the alcohol and coping intervention programs.

Each program contained two 2 h sessions, which were conducted at a 1-month interval (H.H.). Follow-up interviews were conducted after 1 year and after 2 years. The same interviewer was used for the two follow-up examinations (J.R.). The interviewer was not aware of which intervention program each respondent belonged to. The study was approved by the Ethics Committee, Lund University (Fig. 1).

INTERVENTION PROGRAMS

All three intervention programs were manual based and individually presented during two 2 h sessions. The intervention programs were conducted by a therapist (H.H.), who was only a few years older (31 years old) than the respondents, but had extensive experience from abuse treatment and from general psychiatry. Prior to the start of the project, the therapist was thoroughly educated in the manuals. The therapist was highly committed to adapting the session to suit the individual in order to build a positive alliance and improve the student’s rapport with the therapist. The therapist was instructed to be...
flexible in her approach and be aware of factors such as empathy, warmth, acceptance, or support of risk taking. The therapist carefully informed the students about the randomized design and that the manuals of the different programs were to be followed strictly.

The alcohol intervention program

The alcohol intervention programme was based on the BASICS manual (Dimeff et al., 1999). The following parts were used in our programme: (i) identify high-risk drinking situations, (ii) provide accurate information about alcohol, (iii) identify personal risk factors, (iv) challenge myths and positive expectations, (v) establish appropriate and safer drinking goals, (vi) managing high-risk drinking situations, and (vii) learn from mistakes.

Initially, the student got feedback on her/his AUDIT scores assessed at baseline. After that, the session focused on the student’s own expectations of alcohol use. Feedback of alcohol expectancy self-ratings was systematically offered.

During the session, the student and therapist also conversed about facts, myths, and drinking patterns in Sweden. The participant learned how to calculate their blood alcohol level, based on memories from a party they considered joyful and pleasant, and without negative consequences.

In conclusion we gave the student advice on how to plan her/his alcohol consumption at a party. The focus was on drinking-moderation strategies, drinking refusal, peer influences, assertive behaviour, identification of high-risk situations, and negative emotional states.

The intervention program was administered in two individual 2 h sessions. The students were asked, as homework, to keep a diary of their alcohol consumption and calculate blood alcohol levels between the two intervention sessions. At the second intervention session, the topics from the first session were repeated. The homework (diary) was also discussed in detail.

The coping intervention program

This program is also based on a cognitive behaviour technique. The manual was developed at the Department of Clinical Alcohol Research, Lund University. The aim of this program is to help the individual to confront and cope with reality more effectively. The following elements were included:

(i) The student gets feedback from the coping assessments (not in the alcohol only intervention group). This feedback, the student’s own experiences of living together with an alcoholic, his/her relations with non-alcoholic family members, and his/her social network, were discussed.

(ii) Information about common coping patterns in families of alcoholics and coping strategies in abuse situations is given. Focus is on relationship coping, emotion coping, and problem coping. Central coping strategies, such as the student’s ability to express emotions, handle discord, or not use avoidance are discussed.

(iii) Discussion about how inappropriate coping strategies can be changed and how better working strategies can be implemented, maintained, or strengthened.

The students were asked to keep a diary of the coping strategies they use in trying situations in daily life during the
month between the sessions and rate severity on an analogue visual scale (intensity, 1–100). Part of the homework was also to read and reflect on two books in Swedish, ‘Become my mother again’ (Jinder, 1991) and ‘If you really loved me...’ (Ditzler and Ditzler, 1993). At the second intervention session, the topics from the first session were repeated. The homework (diary) was also discussed in detail.

The combination program

The combination program combines the two interventions described above, i.e. the alcohol intervention program and the coping intervention program. The participants in this program were first exposed to the alcohol program and then to the coping program. Both parts had been shortened to fit into the combination program. All individual components remained, while blood alcohol level and coping strategies were discussed at a somewhat less detailed level.

Baseline assessment and outcomes

At the baseline assessment and at the follow-ups, structured interviews were conducted. At the baseline interview we collected data on demographics, on the student’s own views of how he/she and other family members had been affected by the alcohol problem, on how each family member had dealt with the problem, the student’s own relationship with alcohol and drugs and previous treatment regarding their problem/situation. Questions about the students own attitude towards alcohol were important to establish whether the respondent had a high consumption of alcohol or not. The baseline assessment also included detailed questions about the parent’s drinking problem, in order to describe the observed group as thoroughly as possible. These questionnaires included items corresponding to DSM-IV diagnostic criteria for alcohol abuse and dependence.

At the follow-up interview the respondents were also asked to evaluate the program they participated in. In addition to the face-to-face interview, six self-report scales were conducted both in the baseline examination and in the follow-up examinations.

Self-report scales

Alcohol use disorders identification test (AUDIT) (Saunders, 1993; Bergman et al., 1998). The AUDIT is a 10-item screening questionnaire that measures the total amount of alcohol consumed, number of high consumption occasions, and consequences of drinking (alcohol-related problems).

Estimated blood alcohol concentration (EBAC). In this self-assessment questionnaire the students were asked to remember their last pleasant drinking occasion and to write down their alcohol consumption at that occasion. The estimation is based on the number of drinks during the party related to time, gender, and weight. This method for estimating BAC was obtained from National Highway Traffic Safety Administration, US Department of Transportation (1994).

The short index of problems (SIP) (Miller et al., 1995). This is a brief version of the Drinker Inventory of Consequence (DrInC), which measures adverse consequences of alcohol consumption and contains 15 items.

Coping with parents’ abuse questionnaire (Zetterlind and Hansson, 2001). The scale is based on the coping-behaviour scale (Orford et al., 1975), which has been reworked and adapted to the target group ACOA. The scale produced a working typology of six common ways in which ACOA respond to the ‘users’, family adjustment, dependence/independence in the relationship, isolation, and social network. The six coping typologies are: discord, emotion, control, relationship, avoidance, and taking specific action. The scale consists of 37 questions. The scale’s internal consistency in the present study was 0.89, measured with Cronbach’s alpha.

The symptom checklist-90 (SCL-90) (Derogatis, 1977). This is a 90-item self-report instrument measuring psychological symptoms over the past week. The GSI provides an estimate of the subject’s general state of mental health (Fridell et al., 2002).

The interview schedule for social interaction (ISSI) (Undén and Orth-Gomer, 1989). This instrument is a 30-item interview schedule, which measures the availability and perceived adequacy of a wide range of social contacts and relationships.

In addition, an overall alcohol score is presented. The score was calculated in order to get a single measure of drinking improvement. The standardized difference score was defined as the mean of the standardized differences of AUDIT, EBAC, and SIP. The standardized difference (baseline to follow-up) is the mean score divided by standard deviation.

Satisfaction with the interventions. This was measured with one question (‘Would you say that the intervention you received by participation in the study was adapted to your situation?’), where the students were asked to rate the program on a 5-point scale.

Randomization procedure

After baseline assessment was complete, the interviewer contacted a secretary of the Department of Clinical Alcohol Research, Lund University, by telephone. This person carried out the randomization procedure by using sealed black envelopes from different boxes based on different strata. Stratification was made by gender, above/below Swedish average score on mental well-being (SCL-90) and high/low score on AUDIT [high scores 11+ for males and 7+ for females (Johnsson and Berglund, 2003)].

Power analysis

There are no studies in the literature with an approach similar to the one in this study. In order to discover a significant difference in a total population of 82, an effect size of about 0.59 is needed with \( P = 0.05 \) and power of 80% (Altman, 1991). In the study of Kivlahan et al. (1990), an effect size of 0.98 on alcohol consumption was reported and of 0.50 for binge drinking. The 6-month figures in the Marlatt study (Marlatt et al., 1998) were 0.30 and 0.28, respectively. The present study could, perhaps therefore, be regarded as somewhat underpowered.

Statistical methods

SPSS 11.5 for Windows was used for statistical analysis. Baseline differences were tested using the Kruskal–Wallis test. Changes within each group were tested with the Wilcoxon signed rank test and changes between groups, with and without alcohol and coping intervention, respectively, with the Mann–Whitney \( U \)-test. The results are presented as
means and standard deviations. Correlations between variables were calculated with the Spearman test. A P-value of <0.05 was regarded as significant.

Differences in changes between the two groups were tested by linear regression. The 12-month outcome variable was regressed on treatment group as an indicator variable, with baseline outcome variable as covariate (Vickers and Altman, 2001).

**RESULTS**

**Participant flow and follow-up**

A total of 82 students met the inclusion criteria for participation in the study. Three of the students who applied for participation were excluded because they had never consumed alcohol. All participants finished the baseline assessment, accepted the intervention, were randomized, and completed the intervention. At the 12-month assessment, one student interrupted the interview and declined further participation (the coping intervention program). One student completed the face-to-face interview (the coping intervention program), but did not fill in the six self-completion questionnaires. Despite several attempts there were two more students that we were unable to locate. None of these subjects was outliers. These four subjects were not included in outcome analyses.

Student recruitment started in January 2000 and was completed in April 2001. The 12-month follow-up started in February 2001, and the 24-month follow-up 1 year later. The first follow-up sessions were completed in May 2002 and the 24-month follow-up finished in May 2003. The 24-month follow-up is not presented in the present paper.

In Table 1, initial characteristics of participants assigned to the three intervention groups are presented. The scores in the table are unadjusted. Table 1 shows that 71% of the participants were females and that the average age of the participants was 25 years. 94% of the participants had at least one parent diagnosed as alcohol dependent according to DSM-IV. For all except seven participants, the parent’s abuse was ongoing at the start of the program (three had been sober for ≥1 year and four were dead) and 86% of the participants reported that they had been exposed to parents’ alcohol problems during their childhood (before the age of 12).

Regarding the students’ own alcohol behaviour, as shown in Table 1 that 54% of the participants have scores above the traditional cut-off point (≥8 in men and ≥6 in women) according to AUDIT (Reinert and Allen, 2002). Regarding mental well-being, the initial SCL-90 score was rather high, with most subjects (47) over the cut-off point for clinically significant symptoms, at 0.6 (Fridell et al., 2002).

In Table 2, the Spearman correlations between the outcome measures at initial examination are presented. The three alcohol measures were significantly associated with a strong association between AUDIT and SIP, and there were moderate to low correlations between each of those and the EBAC. The scale Coping with parents’ abuse questionnaire correlated moderately with SCL-90 and ISSI (negative correlation). Most of the correlations between the alcohol measures and the other measures were close to zero with the exception of EBAC, which was associated with Coping with parents’ abuse questionnaire (negative correlation).

In Table 3, changes from initial admission to the 12-month follow-up scores are presented. The alcohol intervention groups improved significantly more on the combined standardized alcohol variable compared with the non-alcohol intervention group (i.e. the coping group) [–0.27 (CI –0.53 to –0.03)]. The results on the three subscales AUDIT, SIP, and EBAC indicate improvement near significant levels for the groups receiving alcohol intervention. In all analysis the specific 1 year outcome was controlled for the corresponding baseline figure.

There was no difference in improvement on the scale Coping with parents’ abuse between the groups that received coping intervention and the group that did not receive coping intervention. Nor were there any differences in the SCL-90 and the ISSI scale between groups with and without coping intervention, respectively. There was no improvement in symptom ratings after one year. In addition, the ISSI scale measuring social interaction capacity did not improve in the coping intervention group and only very marginally in the other groups.

**Table 1. Initial characteristics of participants randomly assigned to three intervention groups**

<table>
<thead>
<tr>
<th></th>
<th>Alcohol</th>
<th>Coping</th>
<th>Combination</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>N (male/female)</td>
<td>26 (9/17)</td>
<td>24 (5/19)</td>
<td>28 (8/20)</td>
<td>78 (22/56)</td>
</tr>
<tr>
<td>Mean age (SD)</td>
<td>25.04 ± 3.61</td>
<td>24.04 ± 3.21</td>
<td>27.50 ± 6.50</td>
<td>25.62 ± 4.93</td>
</tr>
<tr>
<td>Pre-teenage experience of parents abuse (before 12 years old)</td>
<td>20</td>
<td>22</td>
<td>25</td>
<td>67/78</td>
</tr>
<tr>
<td>Present abuse (parents)</td>
<td>23</td>
<td>23</td>
<td>25</td>
<td>71/78</td>
</tr>
<tr>
<td>Alcohol dependent (parents)</td>
<td>23</td>
<td>23</td>
<td>27</td>
<td>73/78</td>
</tr>
<tr>
<td>AUDIT</td>
<td>8.2 ± 4.1</td>
<td>7.7 ± 5.1</td>
<td>6.9 ± 5.6</td>
<td>7.6 ± 4.9</td>
</tr>
<tr>
<td>EBAC</td>
<td>0.89 ± 0.66</td>
<td>0.69 ± 0.54</td>
<td>0.61 ± 0.50</td>
<td>0.73 ± 0.57</td>
</tr>
<tr>
<td>SIP</td>
<td>3.3 ± 3.4</td>
<td>2.7 ± 2.6</td>
<td>2.9 ± 4.2</td>
<td>3.0 ± 3.5</td>
</tr>
<tr>
<td>SCL-90 Total</td>
<td>0.81 ± 0.49</td>
<td>1.03 ± 0.65</td>
<td>0.84 ± 0.55</td>
<td>0.89 ± 0.56</td>
</tr>
<tr>
<td>Coping with parental abuse questionnaire Total</td>
<td>14 (3/11)</td>
<td>15 (1/14)</td>
<td>18 (4/14)</td>
<td>47 (8/39)</td>
</tr>
<tr>
<td>ISSI Total</td>
<td>20.4 ± 5.3</td>
<td>19.2 ± 6.9</td>
<td>18.0 ± 6.9</td>
<td>19.2 ± 6.4</td>
</tr>
</tbody>
</table>
The level of satisfaction with the intervention received varied between the three groups. The share of participants giving their own program scores 4–5 were 72% (21/29) in the combination group, 63% (15/24) in the coping group and 46% (12/26) in the alcohol group. Thus, alcohol intervention had a significantly lower level of satisfaction than both combination (P < 0.001) and coping (P < 0.05).

**DISCUSSION**

There are a number of aspects to take into consideration when analysing the results of the study. The experience of living close to a parent with pronounced alcohol problems and the abuse being ongoing may have affected the students’ decision to participate in the study. Own risk drinking was not an inclusion criterion, but a large share of the participants had a relatively high AUDIT score. It is, however, not clear whether they were aware that their drinking was hazardous. Previous studies have shown that the majority of students with abuse and dependence do not describe themselves as problem drinkers and do not believe that they have an alcohol problem (Daeppen et al., 1999).

The main findings of the present study were, first, the groups receiving alcohol intervention improved their drinking pattern significantly more than the group receiving coping intervention only. Second, the groups receiving coping intervention did not differ from the group not receiving coping intervention when it came to the handling of their parents’ alcohol problems. They neither differed in changes of their own mental health nor in their social interaction capacity.

The study has several strengths. It was a randomized, controlled trial. In most previous studies, the control group has either been a non-treated group or an educational training group. In the present design we used a different type of control group. Using two types of intervention, alcohol intervention and coping intervention, it was possible to use the non-alcohol intervention group as a control group for alcohol intervention, and the non-coping intervention group as a control group for coping intervention. In this way the control group also received active intervention. Use of control groups with delayed treatment or waiting list controls is problematic in that differences between intervention and control could be caused by negative consequences of the delay in the control group instead of improvement in the intervention group (Kendall et al., 2004).

The follow-up rate was very high. Furthermore, there was almost no attrition between the first and second sessions of the intervention. This very high retention in the study is probably explained by the high qualification of the therapist both in the addiction area and in the general psychiatry area and also by her relatively young age.

The follow-up examination was performed by another young, but clinically experienced social worker (J.R.). Blinded follow-ups were possible and most of the outcome variables were based on questionnaires, which further reduced the risk for non-blinded bias.

| Table 2. Spearman correlation between the outcome measures at initial examination |
|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | AUDIT (total)   | SIP             | EBAC            | SCL-90 (GSI)    |
| AUDIT (total)   | —              | 0.75**          | 0.42**          | —              |
| SIP             | —              | 0.25*           | 0.06            | 0.10           |
| EBAC            | —              | 0.06            | —0.35**         | 0.18           |
| SCL-90 (GSI)    | —              | 0.53**          | —0.38**         | —              |
| Coping with parental abuse | — | 0.56**          | —              | —              |
| ISSI            | —              | —              | —              | —              |

*P < 0.01; **P < 0.05.

| Table 3. Change in scores from initial admission to 12-month follow-up (in parentheses 12-month follow-up scores) |
|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | Alcohol         | Coping          | Combination     | Total           |
| N (male/female) | 26 (9/17)       | 24 (5/19)       | 28 (8/20)       | 78 (22/56)      |
| AUDIT           | —1.88 ± 3.59*   | —0.46 ± 4.30    | —0.93 ± 3.22    | —1.10 ± 3.70**  |
| EBAC            | —0.25 ± 0.55*   | —0.09 ± 0.44    | —0.14 ± 0.26*   | —0.16 ± 0.43*** |
| SCL-90          | —1.35 ± 2.80*   | 0.04 ± 3.03     | —0.86 ± 2.24*   | —0.74 ± 2.71**  |
| T1              | —0.53 ± 0.47    | —0.10 ± 0.69    | —0.29 ± 0.56    | —0.31 ± 0.69    |
| T2              | —0.09 ± 0.45    | —0.04 ± 0.40    | —0.18 ± 0.56    | —0.11 ± 0.48    |
| T3              | (0.70 ± 0.41)   | (0.97 ± 0.62)   | (0.65 ± 0.57)   | (0.77 ± 0.55)   |
| T4              | —0.35 ± 14.95** | —5.63 ± 13.02*  | —9.39 ± 13.67*** | —8.22 ± 13.85*** |
| T5              | (75.0 ± 10.8)   | (79.6 ± 15.9)   | (76.8 ± 12.9)   | (77.1 ± 13.2)   |
| Coping with parental abuse | —0.12 ± 4.90 | 1.96 ± 5.54    | 0.45 ± 5.23    | 0.33            |
| ISSI            | 0.35 ± 4.87     | (20.7 ± 5.7)    | (18.0 ± 7.1)    | (20.0 ± 7.5)    |

Alc., alcohol intervention group; Cop., coping intervention group; and Comb., combination group. Changes within each group were tested with the Wilcoxon signed rank test and changes between groups, with and without alcohol and coping intervention, respectively, with the Mann–Whitney U-test. Changes 0–1 measurements: ***P < 0.001; **P < 0.01; *P < 0.05.
Allocation included a central office randomization procedure. This is rather unusual in this type of randomization study, where the procedure is performed in the middle of a session, and it strengthens the study.

The interventions were experienced differently by the subjects in the predicted order, where combined treatment was perceived as most adequate, coping was perceived as second most adequate and alcohol intervention was perceived as least adequate. This indicates that the therapist was able to offer different types of intervention. Furthermore, the results probably cannot be explained generally by the positive expectations received from each type of intervention. If so, the combined intervention would have been more successful than the alcohol intervention and this was not the case. However, the approval ratings could be influenced by many factors other than the intervention itself. Notably, no personal information was discussed and the therapist conducting the follow-up interviews was not aware of the type of intervention the student had received, which fact ought to increase the reliability of the results.

There are some weaknesses in the study. First, there was only one intervention therapist for all the three interventions. The use of several therapists is, in general, advantageous, because in many studies differences in outcome are explained by therapist factors rather than technique factors (Lambert and Barley, 2002; Lambert, 2004). This could be controlled by using several therapists. This weakness however, is probably in part compensated by the fact that the treatment models are manual based. Several studies have shown that manual based treatments are provided in basically the same way by different therapists, which makes it possible to compare the effects of the different treatment models in our study (Beutler et al., 2004; Kendall et al., 2004). The study ought to be replicated in the context of daily clinical activities, where therapists usually have different areas of competence, i.e., an effectiveness trial. The use of tape recordings would help to show that the programs were not contaminated by mixing intervention programs or deviating from the manual. The number of subjects was small, according to the power analysis, which may explain several non-significant findings in the alcohol outcome variables.

Given the recruitment method, generalization of the findings is limited to treatment-seekers. It might also be noted that previous studies have shown that individuals with a family history of alcoholism are less likely to receive higher education (Sher et al., 1991). Our sample consisted only of university students and thus affect generalizability.

In general psychotherapeutic treatment theory, most of the effects are explained by general factors, and specific effects are not very common (Hubble et al., 1999; Lambert and Ogles, 2002). In the present study, those getting alcohol intervention reduced their drinking more than the other participants do, while improvement in dysfunctional coping was observed in all groups. On the one hand, this means that talking to the subject about his/her own alcohol drinking pattern improves both that pattern and the general coping ability in relation to his/her family. On the other hand, talking about the general coping behaviour without discussing the subject’s own drinking pattern has no effect on the subject’s own drinking pattern. Alcohol intervention seems to be a specific intervention, while effects on dysfunctional coping are related to general factors.

It could be argued that our definition of EBAC during a party night that the students enjoyed would tend to produce reports of relatively low EBAC levels, especially for those with a heavy drinking pattern. Notably, most of the students report high EBAC drinking episodes. Our EBAC levels are also similar compared with values reported in literature (Larimer et al., 2001) based only on typical EBACs. Since participants in the alcohol intervention group are being taught what an acceptable level of alcohol consumption is, it could not be excluded that they give more socially desirable answers in the follow-up interview than the control group.

The initial SCL-90 score was rather high, with most subjects (47) over the cut-off point for clinically significant symptoms, at 0.6 (Fridell et al., 2002). There was, however, no improvement in symptom ratings after 1 year. In addition, the ISSI scale measuring social interaction capacity did not improve in the coping intervention group and only very marginally in the other groups.

Both these findings differ from the findings in our previous studies on relatives of alcoholics in which the subjects reported important improvement on the SCL-90 score and on ISSI score (Zetterling et al., 2001; Hansson et al., 2004). Different types of mechanisms are probably present, childhood experiences with more developmental crises in the first groups and a stronger presence of acute stress situations in the second group.

The present findings will have important implications on future intervention and support for ACOA. The inclusions of intervention for own alcohol drinking pattern is important for decreasing the risk for future alcohol problems.

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