Fachgebiet Psychologie

A Brief Intervention for Alcohol Problems and Smoking Delivered by General Practitioners: A Randomised Controlled Trial

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Introduction

According to representative surveys (e. g. Augustin & Kraus, 2005) hazardous drinking and smoking are alarmingly prevalent within the German population and cause a variety of individual and social problems. People with hazardous drinking habits are at particular risk of suffering physical, psychological, and social harm (e. g. Anderson & Baumberg, 2006). Furthermore, the concurrent use of alcohol and tobacco is also widespread in Germany, and the adverse health effects of either behaviour are aggravated by its co-occurence (John, Hill, Rumpf, Hapke, & Meyer, 2003).

However, it is not solely the alcohol and tobacco consuming individual who is affected by hazardous drinking and smoking; relatives, friends, colleagues, and other members of the social environment can, to a greater or lesser extent, be influenced by the negative consequences (e. g. passive smoking, violence, traffic accidents, financial problems). In addition, wider society has to carry the immense financial, social, and legal costs incurred by hazardous drinking and smoking (Anderson & Baumberg, 2006).

Brief interventions for alcohol use disorders and smoking have become more and more popular over recent years. Several studies and reviews have been conducted to examine the efficacy of these interventions in reducing alcohol and tobacco consumption, but differences are found with respect to setting, participants, therapist, formats, and trainings.

Brief interventions have been employed and evaluated in a variety of settings (e.g. specialist substance abuse treatment centres, hospitals, and universities). It is, however, primary care settings on which this work will focus. Primary care practices appear to be particularly suited to providing such interventions. This is due to, for example, the high prevalence of hazardous drinking (Hill, Rumpf, Hapke, Driessen, & John, 1998) and smoking (Hoch, Muehlig, Höfler, Lieb, & Wittchen, 2004) in primary care settings and the generally accepted role of the doctor as a ‘health promoter’ (Richmond & Anderson, 1994). The benefit of a long term approach which enables doctors and other health care professionals to employ brief interventions within their daily routine should be increasingly acknowledged. In contrast, many studies to date, used researchers or specialists to conduct the interventions.

Even though, a number of studies have analysed the effect of brief interventions among alcohol dependent drinkers, the function of these interventions in terms of

prevention of serious problems is particularly noteworthy. It appears brief interventions for hazardous drinkers provide an opportunity to intervene before alcohol dependence has developed and social resources have dried up.

The extent and components of brief interventions also differ across studies. Whereas sometimes a five-minute advice is offered to the participants, other studies employ interventions of more than five sessions. In the context of primary care, however, brief interventions should really be ‘brief’ and not require several visits because this might inter alia discourage doctors and patients. Furthermore, brief interventions based on the principles of Motivational Interviewing (MI; Miller & Rollnick, 2002) are widespread and elements of successful brief interventions are often summarised in the acronym FRAMES (feedback, responsibility, advice, menu, empathy, self-efficacy; Miller & Sanchez, 1994). By contrast, many studies lack a clearly defined and structured intervention, nor do they offer information about the amount of, the quality, or the evaluation of the training of those carrying out the intervention.

Only one study could be identified that explored the effectiveness of concurrent treatment for alcohol and tobacco use (Stotts, Schmitz, & Grabowski, 2003), but its results suggest that a high motivation to quit both drinking and smoking was rather impedimental, at least with respect to treatment retention. Overall, the results of single studies and meta-analyses regarding the efficacy of brief interventions are promising, but the evidence, particularly with respect to smoking, is still ambiguous.

The present study is the first randomised controlled trial in Germany, a country with very high per capita consumption of alcohol (Meyer & John, 2007), testing the efficacy of a brief intervention for alcohol and tobacco use in primary care. Special emphasis was put on both high internal and external validity. The intervention was based on MI, highly structured, and reliant upon a written manual. Similarly, the training of the doctors was diligently planned, conducted, and evaluated. It should furthermore be noted that all procedures associated with the intervention (i. e. screening, scoring, documentation) were also completed either by the doctors themselves or by their receptionists.

Background

Categorisation and Definitions of Alcohol Use Disorders

Alcohol use disorders need to be distinguished from *abstinence* and *safe alcohol consumption* that is not associated with any physical, psychological, or social harm. The term *alcohol use disorders* can be divided into four main categories (Rist, Demmel, Hapke, Kremer, & Rumpf, 2004): (a) hazardous drinking, (b) harmful alcohol use, (c) alcohol abuse, and (d) alcohol dependence.

Hazardous drinking is associated with an increased risk of alcohol-related harm in terms of physical impairment (Rist et al., 2004). It is usually defined by the frequency and the quantity of alcohol consumption (Gordon, 2006). The limits, however, do vary in different countries and cultures. Gordon (2006), for example, defines more than 14 standard drinks per week for men and more than seven drinks per week for women as being amounts indicating hazardous drinking. Additionally, he defines *binge drinking* as a particular subset of hazardous drinking, in the centre of which is the amount of alcohol consumed on one occasion (more than five standard drinks for men and more than four drinks for women, respectively). Binge drinking is more prevalent among adolescents and young people and associated with unique health risks and risky behaviours (e. g. drink-driving, unsafe sex) in particular. In the case of *harmful alcohol use* physical, psychological, and/or social harm is already detectable.

In contrast to hazardous and harmful drinking, *alcohol abuse* and *alcohol dependence* are further defined by conditions and harm associated with the consumption of alcohol, not solely by the actual amount consumed (Gordon, 2006). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association, 2000) a person has to fulfil at least one of the following four criteria over the course of the prior year to be given the diagnosis of *alcohol abuse*: (a) failure of roles at home, work, or school, (b) risk of bodily harm at work or socially, (c) run-ins with the law, and (d) interpersonal trouble with family and friends. The diagnosis of *alcohol dependence* is defined by meeting three of the following seven criteria occuring over the course of the prior year: (a) tolerance, (b) physical or psychologic withdrawal, (c) consumption of larger amounts or over a longer time than

intended, (d) persistent desire or unsuccessful efforts to cut down or control alcohol use, (e) large amounts of time spent pursuing activities to obtain or use alcohol or to recover from its effects, (f) reduction or abandonment of important social, occupational, or recreational activities, and (g) continued alcohol use despite knowledge of having a persistent or recurrent problem that is likely to have been caused or exacerbated by its use (American Psychiatric Assosciation, 2000).

In Germany, Bühringer et al. (2000) specify five categories of alcohol consumption based on a quantity-frequency index[1]: (a) abstinence, (b) low-risk consumption (< 30 g for men, < 20 g for women), (c) hazardous drinking (30 – 60 g for men, 20 – 40 g for men), (d) harmful drinking (> 60 – 120 g for men, > 40 – 80 g for women), and (e) excessive drinking (> 120 g for men, > 80 g for women).

Prevalence of Alcohol Use Disorders

In the context of their report on alcohol in Europe, Anderson and Baumberg (2006) state that about 15% of the European population consume more than 40 g and 20 g, for men and women respectively, of ethanol as an average daily amount. Such an amount surpasses the limits for hazardous drinking as defined by Bühringer et al. (2000). Indeed, another 6% of these drinkers consume even more than 60 g and 40g, respectively. According to Anderson & Baumberg (2006) about 5% of men and 1% of women in Europe can be categorised as alcohol dependent; there is an abstinence rate of only 15%.

In order to illuminate the situation concerning alcohol use in Germany, representative postal surveys were conducted with 8,139 and 8,061 participants, respectively, aged between 18 and 59 years (Kraus & Augustin, 2001; Augustin & Kraus, 2005). Prevalences during the last 12 months were assessed for the different categories of alcohol consumption as defined by Bühringer et al. (2000). First of all, a much lower abstinence rate of 7.9% (7% for men and 8.9% for women) was found compared to the numbers of the European report (Augustin & Kraus, 2005). About 71.1% of the sample (70.8% and 71.5%, respectively) fell within the category of low-risk consumption. Hazardous drinking habits were found for 9.3% of the sample (12.1%

[1] Average daily amount of ethanol consumed during the last 30 days.

and 6.3%, respectively) and 2.5% (3.7% and 1.2%, respectively) of the participants drank at a harmful level. Excessive consumption of alcohol was found for 0.3% of the sample (0.4% and 0.1%, respectively). Furthermore, the 12-month prevalence of alcohol dependence according to DSM-IV criteria was 3.1% (5% and 1.3%, respectively) in the year 2000 which complies with the results of the European report (Kraus & Augustin, 2001).

Looking at alcohol use in the United States, Gordon (2006) draws an even more negative picture. Based on the results of the National Institute of Epidemiology's Survey on Alcohol and Related Conditions (with 43,093 participants), Gordon assumes that about one third of the US population is at least at risk of alcohol related harm. Furthermore, he states that probably 20% of primary care patients are problem drinkers of which 75% will never be identified as such.

Hill et al. (1998) assessed prevalence rates of alcohol abuse and dependence according to DSM-IV/ICD-10 in German general practices. Compared to the general population they found a prevalence rate nearly twice as high for alcohol dependence (7.2%), and a 3.5% prevalence rate for alcohol abuse. This indicates the relative high proportion of problem drinkers in primary care and underlines the importance of general practitioners (GPs) in the prevention and intervention of alcohol problems. Additionally, a representative study conducted in Northern Germany revealed that 63.3% of hazardous drinkers had consulted their family doctor during the previous 12 months and only 7.3% had not consulted any health care professional (Bischof, Rumpf, Meyer, Hapke, & John, 2004).

As can be seen in the results above, gender is an important correlate of alcohol use. Women in general drink less than men, and are more likely to be abstinent or drink at low-risk levels (Kraus & Augustin, 2001).

There also appear to be differences in alcohol consumption between diverse age groups (Kraus & Augustin, 2001). The highest abstinence rates are found for people aged between 18 and 20 (8.2%) and people aged between 50 and 59 (7.1%). In addition, prevalence for alcohol dependence was highest among people aged 25 to 29 (4%) and lowest in the age group of 50 to 59 (2.6%).

Screening and Brief Interventions for Alcohol Use Disorders

Given the profound negative effects of alcohol and the high prevalence of hazardous drinking, alcohol abuse and dependence in primary care practices, it seems sensible and necessary to employ screening and brief intervention procedures for alcohol use disorders into primary care routine.

Screening

There are three approaches to screen for alcohol use disorders: (a) laboratory indicators, (b) self-report questionnaires, and (c) assessment of alcohol consumption. The evaluation of these approaches is influenced by the respective aim: recognition of hazardous drinking or of alcohol abuse and dependence.

In order to ensure effective and efficient screening in primary care settings Gordon (2006) recommends a stepwise approach. Firstly, every patient should be asked about any alcohol consumption, to distinguish abstinent patients from those who drink alcohol. A second step should be to assess the individual amount of alcohol consumed. This can be realised by using quantity-frequency measures or screening questionnaires. Thirdly, hazardous drinking should be differentiated from alcohol abuse and dependence. Again, certain instruments (e. g. the CAGE: Cut-down, Annoyance, Guilt, Eye-opener) can be helpful at this stage. Finally, a distinct diagnosis for alcohol abuse or dependence should be formed by means of standardised interviews.

Laboratory indicators

Commonly discussed biochemical indicators of alcohol consumption are γ-glutamyltransferase (GGT), aspartate aminotransferase (ASAT), alanine aminotransferase (ALAT), mean corpuscular volume (MCV), and carbohydrate deficient transferin (CDT). A rise of GGT presupposes that the liver is already impaired which might also be due to factors other than alcohol consumption (Wetterling & Junghanns, 2006). GGT shows low specificity and sensitivity. These findings also apply to ASAT, ALAT and MCV (Wetterling & Junghanns, 2006). More promising are the findings about CDT, the laboratory indicator with the highest specifity, at least for men.

Analyses, however, are still too laborious and expensive to be useful in primary care routine (Wetterling & Junghanns, 2006).

Other biochemical indicators (e. g. 5-hydroxstryptophol [5-HTOL], methanol, ethyl-glukuronid [EtG], fatty acid ethylester) that are currently tested also seem unsuitable for detecting hazardous drinking (Wetterling & Junghanns, 2006). The only exception is phosphatdylethanol (PEth) which appears to be a sound indicator of hazardous drinking. Its implementation into routine care, however, is still difficult due to laborious analysing methods and necessary further studies.

Self-report questionnaires

Screening questionnaires have been developed to detect either hazardous drinking or alcohol abuse and dependence, or both. Commonly used questionnaires to screen for alcohol abuse and dependence are the CAGE (Ewing, 1984), the Michigan Alcoholism Screening Test (MAST; Selzer, 1971) and the German-language Lübeck Alcohol Dependence and Abuse Screening Test (LAST; Rumpf, Hapke, Hill & John, 1997).

CAGE is an acronym for four questions: (a) Have you ever felt you should **C**ut down on your drinking?, (b) Have people **A**nnoyed you by critising your drinking?, (c) Have you ever felt bad or **G**uilty about your drinking?, and (d) Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover (**E**ye-opener)? Cut-off scores for alcohol abuse or dependence have been set to either at least 1, or at least 2 positive answers. For both scores, sensitivities and specificities have been satisfactory but varied in different ethnic and gender populations (Fiellin, Carrington, & O'Connor, 2000; Gordon, 2006). Both, the acronym being a helpful mnemonic and the questionnaire's brevity, make the CAGE recommendable for brief screening of alcohol abuse and dependence in primary care. Hazardous drinking, however, is not reliably identified by it (Gordon, 2006).

The MAST consists of 25 items assessing alcohol use, social and occupational consequences, and previous attempts at alcohol treatment. With a cut-off score of 5 the MAST achieved a sensitivity of 98% and a specificity of 95% in a primary care sample (Gordon, 2006). A 10-item version, the Short MAST (SMAST), has also been developed to facilitate implementation into routine care. The SMAST revealed a sensitivity of 82% and a specificity of 96% for a lifetime diagnosis of alcohol abuse and

dependence when a cut-off score of 2 was employed. A higher sensitivity of 100% and a lower specificity of 85% were found for a current diagnosis (Fiellin et al., 2000).

The LAST comprises two items from the CAGE and five items from the MAST: (a) Are you always able to stop drinking when you want to?, (b) Have you ever felt you should cut down on your drinking?, (c) Have you ever felt bad or guilty about your drinking?, (d) Does your wife, husband, parent, or other close relative ever worry or complain about your drinking?, (e) Have you ever been into trouble at work because of drinking?, (f) Have you ever been told you have liver trouble/Cirrhosis?, and (g) Have you ever been in a hospital because of drinking? (Rumpf et al., 1997). Rist et al. (2004) recommend the LAST for screening of alcohol abuse and dependence in Germany because it has proved to be more sensitive, valid and economical than the CAGE and the MAST.

The increasing interest in prevention of alcohol problems has led to the development of screening instruments for hazardous drinking, the most popular of these being the Alcohol Use Disorders Identification Test (AUDIT) developed by the World Health Organisation (WHO; Babor, de la Fuente, Saunders & Grant, 1992). It comprises of 10 items that have five (items 1 to 8) or three (items 9 and 10) possible answers (see Table 1). A total score, ranging from 0 to 40, is computed by adding the scores of each item. The WHO recommends a cut-off score of eight for hazardous drinking (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). The AUDIT was meant to assess three conceptual domains (Reinert & Allen, 2002): alcohol intake (items 1 to 3), alcohol dependence (items 4 to 6), and adverse consequences of alcohol consumption (items7 to 10). In contrast to that, several studies analysing the factor structure of the AUDIT favoured a two-factor model (items 1 to 3 vs. items 4 to 10). One factor might be called drinking behaviour, whereas the other is about adverse consequences and symptoms of alcohol dependence (Reinert & Allen, 2002). The AUDIT-C is one of the abbreviated versions of the AUDIT consisting of the first three items.

Table 1

The Alcohol Use Disorders Identification Test

Items	Response options
1. How often do you have a drink containing alcohol ?	Never (0) Monthly or less (1) Two or four times a month (2) Two to three times a week (3) Four or more times a week (4)
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2 (0) 3 or 4 (1) 5 or 6 (2) 7 or 9 (3) 10 or more (4)
3. How often do you have six or more drinks on one occasion?	Never (0) Less than monthly (1) Monthly (2) Weekly (3) Daily or almost daily (4)
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never (0) Less than monthly (1) Monthly (2) Weekly (3) Daily or almost daily (4)
5. How often during the last year have you failed to do what was normally expected from you because of drinking?	Never (0) Less than monthly (1) Monthly (2) Weekly (3) Daily or almost daily (4)
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never (0) Less than monthly (1) Monthly (2) Weekly (3) Daily or almost daily (4)
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never (0) Less than monthly (1) Monthly (2) Weekly (3) Daily or almost daily (4)
8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?	Never (0) Less than monthly (1) Monthly (2) Weekly (3) Daily or almost daily (4)
9. Have you or someone else been injured as a result of your drinking?	No (0) Yes, but not in the last year (2) Yes, during the last year (4)
10. Has a relative, friend, doctor, or other health worker been concerned about your drinking or suggested that you should cut down?	No (0) Yes, but not in the last year (2) Yes, during the last year (4)

In the context of their review, Fiellin et al. (2000) found six studies from 1993 to 1998 evaluating the AUDIT. These revealed a sensitivity of 97% and a specificity of 78% for hazardous drinking when a cut-off score of eight or more was used. Across a set of 13 studies from 1996 to 2001, Reinert and Allen (2002) found a median sensitivity of 86% and a median specificity of 89%, again for a cut-off score of eight. They also stated that the AUDIT was often more sensitive and specific when compared to other self-report screening questionnaires, biochemical indicators, clinical interviews, and observation of significant others. However, the cut-off score of eight appears to be too high for women. The AUDIT showed satisfactory internal (Cronbach's alpha > .80) and test-retest reliabilities. The AUDIT-C performed nearly as well as the full version (Reinert & Allen, 2002) and is even more time-efficient.

McCusker, Basquille, Khwaja, Murray-Lyon, and Catalan (2002) compared the AUDIT with the CAGE in a general hospital and concluded that the AUDIT is preferable in clinical practice when screening for hazardous and harmful drinking. The AUDIT is also recommended by Gordon (2006) because it is (a) able to detect less severe alcohol problems, (b) short, (c) well tested, (d) able to identify current drinking behaviour, and (e) not influenced by gender or ethnicity.

Short screening questionnaires in general perform as well or better than any current laboratory indicator, except PEth and CDT, at recognising hazardous drinking in routine primary care (Fiellin et al., 2000; Wetterling & Junghanns, 2006).

In addition to the above described questionnaires, a single-question approach appears to be a good idea because of the ease of employing it in routine practice. Questions like the AUDIT item 3 ("How often do you have six or more drinks on one occasion?") have mostly yielded satisfactory sensitivities and specificities for detecting problem drinkers and might be useful as pre-screening tool (Gordon, 2006).

Assessment of alcohol consumption

There are two common methods to assess alcohol consumption: quantity-frequency questions and the Time-Line Follow-Back (TLFB; Sobell, Maisto, Sobell, & Cooper, 1979) technique. Both are recommendable, even though the TLFB has been shown to be slightly more valid (Shakeshaft, Bowman, & Sanson-Fisher, 1999). Validity can be improved by asking for specific drinks and volumes (Williams, Proudfit, Quinn, & Cambell, 1994). With respect to use in primary health care routine it

should be noted that the quantity-frequency questions are more economical (Rist et al., 2004).

Brief interventions

How brief is brief?

Looking at the extent of treatments for alcohol problems, Babor (1994) distinguishes (1) minimal interventions (1 session of no more than 5 minutes),
(2) brief interventions (max. 3 sessions of no more than 60 minutes),
(3) moderate interventions (5 to 7 sessions), and
(4) intensive interventions (8 or more sessions).

In practice, however, it is often difficult to differentiate between minimal and brief interventions. In their review, Bien, Miller, and Tonigan (1993) included studies of brief interventions with zero to five sessions of intervention or advice, resulting in a mean of 1.4 sessions. In another review, Whitlock, Polen, Green, Orleans, and Klein (2004) classified brief interventions into three levels of intensity: (a) very brief interventions (1 session, up to 5 minutes), (b) brief interventions (1 session up to 15 minutes), and (c) brief multicontact interventions (1 session, up to 15 minutes, plus follow-up contacts). They concluded that brief multicontact interventions were the most effective compared to very brief and brief interventions in reducing risky and harmful alcohol use of primary care patients.

However, some other studies have also examined the effect of brief interventions' extent. For example, Aalto et al. (2000) found that minimal advice was as effective in reducing drinking as brief interventions of three or seven 10-to-20-minute sessions. The authors suggest that the reduced effectiveness of brief interventions might be due to the setting of general practice. Similarly, Wutzke, Conigrave, Saunders, and Hall (2002) found no difference in effectiveness at 9-month follow-up between (a) simple advice (5 minutes), (b) brief counselling (simple advice plus 15 minutes of counselling), and (c) extended counselling (brief counselling plus 2 more counselling sessions). In contrast, another randomised controlled trial compared a brief intervention consisting of a 15-minute counselling visit with simple advice of five minutes and showed that the brief intervention was more effective in reducing alcohol intake of male primary care patients (Córdoba et al., 1998).

Opportunistic versus specialist brief interventions

Heather (1996) distinguishes two conceptually different classes of brief interventions: *opportunistic* (or *primary care*) and *specialist* brief interventions. The main difference between the two is the respective target group. Opportunistic interventions are normally delivered to people in primary health care services who do not seek help for alcohol problems, whereas specialist brief interventions target patients who are seeking help for alcohol problems in specialist alcohol treatment services. The first group of patients is often identified by some form of screening. These patients often have less severe alcohol problems and are less motivated for treatment than the help-seeking population of specialist treatments (Moyer, Finney, Swearingen, & Vergun, 2002). Opportunistic brief interventions tend to be shorter, less structured, and less theoretically based than specialist brief interventions (Heather, 1996).

In their review, Bien et al. (1993) examined the effectiveness of opportunistic and specialist brief interventions. They found that brief interventions in primary care were predominantly successful in reducing alcohol consumption and alcohol-induced problems (7 of 8 studies). On the other hand, brief interventions were as effective as more intensive treatments in specialist settings (11 of 13 studies). Therefore, opportunistic and specialist brief interventions can both be effective. These results are basically replicated in a meta-analysis by Moyer et al. (2002). They found small-to-medium effect sizes for brief interventions compared to control conditions in non-treatment-seeking samples (34 studies) and hardly any significant effect sizes for brief interventions compared to extended treatment in treatment seeking samples (20 studies).

Formats and components of brief interventions

Apart from the temporal extent of an intervention, there are several features commonly used to characterise brief interventions (Moyer et al., 2002): (a) having a goal of reduced drinking, (b) delivered by a physician or other health-care professional, (c) directed at non-dependent, but hazardous drinkers, (d) addressing individuals' levels of motivation to change drinking habits, (e) being self-directed, and (f) having particular ingredients.

Furthermore, Rist et al. (2004) distinguish between conventional brief interventions (e. g. simple advice, psychoeducation) and brief interventions adapted from MI. MI is defined as a "client-centered, directive method for enhancing intrinsic

motivation to change by exploring and resolving ambivalence" (Miller & Rollnick, 2002). Four basic principles to facilitate change have been formulated:

(1) Express empathy.
The therapist tries to understand and accept the client's feelings and perspectives without judging, criticising, or blaming.

(2) Develop discrepancy.
By clarifying important personal goals and exploring the consequences of the patient's behaviour, the therapist tries to develop and increase the discrepancy between the goals and current behaviour.

(3) Roll with resistance.
Resistance is considered part of the process of change. The therapist tries to reframe the patient's statements of reluctance or ambivalence and does not impose his own perspectives.

(4) Support self-efficacy.
The therapist tries to convey to the patient that he/she is responsible for choosing and carrying out change and that he/she can do it.

Demmel (2001) presents several intervention formats that adhere to the above described principles of MI. The *Drinker's Check-up* (DCU; Miller, Sovereign, & Krege, 1988), for example, is based upon objective, but sensitive feedback about the results of a broad diagnostic assessment concerning alcohol consumption. It has been implemented in out- and in-patient settings and generally been successful in reducing alcohol consumption (e. g. Brown & Miller, 1993; Bien, Miller, & Boroughs, 1993).

An advancement of the DCU is the *Motivational Enhancement Therapy* (MET; Miller, 2000). It comprises one assessment session, one feedback session, and two booster sessions. In the context of Project MATCH (Matching Alcoholism Treatments to Client Heterogeneity) MET was compared to two more extensive treatment methods and proved to be as effective over a three year follow-up (Project MATCH Research Group, 1997, 1998).

Also similar to the DCU is the harm-reduction program BASICS (Brief Alcohol Screening and Intervention for College Students; Dimeff, Baer, Kivlahan, & Marlatt, 1999). After an assessment interview and elaborate diagnostic by means of questionnaires, participants are asked to record their drinking behaviour for one or two

weeks (self-monitoring). Subsequently, a feedback interview is conducted during which the participants are informed about the results of the assessment and the self-reports are discussed. A booster session can be offered if required. BASICS has so far proven to be effective in reducing alcohol consumption, social and health problems (Marlatt et al., 1998), and frequency of binge drinking (Borsari & Carey, 2000).

In order to allow the implementation of MI in routine practice, Rollnick, Heather, and Bell (1992) developed the *Brief Motivational Interviewing* (BMI). Apart from specific microskills (e. g. open-ended questions, reflective listening) certain intervention strategies (e. g. *The good things and the less good things*, *The future and the present*, *Exploring concerns*) are proposed. BMI has been compared to skills-based counselling (SBC) and routine hospital care (Heather, Rollnick, Bell, & Richmond, 1996). BMI and SBC proved to be superiour to the standard treatment in terms of a reduction of alcohol consumption. Furthermore, it appeared that BMI was especially effective for "unmotivated" patients. Later BMI had been further developed and a special guide for pracititioners was published (Health Behaviour Change, HBC; Rollnick, Mason, & Butler, 1999)

The term *brief motivational interventions* comprises interventions that have been adapted from MI and normally include some or all elements summarised in the acronym FRAMES (e. g. Miller & Rollnick, 1991): (a) Feedback (The client receives feedback about his/her current drinking status after a structured, comprehensive assessment has been performed.), (b) Responsibility (The client's personal responsibility for change is emphasised.), (c) Advice (The client is advised by therapist to change his/her drinking habits.), (d) Menu (A range of options is offered to the client so that he/she can choose his/her personal strategy to change.), (e) Empathy (The therapist is sympathetic and accepting of the client's perspective.), and (f) Self-efficacy (The therapist tries to persuade the client that he/she can make successful changes.).

In his review of brief interventions for alcohol problems Bien et al. (1993) showed the general effectiveness of brief interventions and also examined which of the FRAMES elements were relevant to the interventions of the included studies. All interventions contained some kind of feedback. Feedback and Responsibility were incorporated into 81% of the interventions, Self-efficacy in 69%, Empathy in 63% and

Menu in 59% of the interventions. There were 22 of these 32 studies that contained at least five of the six elements.

Efficacy of brief interventions

Several randomised controlled trials have been conducted to test the efficacy of brief interventions in primary care. Four of the six selected studies (see Table 2) report results in favour of brief interventions. Senft, Polen, Freeborn, and Hollis (1997), for example, compared patients receiving usual care to patients receiving a 15-minute counselling session based on the principles of MI and conducted by health counsellors (members of the research staff). Six and 12 months later, follow-up telephone interviews were conducted. No differences between the two groups emerged with respect to abstinence and number of drinks per drinking day at follow-up. However, at 6-month follow-up participants of the intervention group reported significantly lower alcohol consumption and fewer drinking days per week. Six months later the difference in total consumption was no longer significant, whereas the difference in number of drinking days was still significant.

Similarly, Fleming, Barry, Manwell, Johnson and London (1997) examined the efficacy a brief intervention treatment. After a 30-minute assessment interview, control participants only received a booklet on general health issues, whereas participants of the intervention group were given the same booklet, received two additional 15-minute brief interventions one month apart and telephone calls two weeks after each session. Participants of both groups had significantly reduced their drinking at 6-, 12- and 48-month follow-ups (see also Fleming et al., 2002); reduction, however, being more pronounced in the intervention group. Additionally, participants of the intervention group showed significantly shorter hospital stays and fewer emergency department visits.

Table 2

Randomised Controlled Trials of Brief Interventions in Primary Care

RCT	Country	Sample	Screening	Intervention	Results
Aalto et al. (2000)	Finland	118 female heavy drinkers aged 20 to 60 years	≥ 190 g ethanol/week or CAGE cut-off ≥ 2	Group A: 7 brief intervention sessions Group B: 3 brief intervention sessions Group C: 1 simple advice	Drinking reduced in all groups over three year follow-up No significant differences between groups
Fleming et al. (1997, 2000)	United States	482 male & 292 female problem drinkers aged 18 to 65 years	Men/women: > 168/ 132 g ethanol/week	Control group: assessment interview, health booklet Intervention group: assessment interview, health booklet, two 15-min interventions	Drinking reduced in both groups at 6, 12, & 48 months follow-up Greater improvement (drinking & health care utilisation) in the intervention gruop
Lock et al. (2006)	United Kingdom	63 male & 63 female heavy drinkers aged 16 years and over	Men/women: AUDIT cut-off ≥ 8/7	Control group: leaflet & usual advice Intervention group: 5 – 10 min brief intervention, self-help booklet	Reduced AUDIT scores in both groups at 6 & 12 months follow-up No significant differences between groups
Ockene et al. (1999); Reiff-Hekking et al. (2005)	United States	343 male & 187 female high-risk drinkers aged 21 to 70 years	Men/women: > 12/9 drinks/week or binging ≥ 1/month or CAGE cut-off ≥ 2	Usual care: assessment interview, health booklet Special intervention: assessment interview, health booklet, 5 – 10 min patient-centred counselling	Drinking reduced in both groups at 6 &12 months follow-up Greater reduction in the special intervention group
Senft et al. (1997)	United States	364 male & 152 female hazardous drinkers aged 21 years and over	AUDIT score 8 – 21	Control group: usual care Intervention group: message, 15-min brief intervention adapted from MI	Fewer drinking days/week in the intervention group at 6 & 12 months follow-up
Wutzke et al. (2002)	Australia	351 male & 203 female hazardous drinkers	Men/women 300/180 g ethanol/week or 2 ≥ occasions/months 100/60 g or alcohol related harm	Control group: assessment only Simple Advice: 5 min Brief counselling: 5 + 15 min Extended counselling: 5+ 3 x 15 min	Significant lower consumption in intervention groups at 6 month follow-up, but not after 10years No effect of intervention intensity

Ockene, Adams, Hurley, Wheeler, and Hebert (1999) compared a control group receiving usual care and a health booklet to a special intervention group. The special intervention included the health booklet, a 5- to 10-minute patient-centered counselling session, and additional visits if desired. Results at 6-month follow-up showed that reduction of alcohol consumption was significantly greater in the intervention group. Additionally, there was a tendency for greater decrease of binge drinking episodes in the intervention group. Analysing only excessive weekly drinkers (men/women: > 12/9 drinks/week) showed a significantly greater percentage of participants achieving safe drinking levels in the intervention group compared to the control group. At 12-month follow-up participants of the intervention group still had larger reductions of weekly alcohol intake than participants of the control group and more participants of the intervention group maintained safe drinking levels (Reiff-Hekking, Ockene, Hurley, & Reed, 2005).

Wutzke et al. (2002) conducted a study to examine the long-term effectiveness of brief interventions for unsafe alcohol consumption. They compared four groups of participants receiving different treatment: (a) control group (assessment only), (b) simple advice (5-minute brief advice, information leaflet), (c) brief counselling (simple advice plus 15 minutes of counselling in problem-solving techniques), and (d) extended counselling (brief counselling plus 2 additional counselling sessions). The authors found that at 9-month follow-up participants of the intervention groups reported significantly lower alcohol consumption and less unsafe drinking than the control group. No significant differences appeared among the three intervention groups. However, at 10-year follow-up the above described differences between control and intervention groups had diminished. It can be argued therefore that brief interventions tend to exhibit rather short- than long-term effectiveness.

However, two of the selected studies report results questioning even the short-term effectiveness of brief interventions in primary care. Alto et al. (2000) compared the effects of simple advice, a 3-session, and a 7-session brief intervention. Each of the 10- to 20-minute brief intervention sessions was based on the FRAMES concept. All groups reported reduced drinking and no significant differences between the groups appeared. The authors conclude that brief interventions might not work as well in the routine setting of general practice compared to special research conditions.

In a recent study conducted by Lock et al. (2006) standard treatment was compared to a 5- to 10-minute brief intervention including structured advice on alcohol, tips to reduce consumption, advice on how to set goals, determine action, and review progress. A self-help booklet was also offered to the patients. Despite the fact that both groups showed significant reduction in AUDIT score at 12-month follow-up, no significant differences between the groups were found with respect to any outcome measure of alcohol consumption. However, it has to be kept in mind that the intervention was performed by nurses, not GPs and that the sample was rather small *(n* = 126).

In order to get a more comprehensive picture of the empirical evidence, several meta-analyses and reviews concerning the effectiveness of brief interventions have been published over the last years. However, they tend to have different emphases with respect to outcome measures, settings, intervention formats, and experimental designs. The following section, however, will concentrate on seven reviews and meta-analyses that examine the effect of brief interventions on alcohol consumption (see Table 3). The effects of brief interventions within other behavioural domains (e. g. cigarette smoking, illicit drug use, diet, exercise, HIV-risk behaviours) might be analysed in the context of these reviews, but will not be discussed here.

The reviewed randomised controlled trials were conducted in a variety of settings and only one review confined to studies conducted in primary care (Whitlock et al., 2004) exists. The other six reviews contain studies of at least three different settings (e. g. primary care, specialist treatments, hospitals, community settings). Futhermore, there appear to be two main clusters of brief interventions within this selection of reviews: (a) brief interventions/brief counselling that are not further specified (Bien et al., 1993; Moyer et al., 2002; Whitlock et al., 2004), and (B) brief adaptations from MI (AMI; Burke, Arkowitz, & Menchola, 2003; Dunn, Deroo, & Rivara, 2001; Hettema, Steele, & Miller, 2005; Vasilaki, Hosier, & Cox, 2006). There are three experimental designs in the included studies: (a) brief intervention versus control group, (b) brief intervention versus extended/comparison treatment, and (c) brief intervention and standard treatment versus standard treatment alone.

Table 3

Reviews and Meta-analyses Examining the Effectivenss of Brief Interventions in Reducing Alcohol Consumption

Authors	Review or Meta-analysis	Settings	Intervention approach & experimental design	Number of studies included	Conclusions
Bien et al. (1993)	Review	(1) Health Care (general practices and hospitals) (2) Media adverts (3) Specialist treatment	(1a) Facilitating referral by empathic counselling, letters, telephone calls (1b) Brief interventions / counselling to reduce drinking	(1a) *n* = 13 (1b) *n* = 8	(1a) Brief interventions are effective in facilitating referral to specialist treatments (12 studies). (1b) Brief interventions are effective in reducing alcohol consumption and/or related problems (7 studies).
Burke et al. (2003)	Meta-analysis	(1) Hospital (2) Specialist treatment (3) College campus	AMI[2] (a) Prelude to further treatment (b) Stand-alone treatment (c) adjunct to standard treatment	(1) *n* = 7 (2) *n* = 6 (3) *n* = 3 (a) *n* = 4 (b) *n* = 11 (c) *n* = 1	AMIs have yielded • small to medium effect sizes when compared to no-treatment/placebo controls • no significant effects when compared to other treatments with respect to frequency of drinking and BAC[3].
Dunn et al. (2001)	Review	(1) Hospital (inpatient/ ER[1]) (2) Outpatient services (3) Specialist treatment (4) College campus	AMI (a) AMI vs no treatment (b) AMI vs. comparison treatment (c) AMI + usual treatment vs. usual treatment	(1) *n* = 4 (2) *n* = 5 (3) *n* = 6 (4) *n* = 2 (a) *n* = 6 (b) *n* = 9 (c) *n* = 5	AMIs appear to be effective on different outcome measures of substance abuse (10 of 15 studies).

(*table continues*)

Table 3 (*continued*)

Authors	Review or Meta-analysis	Setting	Intervention approach & experimental design	Number of studies included	Conclusions
Hettema et al. (2005)	Meta-analysis	e. g. outpatient services, inpatient facilities, general practices, jail, ER	Average of two sessions MI[4] or AMIs (a) AMI vs no treatment (b) AMI vs. comparison treatment (c) AMI + usual treatment vs. usual treatment	(a) *n* = 14 (b) *n* = 13 (c) *n* = 5	(a) AMIs appear to be more effective than no treatment (effect size 0.38). (b) AMIs appear to be slightly more effective than comparison treatments (effect size 0.11). (c) AMIs combinded with usual treatment seem more effective than usual treatment alone (effect size 0.33)
Moyer et al. (2002)	Meta-analyis	(1) Non-treatment seeking (2) Treatment seeking	Brief interventions (BI) (≤ 4 sessions) (a) BI vs. control group (b) BI vs. extended treatment	(1) + (a) *n* = 34 (2) + (b) *n* = 20	(1) + (a) For up to 12 months follow-up BI were significantly more effective than no treatment with respect to alcohol consumption and drinking related outcomes.
Vasilaki et al. (2006)	Meta-analysis	(1) Community setting (2) Hospital (3) Specialist treatment (4) College campus	AMIs (a) AMI vs. no treatment (b) AMI vs. comparison treatment	(1) *n* = 6 (2) *n* = 4 (3) *n* = 2 (4) *n* = 3 (a) *n* = 6 (b) *n* = 6 (a) + (b) *n* = 3	(a) AMIs are more effective than no treatment in reducing alcohol consumption among hazardous drinkers in the short term (≤ 3 months). (b) AMIs are more effective than a diverse set of other treatments.
Whitlock et al. (2004)	Review	General practices	Behavioural counselling interventions (a) very brief (1 sesion, ≤ 5 min) (b) brief (1 session, ≤ 15 min) (c) brief multicontact (initial session ≤ 15 min + follow-up contacts)	(a) *n* = 2 (b) *n* = 6 (c) *n* = 7	(a) + (b) Very brief and brief interventions were only significantly more effective than no treatment in 3 of 8 studies. (c) Brief multicontact interventions were more effective than no treatment (6 of 7studies).

Note. [1] Emergency Room. [2] Brief interventions adapted from Motivational Interviewing. [3] Blood alcohol concentration. [4] Motivational Interviewing.

Three reviews include studies with all three experimental designs (Burke et al., 2003; Dunn et al., 2001; Hettema et al., 2005), three reviews include studies with a control group and studies with a comparison group (Bien et al., 1993; Moyer et al., 2002; Vasilaki et al., 2006), and one review includes only studies with a control group (Whitlock et al., 2004). Due to this complexity, the results of these reviews will be described in chronological order, and findings relevant to brief interventions adapted from MI and conducted in primary care settings will be emphasised.

Bien et al. (1993) reviewed eight randomised trials in health care settings and found that within seven of these studies alcohol use and/or related problems were significantly reduced among patients receiving a brief intervention compared to control groups. Considering a variety of outcome measures (e. g. weekly alcohol consumption, typical daily alcohol consumption, GGT levels), Bien et al. found a mean effect size of 0.38 favouring brief interventions compared to no intervention. Additionally, they found brief interventions to be effective in facilitating referral to specialist treatment services (11 of 12 studies) and to be about as effective as more extensive interventions in treatment contexts (11 of 13 studies).

Eight years later, Dunn et al. (2001) explored the effectiveness of brief interventions adapted from motivational interviewing (AMI) across four behavioural domains (substance abuse, smoking, HIV risk, and diet/exercise) in a variety of settings. They identified 17 studies in the field of substance abuse and 10 of these studies analysed the effectiveness of AMIs with respect to different outcome measures of alcohol consumption (e. g. drinks per week, blood alcohol concentrational, alcohol related problems). Participants included men, women, young people and adults with a diagnosis of alcohol abuse or dependence. Four trials compared AMIs with a no-treatment control group and two of these found significant effect sizes (ranging from 0.30 to 0.92) at 12-month follow-up favouring brief interventions. Another six studies compared AMIs with a comparison treatment (e. g. cognitive behavioural treatment, 12-Step Facilitation Treatment, directive confrontational counselling). Three studies found AMIs to be more effective than the comparison treatment (effect sizes ranging from 0.42 to 0.73), two studies found no significant differences, and one study found 12-Step Facilitation Treatment superiour to AMI. Finally, AMIs combined with usual treatment were compared to usual treatment alone in two studies. One of them reported significant

effects favouring AMI plus usual treatment at 3-month follow-up (effect size of 0.83), whereas the other study found no significant effect sizes at 1-month follow-up.

In 2002 Moyer et al. compared the effectiveness of brief interventions in reducing alcohol problems between treatment-seeking and non-treatment-seeking populations. Treatment-seeking participants are usually self-referred drinkers or come from specialist treatment services, whereas non-treatment-seeking samples are found opportunistically (e. g. in primary care practices or hospitals). The authors identified 20 randomised controlled trials comparing brief interventions with extended treatment in treatment-seeking samples and 34 trials comparing brief interventions with control conditions in non-treatment-seeking samples. Within the treatment-seeking samples only one significant aggregate effect size of 0.42 was found for alcohol consumption at 3- to 6-month follow-up, indicating superiority of brief interventions compared to extended treatment. Looking at the non-treatment-seeking samples, however, revealed significant aggregate effect sizes (ranging from 0.14 to 0.67) for alcohol consumption and a composite of all drinking-related outcomes for up to 12-month follow-up, favouring brief interventions over control conditions. Additionally, when participants with severe alcohol problems were excluded, the effect of brief interventions was significantly larger.

Burke et al. (2003) conducted a meta-analysis of randomised controlled trials to evaluate the effectiveness of AMIs within five behavioural domains (alcohol, drugs, diet/exercise, smoking, HIV risk). The authors identified 15 studies investigating AMIs for alcohol problems and 10 of these had previously been considered in the review by Dunn et al. (2001). Again, studies were conducted in a variety of settings (hospitals, substance abuse clinics, college campuses) and two design types were implemented (AMI vs. control condition, AMI vs. comparison treatment). Sample sizes varied from 32 to 952 participants. Four studies examined the effect of AMIs as a prelude to further treatment, 11 studies employed AMIs as a stand-alone treatment, and only one study combined AMI with standard treatment. Compared with a no-treatment or placebo control group, AMIs yielded significant combined effect sizes with respect to drinking frequency ($d = 0.25$) and to blood alcohol concentration ($d = 0.53$). However, combined effect sizes were non-significant when AMIs were compared with alternative treatments ($d = 0.09$). Furthermore, Burke et al. state that, regardless of design type and

behavioural domain, effects of AMIs did not appear to fade significantly over time (up to 67 weeks of follow-up).

In their review, Whitlock et al. (2004) concentrated on 12 studies examining the effect of behavioural counselling interventions on alcohol consumption among non-dependent, but hazardous drinkers in primary care. The authors distinguished between (a) very brief interventions (1 session, ≤ 5 minutes; 2 studies), (b) brief interventions (1 session, ≤ 15 minutes; 6 studies), and (c) brief multicontact interventions (1 session, ≤ 15 minutes, plus follow-up contacts; 7 studies). Twelve of these 15 interventions were delivered at least partially by the patients' usual primary care physician. Only three of eight studies testing very brief and brief interventions found significant effects with respect to alcohol consumption. In contrast, six of the seven trials testing brief multicontact interventions reported significant effects on at least one alcohol outcome measure. Whitlock et al. concluded that brief multicontact behavioural interventions can reduce risky and harmful alcohol consumption among primary care patients, whereas very brief and brief interventions are less effective or even ineffective. They added that successful interventions generally include advice, feedback, goal setting, and additional contacts for further assistance and support.

Hettema et al. (2005) identified 72 studies examining the efficacy of MI (MI) within a variety of behavioural domains (e. g. alcohol, smoking, drugs, HIV, gambling, eating disorders). The effect of MI on alcohol consumption was tested by 31 randomised controlled trials. Mean combined effect sizes favouring MI for up to 3-month follow-up were 0.44, compared to untreated control groups (n = 9), 0.28 when MI was added to standard treatments (n = 3), and 0.38 when compared to alternative treatments (n = 6). Across all follow-up points, combined effect sizes were 0.38 compared to untreated controls (n = 14), 0.33 as additive treatments (n = 5), and 0.11 compared to alternative treatments (n = 13). All combined effect sizes were significant.

The latest meta-analytic review to date was published by Vasilaki et al. in 2006 and examined the efficacy of MI as a brief intervention for excessive drinkers. The authors identified 22 studies which tested brief MI in a variety of settings: (a) colleges (7 studies), (b) outpatient community settings (6 studies), (c) emergency-rooms or clinic settings (5 studies), and (d) specialist substance-abuse treatment agencies (4 studies). Eighteen studies reported results favouring brief MI compared to no intervention,

comparison treatments, treatment as ususal, and standard care. Four studies found brief MI to be as effective as a comparison treatment, brief advice, and standard care. For the meta-analytic purpose of this review, seven studies were excluded because they did not meet the inclusion criteria or did not provide all relevant information. Of the remaining 15 studies, six compared brief MI with no treatment, six with another treatment, and three with both, no and comparison treatment. Significant aggregate effect sizes favouring brief MI were found compared to no treatment (d = 0.18), as well as compared to other treatments (d = 0.43). However, effect sizes comparing brief MI to no-treatment control groups were significantly heterogeneous. Therefore, the nine studies were divided into trials with a follow-up period of no more than three months (n = 5) and trials with a follow-up period of three to six months (n = 4). Significant differences between the two groups were found, showing that within a short-term follow-up period brief MI was more effective (d = 0.60 vs. d = 0.06). However, effect sizes within the group of short-term follow-up were still significantly heterogeneous. Further analyses revealed that the effect of brief MI was significant when participants with severe alcohol problems were excluded (d = 0.40). Thus, the authors concluded that brief MI is more effective than no treatment in reducing alcohol consumption among hazardous drinkers in the short term.

To summarise, it can be claimed that there is growing evidence from randomised controlled trials as well as meta-analyses documenting the effectiveness of brief interventions adapted from MI in reducing alcohol consumption and alcohol-related problems in a variety of settings. However, there are still many questions to be answered by future research. For example, it is still unclear how effective brief interventions can be for alcohol dependent drinkers. Furthermore, we still do not know enough about the long-term efficacy of brief interventions, about their effective components, and about their optimal extent. Finally, it has still to be examined whether brief interventions can work within the routine of general practice and similar settings.

Nicotine Dependence: a Correlate of Alcohol Use Disorders

Prevalence of Nicotine Dependence

Even though the prevalence of smoking has declined notably in most Western countries during the past decades (e. g. Kraus & Augustin, 2001), current numbers are still a major cause of health concerns. In the context of their representative survey conducted in Germany, Augustin, Metz, Heppekausen, and Kraus (2005) found 42% of the participants to be non-smokers (i. e. no more than 100 cigarettes in ones life), 24.2% to be former smokers (i. e. more than 100 cigarettes in ones life, but currently abstinent), and 33.9% to be regular smokers (i. e. having smoked during the last 30 days; 37.1% of men and 30.5% of women, respectively). Less than 5% consumed other tobacco products (e. g. cigars, chewing tobacco) than cigarettes. Among smokers, 43.9% smoked no more than 10 cigarettes per day, and 35.6% were heavy smokers (at least 20 cigarettes per day; 41.6% of men and 28.6% of women, respectively). While the overall prevalence of smoking declines with age (41.3% smokers among 18- to 20-year olds, 27.4% among 50- to 59-year olds), the prevalence of heavy smoking increases (10.5% among 18- to 20-year old smokers, 44.7% among 50- to 59-year old smokers). Regarding nicotine dependence, 11.4% of the sample (13.5% of men and 9.2% of women) scored positive on the Fagerström Test of Nicotine Dependence (Heatherton, Kozlowski, Frecker, & Fagerström, 1991).

Hoch et al. (2004) explored the prevalence of smoking among German primary care patients and found point-prevalences (4 weeks) of 4.7% for occasional tobacco use and of 25% for regular use. However, 71% of the patients reported having ever smoked a cigarette, pipe, or cigar in their lives. Additionally, the authors found a prevelance of 13.9% for nicotine dependence according to DSM-IV criteria which is notably higher than the general population prevalence of 8% reported by Kraus and Augustin (2001).

Since the late 1970s it has been stated that a close relationship exists between addictive behaviours, expecially between alcohol and tobacco use (e. g. Battjes, 1988). Anthony and Echeagaray-Wagner (2000), for example, analysed patterns of co-occurring consumption and dependence of alcohol and tobacco in the United States. They found that among young adults, the prevalence of concurrent alcohol and tobacco

use was between 35 to 45%, whereas among the youngest (12 years and older) and oldest (older than 60 years) participants 10 to 15% had consumed both alcohol and tobacco within the past year. Additionally, the authors concluded from their analyses that the majority of smokers had also consumed alcohol, whereas the proportion of smokers among alcohol consumers was smaller. Looking at the dependence rates according to DSM-II-R criteria, it was found that among female smokers approximately 8 to 10% were diagnosed as alcohol and tobacco dependent. For male smokers these values were slightly higher.

In Germany, Demmel, Beck, Richter, and Reker (2004), for example, found a prevalence of 89% of smokers among alcohol dependent inpatients. Similarly, a study conducted by John et al. (2003) revealed 78 to 81% smokers among alcohol dependent participants. Additionally, 47.1% of regular smokers in a general hospital and 32% of smoking patients in general practices showed at least hazardous drinking habits, compared to 18% in the general population.

Assessment of Nicotine Dependence

Tobacco use can quite easily be assessed by the number of smoking days during the past months and the number of cigarettes (or other tobacco products) per smoking day. However, in order to assess nicotine dependence, several instruments have been developed. One of the first is the Fagerström Tolerance Questionnaire (FTQ; e.g. Fagerström & Schneider, 1989) consisting of eight items. Its revision, the Fagerström Test of Nicotine Dependence (FTND; Heatherton et al., 1991), comprises of six items and represents a modest improvement over the FTQ in terms of internal consistency and correlation with nicotine withdrawal symptoms (Payne, Smith, McCracken, McSherry, & Antony, 1994). The Heavy Smoking Index (HSI; Heatherton, Kozlowski, Frecker, Rickert, & Robinson, 1998) is an even shorter version of the FTND and consists of only two items (time until the first cigarette of the day and number of cigarettes per day). It has shown good sensitivity and specificity and represents a brief alternative to the FTND for detecting severe nicotine dependence (Diaz et al., 2005). Other examples of instruments to assess nicotine dependence are the Nicotine Dependence Syndrome Scale (NDSS; Shiffman, Water, & Hickcox (2004) and the Hooked On Nicotine Checklist (HONC; Wellman et al., 2005).

Brief Interventions for Nicotine Dependence

Apart from nicotine being highly addictive on its own, the concurrent use of nicotine and alcohol poses specific problems. On one hand, the disease risk from concurrent smoking and drinking is higher than by an either alone (John et al., 2003). Such synergistic effects have, for example, been found for cancers of the mouth, throat, and larynx (Battjes,1988). On the other hand, smoking influences alcohol consumption and vice versa, which is particularly relevant to treatment of either dependence. Battjes (1988), for example, states that increased alcohol consumption leads to increased tobacco consumption. Similarly, John et al. (2003) mention that drinking increases the craving to smoke. With respect to treatment, it has been shown that smokers who quit during treatment for alcohol use disorders are more successful in controlling their drinking than smokers who continue to smoke (e. g. Miller, Hedrick, & Taylor, 1984). Similarly, smokers who avoid alcohol tend to be more successful in reducing their levels of smoking (e. g. Battjes, 1988). A more recent study conducted by Kohn, Tsoh, and Weisner (2003) also showed that patients who quit smoking were more successful in abstaining from alcohol than patients who started or continued to smoke during substance abuse treatment.

Smokers tend to use a variety of strategies to quit or reduce smoking: (a) self-help approaches (e. g. support from relevant others, books, brochures), (b) nicotine replacement therapy (NRT; e. g. chewing gum, transdermal patch), (c) pharmacotherapy (e. g. Bupripion, Varenicline), and (d) psychological interventions (e. g. counselling, brief interventions, smoking cessation courses). Kraus and Augustin (2001) compared former smokers (successful quitters) and current smokers who tried to quit (unsuccessful quitters) with respect to frequency of use of different smoking cessation strategies. Most smokers tried to quit smoking without any aids (87.2% of successful quitters and 62% of unsuccessful quitters). The use of self-help material was also quite common among both groups (15.5% and 28.6%, respectively). Interestingly, unsuccessful quitters made notably more use of NRT than successful quitters (16.7% and 2.5%, respectively). Psychological interventions were used very rarely in both groups ($\leq$ 1%).

Whereas these findings suggest that smokers can be successful in smoking cessation without any aids, it is still necessary to examine the effectiveness of smoking

cessation interventions. The evidence for the effectiveness of self-help material is still inconsistent, but positive effects can be enhanced by counselling and pharmacotherapy (Ranney, Melvin, Lux, McClain, & Lohr, 2006). NRT and other pharmacotherapies have generally been found to be effective and recommandable (e. g. Ranney et al., 2006; Wu, Wilson, Dimoulas, & Mills, 2006). In their review, Ranney et al. found mixed results regarding the effectiveness of stand-alone counselling interventions, but suggest that pharmacotherapy combined with psychological interventions can be more effective than pharmacotheray alone. Okuyemi, Nollen, and Ahluwalia (2006) state that while brief physician advice can increase cessation rates, effects, however, are lesser than for pharmacotherapy.

GPs can and should play an important role in smoking cessation programs for several reasons (e. g. Hoch et al., 2004; Richmond & Anderson, 1994). About 70% of smokers visit their family doctor at least once a year and therefore GPs often know their patients very well and are informed about habits, health status, and risk factors. Additionally, GPs present a credible source of health information to the patient and general practices offer a setting without the possible stigma of specialist treatment. Finally, brief interventions and counselling for smoking cessation are generally accepted by GPs and for example, tend to be performed more often than interventions for hazardous alcohol consumption (Aira, Kauhanen, Larivaara, & Rautio, 2004). However, Kraus and Augustin (2001) found that only 20% of male smokers and 15% of female smokers received some sort of advice from a physician. Furthermore, Hoch et al. showed that more than 25% of smokers were not even recognised as such by their physician. In addition, only about 50% of recognised cases received some form of advice or counselling.

In order to take a closer look at the efficacy of brief interventions for smoking cessation, several reviews and meta-analyses can be considered, but the results are mixed. For example, Dunn et al. (2001) identified two studies examining the effectiveness of brief interventions for smoking cessation of which only one revealed a significant effect size of 0.23. Similarly, Hettema et al. (2005) analysed six studies of motivational brief interventions, showing only one small effect, and concluding that MI has been unsuccessful to date in promoting smoking cessation. Burke et al. (2003) also found no significant combined effect size based on two studies. In contrast, Rubek,

Sandbaek, and Lauritzen (2005) found that brief motivational interviewing led to positive effects in eight of 12 studies. To be more precise, Richmond and Anderson (1994) state that very brief interventions (1 session of only a few minutes) result in smoking abstinence rates of 5 to 10%, whereas extended treatment results in rates of 20 to 36% smoking abstinence. Furthermore, the authors maintain that cessation rates increase when brief interventions are combined with self-help material and NRT.

An interesting study conducted by Stotts et al. (2003) explored motivational aspects and their relation to treatment retention in the context of a dual-substance dependence programme for alcohol and nicotine dependent outpatients. Even though patients were interested in changing both smoking and drinking behaviour, results indicated that patients were more confident and engaged in the process of changing alcohol consumption relative to smoking. Additionally, patients reported lower temptation to use alcohol. With respect to treatment retention, patients with higher initial motivation for quitting both drinking and smoking tended to drop out of treatment earlier than patients with higher motivation for one and lower for the other behaviour. The authors suggest that this effect might be due to the excessive demands of concurrent treatment for alcohol and nicotine dependence. However, direct outcome measures of alcohol and nicotine consumption are not reported and conclusions about the actual efficacy of the treatment programme cannot be drawn (Demmel & Nicolai, 2006). Furthermore, it has to be kept in mind, that this study did not explore the effect of a brief intervention, but of a treatment programme for drinking and smoking.

It should be highlighted that the evidence for brief interventions' efficacy for smoking cessation is still ambiguous. Furthermore, the concurrent treatment of nicotine and alcohol dependence might pose specific problems, despite the possible positive influence on treatment outcome outlined above.

Study aims

The present study was conducted within the context of Project BrIAN (**Br**ief **I**ntervention for **A**lcohol Problems and **N**icotine Dependence; Demmel et al., 2003), a research project supported by the Bundesministerium für Bildung und Forschung (BMBF). Several research centres (University of Duisburg-Essen, University of Münster, and University of Wales College of Medicine) cooperated and developed a brief intervention and a training programme which were then implemented into routine primary care practice. Whereas the efficacy of the training and the German-language version of the AUDIT are separately evaluated, the present study examines the actual effectiveness of the brief intervention.

Participants were randomised to a control or an intervention group before the screening was employed to avoid selection effects. The AUDIT was used as a screening instrument with a cut-off score of eight for alcohol problems as recommended by the WHO (Saunders et al., 1993). The intervention was adapted from MI and intended to be a rather short interview of 10 to 15 minutes in order to be possible to implement within routine primary care practices. Furthermore, the brief intervention was highly structured and manual-guided to enhance internal validity. Similarly, the training of the doctors was diligently planned and conducted. It consisted of two 3-hour sessions, supplemented by an additional booster session. Apart from general information provided about MI, role-plays with standardised patients and respective feedback were major components of the training. With respect to external validity, it is important to note that the doctors and receptionists themselves employed all procedures involved with the intervention (i. e. screening, scoring, intervention, and documentation).

The literature documents the high prevalence of concurrent alcohol and tobacco use (e. g. John et al., 2003) and it has also been shown how drinking and smoking can influence each other in treatment contexts (e. g. Kohn et al., 2003). The present study however, is the first worldwide randomised controlled trial to examine the effect of a brief intervention addressing both drinking and smoking. Additionally this study allows to address whether the effectiveness of a brief intervention for alcohol use depends on the participants' smoking status. Another important consideration in the context of brief interventions is to explore possible effects of gender on the effectiveness of a brief intervention; findings to date have still been ambiguous (for a review see Chang, 2002).

Furthermore, this study is the first trial of a brief intervention in primary care conducted in Germany, a country with a high per capita consumption of alcohol. Many of the studies supporting the efficacy of brief interventions to reduce alcohol use have been employed within populations of lower alcohol consumption such as the United States (e.g . Fleming et al., 1997) and Australia (e. g. Wutzke et al., 2002) and it appears necessary to examine whether these findings can be related to populations with higher consumption levels.

Method

Participants

Total Sample

As described below, 8,089 patients formed the basic sample (see Implementation), but in order to gain an appropriate sample for the required analyses several further exclusion criteria had to be considered (see Table 4).

Table 4

Total Sample: Exclusion Criteria and Numbers of Excluded Patients

		Basic sample *n* = 8089
Exclusion criteria	Excluded	Remaining
Baseline		
Patients for validation purposes[a]	*n* = 928	*n* = 7161
Incomplete alcohol use items[b]	*n* = 375	*n* = 6786
Implausible quantity[c]	*n* = 19	*n* = 6767
Incomplete AUDIT[d]	*n* = 246	*n* = 6521
AUDIT< 8	*n* = 5538	*n* = 983
No Intervention in spite of belonging to the intervention group	*n* = 158	*n* = 825
Intervention in spite of belonging to the control group	*n* = 8	*n* = 817
Patients already in treatment	*n* = 15	*n* = 802
No information about treatment	*n* = 12	*n* = 790
Incomplete readiness to change/self-efficacy ratings[e] and incomplete intervention documentation	*n* = 2	*n* = 788
Follow-up		
Follow-up period expired	*n* = 10	*n* = 778
Follow-up questionnaire not sent back	*n* = 178	*n* = 600
Uncompleted follow-up questionnaire	*n* = 1	*n* = 599
Implausible or incomplete alcohol use items	*n* = 9	*n* = 590
Pregnant	*n* = 2	*n* = 588
AUDIT item 1 = 0	*n* = 2	*n* = 586
> 2 missings in the AUDIT	*n* = 2	*n* = 584
Implausible changes in AUDIT scores from baseline to follow-up	*n* = 1	Total sample: *n* = 583

Note. [a] These patients were taking part in a validation study on the AUDIT in the context of Project BrIAN (Brief Intervention for Alcohol Problems and Nicotine Dependence). [b] Consumption items: frequency (number of drinking days during the last month) and quantity (the number of drinks on an average drinking day during the past month). [c] Women: > 400 g pure alcohol, men: > 500 g pure alcohol. [d] Alcohol Use Disorders Identification Test. [e] Readiness to change alcohol use/alcohol moderation self-efficacy: 11-point rating scale (0 = *not at all important/confident*, 10 = *extremely important/confident*).

The selected 583 patients of the total sample were assigned to either the control group (n = 366) or the intervention group (n = 217) according to the colour of their questionnaire. With regard to demographic characteristics the two groups differed only with respect to age (see Tables 5 and 6). There were also no significant differences between the control and the intervention group with regard to consultations of the particular doctor (see Table 7). The two groups differed with respect to frequency, quantity, and quantity-frequency index (QFI) of alcohol use, as well as the prevalence of hazardous drinking (see Table 8). Groups did not differ with respect to tobacco use (see Tables 9 and 10).

Table 5

Total Sample: Level of Education, Current Employment Status, Nationality, and Native Language as a Function of Group

	Control group		Intervention group			
	%	*n*	%	*n*	χ^2	*df*
Level of education					1.05[a]	2
No certificate	1.1	4	1.9	4		
Special school	1.4	5	1.4	3		
Elementary/secondary school	29.5	108	23.1	50		
Grammar school	23.2	85	25.9	56		
University entrance qualification	27.6	101	27.3	59		
University degree	16.1	59	19.0	41		
Other	1.1	4	1.4	3		
Current employment					1.32[b]	3
Trainee	9.8	36	8.8	19		
Clerk/civil servant	37.4	137	38.7	84		
Worker/skilled worker	21.0	77	17.1	37		
Self-employed	6.6	24	10.6	23		
Unemployed	5.5	20	5.1	11		
Pupil/student	12.0	44	10.1	22		
Homemaker	1.6	6	2.8	6		
Pensioner	2.5	9	3.7	8		
Other	3.6	13	3.2	7		
Nationality					0.15	2
German	96.2	352	95.9	208		
Other	3.6	13	3.7	8		
Two or more (incl. German)	0.3	1	0.5	1		
Native language					1.51	2
German	94.3	345	94.5	205		
Other	4.1	15	2.8	6		
Bilingual (incl. German)	1.6	6	2.8	6		

Note. [a] For the purpose of this analysis the original seven categories were summarised into three (no certificate = no certificate; no university entrance qualification = special school, elementary/secondary school, grammar school, and other; university entrance qualification = university entrance qualification, and university degree). [b] For the purpose of this analysis the original nine categories were summarised into four (learners = trainee and pupil/student; employed = clerk/civil servant, worker/skilled worker, and self-employed; not employed = homemaker, pensioner, and others; unemployed = unemployed).

Table 6

Total Sample: Age, Height, Weight, Gender, Marital Status, and Religion as a Function of Group

	Control group				Intervention group						
	M	*SD*	%	*n*	*M*	*SD*	%	*n*	*t*	χ^2	*df*
Age, years											
Whole sample	33.98	10.85	–	366	36.56	11.35	–	217	-2.73**	–	581
Women	33.14	10.70	–	86	34.53	11.47	–	55	-0.73	–	139
Men	34.24	10.90	–	280	37.25	11.27	–	162	-2.77**	–	440
Height, cm											
Whole sample	177.42	8.81	–	365	178.45	8.23	–	216	-1.40	–	579
Women	167.84	6.29	–	86	169.69	6.02	–	54	-1.73	–	138
Men	180.37	7.24	–	279	181.37	6.65	–	162	-1.44	–	439
Weight, kg											
Whole sample	80.11	15.99	–	362	80.91	15.64	–	215	-.58	–	575
Women	68.00	14.35	–	86	66.58	14.62	–	53	0.56	–	137
Men	83.89	14.56	–	276	85.60	12.89	–	162	-1.24	–	436
Gender									–	0.25	1
Men	–	–	76.5	280	–	–	74.7	162			
Marital status									–	3.42[a]	1
Married, living together	–	–	28.7	105	–	–	36.9	80			
Married, separated	–	–	1.6	6	–	–	0.9	2			
Divorced	–	–	8.2	30	–	–	10.6	23			
Widowed	–	–	0.5	2	–	–	–	–			
Never married	–	–	60.9	223	–	–	51.6	112			
Religion									–	5.22	3
Christian	–	–	73.6	268	–	–	72.1	155			
Muslim	–	–	2.2	8	–	–	0.9	2			
Other	–	–	1.4	5	–	–	–	–			
Nondenominational	–	–	22.8	83	–	–	27.0	58			

Note. [a] For the purpose of this analysis the original five categories were summarised into two (married = married, living together and married, separated; not married = divorced, widowed, and never married).
** $p < .01$.

Table 7

Total Sample: Consultations of the Particular Doctor as a Function of Group

	Control group				Intervention group						
	M	*SD*	%	*n*	*M*	*SD*	%	*n*	*t*	χ^2	*df*
Period consulting the doctor, years	6.35	7.27	–	325	7.02	7.57	–	206	-1.02	–	529
Last consultation									–	0.18	2
During the last 3 months	–	–	49.1	170	–	–	51.0	105			
3 to 6 months ago	–	–	22.5	78	–	–	21.8	45			
more than 6 months ago	–	–	28.3	98	–	–	27.2	56			
Number of consultations over the last 12 months									–	3.22	3
	–	–	74.6	253	–	–	68.7	138			
0 to 4 times	–	–	19.5	66	–	–	21.9	44			
5 to 8 times	–	–	2.9	10	–	–	5.0	10			
9 to 12 times	–	–	2.9	10	–	–	4.5	9			
more than 12 times											

Table 8

Total Sample: Alcohol Use and Readiness to Change as a Function of Group

	Control group				Intervention group						
	M	*SD*	%	*n*	*M*	*SD*	%	*n*	*t*	χ^2	*df*
AUDIT[a] total score											
Whole sample	11.45	3.74	–	366	11.41	3.59	–	217	.14	–	581
Women	11.44	4.00	–	86	10.67	3.27	–	55	1.19	–	139
Men	11.45	3.66	–	280	11.65	3.66	–	162	-0.57	–	440
Alcohol use											
Frequency, days											
Whole sample	9.30	7.55	–	366	11.98	8.60	–	217	-3.80**	–	408
Women	9.12	7.20	–	86	10.35	8.20	–	55	-0.94	–	139
Men	9.36	7.67	–	280	12.53	8.69	–	162	-3.86**	–	303
Quantity, g											
Whole sample	96.01	71.55	–	366	86.52	51.24	–	217	1.86	–	561
Women	85.75	49.28	–	86	66.48	39.41	–	55	2.44*	–	139
Men	99.16	76.90	–	280	93.32	53.09	–	162	0.94	–	427
QFI[b], g											
Whole sample	27.06	28.77	–	366	31.18	25.86	–	217	-1.74	–	581
Women	25.25	22.03	–	86	20.95	18.31	–	55	1.21	–	139
Men	27.61	30.56	–	280	34.66	27.15	–	162	-2.43*	–	440
Readiness to change[c]											
Whole sample	4.29	2.93	–	366	4.50	2.96	–	216	-.80	–	580
Women	4.49	2.93	–	86	4.41	3.20	–	54	0.15	–	138
Men	4.23	2.93	–	280	4.52	2.89	–	162	-1.02	–	440
Hazardous drinking[d]											
Whole sample	–	–	35.5	366	–	–	43.8	217	–	3.92*	1
Women	–	–	51.2	86	–	–	40.0	55	–	1.68	1
Men	–	–	30.7	280	–	–	45.1	162	–	9.17**	1

Note. [a] Alcohol Use Disorders Identification Test. [b] Quantity-frequency index. [c] range = 0 – 10. [d] Women: QFI > 20 g, men: QFI > 30 g.
*$p < .05$ **$p < .01$.

Table 9

Total Sample: Tobacco Use and Age when Beginning to Smoke Cigarettes as a Function of Group

	Control group			Intervention group				
	M	*SD*	*n*	*M*	*SD*	*n*	*t*	*df*
Frequency, days [a]								
Whole sample	24.84	8.99	232	25.14	9.00	132	-0.31	362
Women	25.85	7.78	61	25.44	8.66	41	0.25	100
Men	24.47	9.38	171	25.00	9.19	91	-0.44	260
Quantity, number of cigarettes[b]								
Whole sample	18.40	18.40	230	17.43	11.28	127	0.69	355
Women	16.02	16.02	60	16.63	10.07	40	-0.31	98
Men	19.24	19.24	170	17.80	11.84	87	0.81	255
Age when beginning to smoke, years[c]								
Whole sample	16.71	4.36	197	16.69	2.98	115	0.05	310
Women	17.35	5.15	52	16.35	2.35	37	1.10	87
Men	16.48	4.04	145	16.85	3.24	78	-0.68	221

Note. [a] Number of smoking days during the last month; only occasional/regular smokers as defined in the screening questionnaire. [b] Number of cigarettes on an average smoking days during the last month; only occasional/regular smokers. [c] Only regular smokers.

Table 10

Total Sample: Smoking Status as a Function of Group

	Control group		Intervention group			
	%	*n*	%	*n*	χ^2	*df*
Whole sample					1.51	3
Non-smoker	26.2	96	29.0	63		
Former smoker	8.7	32	10.1	22		
Occasional smoker	15.3	56	12.4	27		
Regular smoker	49.7	182	48.4	105		
Women					1.66	3
Non-smoker	22.1	19	16.4	9		
Former smoker	4.7	4	9.1	5		
Occasional smoker	14.0	12	12.7	7		
Regular smoker	59.3	51	61.8	34		
Men					2.20	3
Non-smoker	27.5	77	33.3	54		
Former smoker	10.0	28	10.5	17		
Occasional smoker	15.7	44	12.3	20		
Regular smoker	46.8	131	43.8	71		

Note. Smoking status according to self-assigment.

No analyses were conducted to compare groups regarding pipe and cigar smoking because there were very few pipe and cigar smokers in the sample (see Table 11).

Table 11

Total Sample: Pipe and Cigar Smokers in Control and Intervention Group

	Baseline			Follow-up		
	pipes	cigars	cigarettes	pipes	cigars	cigarettes
Control group	7	–	–	5	–	–
	–	–	20	2	–	15
	–	–	10	10	–	8
	–	–	–	–	3	–
	–	–	–	–	3	–
Intervention group	1	–	–	1	–	–
	3	–	10	3	–	3
	4	–	15	–	–	15

Note. Number of pipes, cigars and cigarettes on a typical smoking day.

Attrition analyses: I. Adherence to study protocol

In order to explore whether despite the study protocol, doctors or receptionists selected certain patients for the intervention, it was analysed if there were any significant differences between those participants of the intervention group that received an intervention from their doctors (n = 302) and those who did not (n = 165).

Subjects did not differ with regard to any demographic variables, apart from age (see Table 12). There were also no differences concerning consultations of the particular doctor.

Table 12

I. Adherence to Study Protocol: Demographic Characteristics

	Intervention received				Intervention not received						
	M	*SD*	%	*n*	*M*	*SD*	%	*n*	*t*	χ^2	*df*
Age, years	37.19	11.42	–	302	33.90	10.10	–	165	-3.20**	–	374
Gender									–	0.01	1
Men	–	–	76.8	232	–	–	76.4	126			
Marital status[a]									–	1.06	1
Married	–	–	38.7	117	–	–	33.9	56			
Not married	–	–	61.3	109	–	–	66.1	185			
Level of education[b]									–	1.15	2
No certificate	–	–	3.7	11	–	–	4.9	8			
No university entrance qualification	–	–	57.8	174	–	–	53.0	87			
University entrance qualification	–	–	38.5	116	–	–	42.1	69			
Current employment[c]									–	3.34	3
Leaners	–	–	15.6	47	–	–	20.6	34			
Employed	–	–	66.6	201	–	–	66.1	109			
Not employed	–	–	11.3	34	–	–	7.3	12			
Unemployed	–	–	6.6	20	–	–	6.1	10			
Religion									–	4.11	3
Christian	–	–	74.7	224	–	–	73.8	121			
Muslim	–	–	0.7	2	–	–	2.4	4			
Other	–	–	0.7	2	–	–	1.8	3			
Nondenominational	–	–	24.0	72	–	–	22.0	36			

Note. [a] The original five categories were summarised into two (married = married, living together and married, separated; not married = divorced, widowed, and never married). [b] The original seven categories were summarised into three (no certificate = no certificate; no university entrance qualification = special school, elementary/secondary school, grammar school, and other; university entrance qualification = university entrance qualification and university degree). [c] The original nine categories were summarised into four (learners = trainee and pupil/student; employed = clerk/civil servant, worker/skilled worker, and self-employed; not employed = homemaker, pensioner, and others; unemployed = unemployed).
**$p < .01$.

In addition, there were no significant effects found for the AUDIT total score (see Tables 13 and 14). A significant main effect was found for intervention received versus intervention not received on frequency of alcohol use and readiness to change. Participants who received the intervention drank more often than participants who did not receive the intervention. Additionally, they scored higher on the readiness to change scale. Significant main effects for gender appeared on quantity and on the QFI. Women drank less than men. On the QFI there was also a tendency for another main effect of intervention received versus not received. Participants who received the intervention tended to drink more alcohol than participants who did not receive the intervention.

Table 13

Adherence to Study Protocol: Alcohol Use and Readiness to Change

	Intervention received			Intervention not received		
Gender	*M*	*SD*	*n*	*M*	*SD*	*n*
			Frequency, days			
Women	10.14	8.31	70	9.16	7.15	38
Men	12.39	8.96	232	8.90	7.79	124
			Quantity, g			
Women	74.24	55.06	70	79.07	70.98	39
Men	107.96	124.10	232	104.56	93.29	121
			QFI, g[a]			
Women	22.06	19.48	70	21.14	18.70	38
Men	40.02	45.43	232	26.97	34.21	121
			AUDIT total score[b]			
Women	11.16	3.65	70	10.87	4.04	38
Men	12.26	4.97	228	11.16	4.27	121
			Readiness to change[c]			
Women	4.97	3.42	69	3.79	3.09	39
Men	4.72	3.09	232	4.12	3.12	123

Note. [a] Quantity-frequency index. [b] Alcohol Use Disorders Identification Test. [c] Range = 0 – 10.

Table 14

Adherence to Study Protocol: 2-Way Analyses of Variance for AUDIT Total Score, Frequency, Quantity, and QFI of Alcohol Use, and Readiness to Change

Source	*df*	*MS*	*F*
		Frequency	
Intervention Received (IR)	1	379.20	5.34*
Gender (G)	1	74.50	1.05
IR x G	1	119.12	1.68
Error	460	70.98	
		Quantity	
Intervention Received (IR)	1	38.75	0.00
Gender (G)	1	66759.04	6.11*
IR x G	1	1288.70	0.12
Error	458	10923.14	
		QFI[a]	
Intervention Received (IR)	1	3671.96	2.56
Gender (G)	1	10645.60	7.41**
IR x G	1	2765.19	1.93
Error	457	1436.07	
		AUDIT total score[b]	
Intervention Received (IR)	1	36.31	1.77
Gender (G)	1	36.29	1.76
IR x G	1	12.41	0.60
Error	453	20.57	
		Readiness to change[c]	
Intervention Received (IR)	1	59.86	6.05*
Gender (G)	1	0.11	0.01
IR x G	1	6.36	0.64
Error	459	9.90	

Note. [a] Quantity-frequency index. [b] Alcohol Use Disorders Identification Test. [c] Range = 0 – 10.
*$p < .05$. **$p < .01$.

Concerning tobbaco use, a chi-square analysis showed no differences in smoking status between participants who received the intervention and participants who did not. When analysing only the data of regular smokers a significant main effect for gender was found on quantity of smoking (see Tables 15 and 16).

Table 15

Adherence to Study Protocol: Tobacco Use and Age when Beginning to Smoke

	Intervention received			Intervention not received		
Gender	*M*	*SD*	*n*	*M*	*SD*	*n*
			Frequency, days			
Women	29.31	2.32	42	29.83	0.51	18
Men	29.78	1.15	116	28.83	3.89	76
			Quantity, number of cigarettes			
Women	20.54	9.48	41	15.68	6.95	19
Men	24.28	13.28	113	21.96	10.82	76
			Age when beginning to smoke cigarettes, years			
Women	16.31	2.87	42	16.42	2.89	19
Men	16.83	3.52	118	16.76	4.56	79

Table 16

Adherence to Study Protocol: 2-Way Analyses of Variance for Frequency and Quantity of Cigarette Smoking and Age when Beginning to Smoke Cigarettes

Source	*df*	*MS*	*F*
		Frequency	
Intervention Received (IR)	1	1.84	0.30
Gender (G)	1	2.77	0.46
IR x G	1	21.64	3.55
Error	248	6.10	
		Quantity	
Intervention Received (IR)	1	519.86	3.86
Gender (G)	1	1014.44	7.53**
IR x G	1	64.62	0.48
Error	245	134.74	
		Age when beginning to smoke cigarettes	
Intervention Received (IR)	1	0.02	0.00
Gender (G)	1	7.57	0.54
IR x G	1	0.34	0.02
Error	254	14.03	

**$p < .01$.

Attrition analyses: II. Participants lost to follow-up

Participants of the total sample (n = 583) were compared to patients who could not be contacted for follow-up or who refused to participate (n = 179).

Concerning demographic characteristics, the two groups differed with regard to gender, level of education, current employment, and religion (see Table 17). No differences were found with regard to the doctor consultation variables.

Table 17

Participants Lost to Follow-up: Demographic Characteristics

	Total sample				Lost to follow-up						
	M	*SD*	%	*n*	*M*	*SD*	%	*n*	*t*	χ^2	*df*
Age, years	34.94	11.10	–	583	35.55	11.61	--	179	0.63	–	760
Group									–	0.07	1
Intervention	–	–	37.2	217	–	–	36.9	66			
Gender									–	4.34*	1
Men	–	–	75.8	442	–	–	83.2	149			
Marital status[a]									–	0.27	1
Married	–	–	37.1	193	–	–	35.2	63			
Not married	–	–	66.9	390	–	–	64.8	116			
Level of education[b]									–	46.46**	2
No certificate	–	–	1.4	8	–	–	8.4	15			
No university entrance qualification	–	–	54.0	314	–	–	69.8	125			
University entrance qualification	–	–	44.7	260	–	–	21.8	39			
Current employment[c]									–	10.12*	3
Leaners	–	–	20.8	121	–	–	10.7	19			
Employed	–	–	65.5	382	–	–	71.3	127			
Not employed	–	–	8.4	49	–	–	11.8	21			
Unemployed	–	–	5.3	31	–	–	6.2	11			
Religion									–	14.35**	3
Christian	–	–	73.1	423	–	–	73.0	127			
Muslim	–	–	1.7	10	–	–	3.4	6			
Other	–	–	0.9	5	–	–	4.6	8			
Non-denominational	–	–	24.4	141	–	–	19.0	33			

Note. [a] The original five categories were summarised into two (married = married, living together and married, separated; not married = divorced, widowed, and never married). [b] The original seven categories were summarised into three (no certificate = no certificate; no university entrance qualification = special school, elementary/secondary school, grammar school, and other; university entrance qualification = university entrance qualification and university degree). [c] The original nine categories were summarised into four (learners = trainee and pupil/student; employed = clerk/civil servant, worker/skilled worker, and self-employed; not employed = homemaker, pensioner, and others; unemployed = unemployed).
*$p < .05$. **$p < .01$.

Three-way analyses of variance (Participation x Group x Gender) revealed several differences with regard to alcohol use between participants of the total sample and those individuals lost to follow-up (see Tables 18 and 19) .

A main effect was found for participation on the AUDIT total score. Individuals lost to follow-up scored higher than those who participated in the follow-up. Additionally, several differences were detected with respect to the quantity of alcohol use. Firstly, there was a main effect for participation. Individuals lost to follow-up reported to drink more than the participants of the total sample. Secondly, a significant interaction between participation and group was found. Specifying this effect, among patients lost to follow-up patients of the intervention group drank more than those of the control group (107.42 vs. 102.67 g), whereas in the total sample participants of the intervention group drank less than the control group (86.52 vs. 96.01 g). Thirdly, a significant interaction between participation, group and gender was found. In the group of patients lost to follow-up women of the control group drank less than men (78.12 vs. 108.28 g), whereas women of the intervention group drank more than men (131.85 vs. 103.56 g). In the total sample women of both groups drank less than men (85.75 vs. 99.16 g and 66.48 vs. 93.32 g, respectively). Analyses of the QFI of alcohol use revealed a main effect for gender. Women reported to drink less than men.

Table 18

Participants Lost to Follow-up: Alcohol Use and Readiness to Change

		Total sample			Lost to follow-up		
Group	Gender	*M*	*SD*	*n*	*M*	*SD*	*n*
				Frequency, days			
Control	Women	9.12	7.20	86	9.71	8.38	21
	Men	9.36	7.67	280	10.91	8.87	92
Intervention	Women	10.35	8.20	55	8.44	7.45	9
	Men	12.53	8.69	162	11.11	8.91	57
				Quantity, g			
Control	Women	85.75	49.28	86	78.12	46.11	21
	Men	99.16	76.90	280	108.28	74.26	92
Intervention	Women	66.48	39.41	55	131.85	99.21	9
	Men	93.32	53.09	162	103.56	82.99	57
				QFI, g[a]			
Control	Women	25.25	22.03	86	26.20	30.60	21
	Men	27.61	30.56	280	39.95	49.57	92
Intervention	Women	20.95	18.31	55	30.93	23.49	9
	Men	34.66	27.15	162	33.93	40.32	57
				AUDIT total score[b]			
Control	Women	11.39	4.02	84	13.00	4.54	20
	Men	11.41	3.61	277	11.93	4.65	87
Intervention	Women	10.67	3.27	55	12.56	4.04	9
	Men	11.65	3.67	160	11.91	5.14	56
				Readiness to change[c]			
Control	Women	4.49	2.93	86	4.74	4.03	19
	Men	4.23	2.93	280	3.82	3.13	91
Intervention	Women	4.41	3.20	54	5.33	3.67	9
	Men	4.52	2.89	162	4.33	3.24	57

Note. [a] Quantity-frequency index. [b] Alcohol Use Disorders Identification Test. [c] Range = 0 – 10.

Table 19

Participants Lost to Follow-up: 3-Way Analyses of Variance for AUDIT total-score, Frequency, Quantity, and QFI of Alcohol Use, and Readiness to Change

Source	*df*	*MS*	*F*
		Frequency	
Participation (P)	1	6.07	0.09
Group (GR)	1	48.78	0.74
Gender (GE)	1	174.29	2.63
P x GR	1	132.49	2.00
P x GE	1	9.06	0.14
GR x GE	1	51.19	0.77
P x GR x GE	1	1.03	0.02
Error	754	66.40	
		Quantity	
Participation (P)	1	26219.12	5.81*
Group (GR)	1	2522.55	0.56
Gender (GE)	1	7825.78	1.73
P x GR	1	24233.87	5.37*
P x GE	1	6499.40	1.44
GR x GE	1	8941.43	1.98
P x GR x GE	1	22796.38	5.05*
Error	754	4512.90	
		QFI[a]	
Participation (P)	1	2242.24	2.18
Group (GR)	1	9.22	0.01
Gender (GE)	1	4753.72	4.62*
P x GR	1	72.01	0.07
P x GE	1	2.02	0.00
GR x GE	1	1.59	0.00
P x GR x GE	1	2152.70	2.09
Error	754	1029.65	
		AUDIT total score[b]	
Participation (P)	1	79.27	5.11*
Group (GR)	1	3.86	0.25
Gender (GE)	1	2.26	0.15
P x GR	1	0.00	0.00
P x GE	1	31.78	2.05
GR x GE	1	8.34	0.54
P x GR x GE	1	1.26	0.08
Error	740	15.53	
		Readiness to change[c]	
Participation (P)	1	1.42	0.16
Group (GR)	1	7.47	0.81
Gender (GE)	1	18.13	1.98
P x GR	1	3.44	0.38
P x GE	1	13.55	1.48
GR x GE	1	0.35	0.04
P x GR x GE	1	0.92	0.10
Error	750	9.18	

Note. [a] Quantity-frequency index. [b] Alcohol Use Disorders Identification Test. [c] Range = 0 – 10.
*$p < .05$.

A chi-square analysis revealed significant differences with regard to smoking status between drop-outs and the total sample ($\chi^2(3, n = 759) = 23.38, p < .01$). There were more non-smokers, former smokers and occasional smokers in the total sample than among those patients lost to follow-up (27.3 vs. 20.5%, 9.3 vs. 2.8%, and 14.2 vs. 8.0%, respectively. Accordingly, there were fewer regular smokers in the total sample (49.2 vs. 68.8%).

Analysing only the data of regular smokers, a main effect of participation on quantity of smoking was found (see Tables 20 and 21). Individuals lost to follow-up were smoking more cigarettes on a typical smoking day than participants of the total sample.

Table 20

Participants Lost to Follow-up: Tobacco Use and Age when Beginning to Smoke Cigarettes

		Total sample			Lost to follow-up		
Group	Gender	*M*	*SD*	*n*	*M*	*SD*	*n*
				Frequency, days			
Control	Women	28.80	3.12	50	29.81	0.75	16
	Men	29.33	2.54	126	29.52	2.06	60
Intervention	Women	29.15	2.56	34	30.00	0.00	5
	Men	29.67	1.47	69	29.94	0.23	36
				Quantity, number of cigarettes			
Control	Women	18.71	8.26	49	25.38	14.74	16
	Men	23.25	13.94	126	24.20	10.22	61
Intervention	Women	19.21	9.08	33	31.00	8.94	5
	Men	21.74	10.93	65	24.76	14.13	37
				Age when beginning to smoke cigarettes, years			
Control	Women	17.29	5.19	51	14.81	2.40	16
	Men	16.37	4.16	131	16.15	3.50	61
Intervention	Women	16.29	2.07	34	17.00	6.86	5
	Men	16.79	3.37	71	16.94	4.03	36

Table 21

Participants Lost to Follow-up: 3-Way Analyses of Variance for Frequency and Quantity of Cigarette Smoking and Age when Beginning to Smoke Cigarettes

Source	*df*	*MS*	*F*
		Frequency	
Participation (P)	1	14.39	2.93
Group (GR)	1	4.49	0.91
Gender (GE)	1	1.27	0.26
P x GR	1	0.01	0.00
P x GE	1	5.15	1.05
GR x GE	1	0.15	0.03
P x GR x GE	1	0.16	0.03
Error	388	4.91	
		Quantity	
Participation (P)	1	1321.72	9.25**
Group (GR)	1	70.28	0.49
Gender (GE)	1	0.33	0.00
P x GR	1	136.54	0.96
P x GE	1	552.41	3.87
GR x GE	1	131.87	0.92
P x GR x GE	1	24.51	0.17
Error	384	142.90	
		Age when beginning to smoke cigarettes	
Participation (P)	1	8.96	0.58
Group (GR)	1	15.35	1.00
Gender (GE)	1	1.90	0.12
P x GR	1	33.62	2.19
P x GE	1	7.77	0.51
GR x GE	1	0.00	0.00
P x GR x GE	1	20.97	1.36
Error	397	15.38	

**$p < .01$.

Subsample

A subsample of regular cigarette smokers was formed (see Table 22) to explore possible differences between the control (n = 162) and the intervention group (n = 89) with respect to self-assigned smoking status, frequency, and quantity of cigarette smoking. Baseline differences on other variables (demographics, alcohol use etc.) between the control and the intervention group in the subsample were basically the same as in the total sample (for details see Appendix A).

Table 22

Subsample: Exclusion Criteria and Numbers of Excluded Patients

		Total sample *n* = 583
Exclusion criteria	Excluded	Remaining
Baseline		
Non smoker[a]	*n* = 159	*n* = 424
Former smoker[a]	*n* = 54	*n* = 370
Pipe smoker	*n* = 4	*n* = 366
Tobacco use, Frequency[b] missings	*n* = 9	*n* = 357
Tobacco use, Quantity[c] missings	*n* = 10	*n* = 347
Tobacco use, Quantity ≤ 5	*n* = 55	*n* = 292
Tobacco use, Frequency ≤ 20	*n* = 37	*n* = 255
Incomplete readiness to change/self-efficacy[d] and incomplete intervention documentation	*n* = 2	*n* = 253
Follow-up		
Pipe smoker	*n* = 1	*n* = 252
Tobacco use, Frequency missings	*n* = 2	Subsample: *n* = 250

Note. [a] According to self-assignment. [b] Number of smoking days during the last month. [c] Number of cigarettes on an average smoking days during the last month. [d] Range = 0 - 10

Procedures

Recruitment of Doctors

Initial contact with doctors was made by personal letters to the training practices in cooperation with University of Duisburg-Essen, in the form of written invitations to physicians trained in family or internal medicine in Münster and Essen and by advertisements (*Westfälisches Ärzteblatt,* September 2002 and *Rheinisches Ärzteblatt, September* 2002). Interested doctors were informed by telephone or in the context of informative meetings about the main goals and procedures of Project BrIAN (**Br**ief **I**ntervention for **A**lcohol Problems and **N**icotine Dependence). In the end, 26 doctors (14 men) from 20 practices, all located in North Rhine-Westphalia, participated in Project BrIAN and attended the training workshops. Three doctors were not able to participate for the whole period of data collection due to lack of time and organisational problems.

Participating doctors and receptionists received expenses of 1.50 € for each completed screening questionnaire, 25.00 € for each first intervention, 2.50 € for each completed documentation of the intervention, and 20.00 € for each second intervention.

However, these expenses were only paid out if the patient fullfilled the inclusion criteria and gave written consent, and if the practice staff adhered to the study protocol.

Training

Simulated encounter I. Before the actual training began, an actor was sent to each of the practices. He pretended to be a patient ("Mr. Kalina") whose specific role was the same for all doctors and defined by the collaborators of Project BrIAN. The doctors were expecting his visit and had previously received a fictitious screening questionnaire and a brief. Their task was to talk to this standardised patient about his alcohol and tobacco use. They were asked to give neutral feedback about the results of the screening, enhance motivation for change concerning drinking and smoking, and conclude by reaching mutual agreement about further steps. These interviews took about ten to thirty minutes, were audio-recorded, and later transcribed.

Workshop I. At most one week later, doctors attended the first training workshop. They were introduced to the spirit of MI and the principles of the brief intervention. Moreover, they received the interview guideline (see Figure 1 and Appendix B) and had to translate it into action during an interview with a second standardized patient ("Mrs. L."). Furthermore, doctors were informed about the implementation procedures in the practices and the documentation of the interviews. This workshop took about three hours.

Workshop II. Workshop I was followed by a second three-hour workshop during which project collaborators evaluated the first interviews with Mr. Kalina and gave corresponding feedback. More role plays with different standardised patients ("Mr. L.", "Mr. S." & "Mrs. G.") were conducted. All role plays were evaluated by the doctors themselves and by both a colleague and project collaborator using the corresponding versions of the Rating Scales for the Assessment of Empathic Communication in Medical Interviews (Nicolai & Demmel, 2006). During the course of both workshops project collaborators repeatedly reminded the doctors of mistakes and traps that might appear during an interview and that were summarised in a list of DON'Ts (see Appendix B).

Simulated encounter II. After these workshops the standardised patient "Mr. Kalina" visited the practices again and was interviewed by the doctors according to the

interview guideline. These interviews were also audio-recorded and transcribed. The doctors then began to apply the intervention to real patients.

Booster session. After four weeks of implementation project collaborators offered a booster session during which the second interview with Mr. Kalina in the practices was evaluated and another standardised patient ("Mrs. S.") could be interviewed. Furthermore, a "Trouble Shooting" session took place where problems the doctors had experienced were discussed and solutions offered. Noticeable problems and mistakes concerning the intervention implementation and documentation were also named, and, where necessary, collaborators explained the procedures again. The booster session also lasted about three hours.

Later, when the data collection was completed, all interviews with "Mr. Kalina" were evaluated to examine potential training effects (Demmel, Hagen, Nicolai, & Rist, 2005). This was realised by using the audiotapes and transcriptions. There were several instruments to assess different aspects of training success. One pair of raters examined to what extent doctors kept to the interview guideline using a manual checklist. Another pair of raters used three validated instruments to explore whether doctors followed the major principles of MI: (a) **MI T**reatment **I**ntegrity Scale (MITI; Moyers, Martin & Manuel, 2005), (b) Rating Scales for the Assessment of Empathic Communication in Medical Interviews (REM; Nicolai & Demmel, 2006), and (c) **BE**haviour **C**hange **C**ounselling **I**ndex (BECCI; Lane, Huws-Thomas & Hood, 2005).

Intervention

Doctors were asked to apply the intervention to all patients who received a yellow questionnaire and who gained a total score greater than seven on the AUDIT. This, however, was not always implemented for various reasons (e. g. patients being in a hurry, doctors' lack of time, incorrect computation of the AUDIT total score by the receptionists).

The brief intervention was developed in accordance to the principles of MI (Miller & Rollnick, 1991, 2002) and had to be performed according to a structured interview guideline (Figure 1; for a detailed description see Demmel, 2003).

The doctor was instructed to welcome the patient (Introduction) and thank him or her again for participating in the study. The doctor then asked the patient whether it

would be acceptable for him or her to receive some feedback on the results of the screening questionnaire (Permission). If so, the doctor told the patient how much he or she drank compared to the corresponding age group (Feedback; e.g. " You drink more than 87 % of the men/women your age."). If a patient was surprised and/or not willing to believe in the feedback given, the doctor was asked to handle these situations by using reflective listening. Also, it was deemed important to "roll with resistance" (Miller & Rollnick, 1991, 2002), or in other words, prevent the patient from adopting a defensive position. After the feedback, the doctor asked the patient how important it was for him or her to cut down on alcohol (readiness to change alcohol use) and how confident he or she felt to implement this change in behaviour (alcohol moderation self-efficacy). Both answers were rated on an 11-point scale (0 = *not at all important/confident* to 10 = *very important/absolutely confident*). Depending on the answers given the doctor continued with the intervention and tried to increase the patient's readiness to change by eliciting change talk (see Figure 1). The final part of the interview contained the doctor's summary of the aspects discussed and a mutual discussion and determination of further treatment goals and steps (Shared Decision Making).

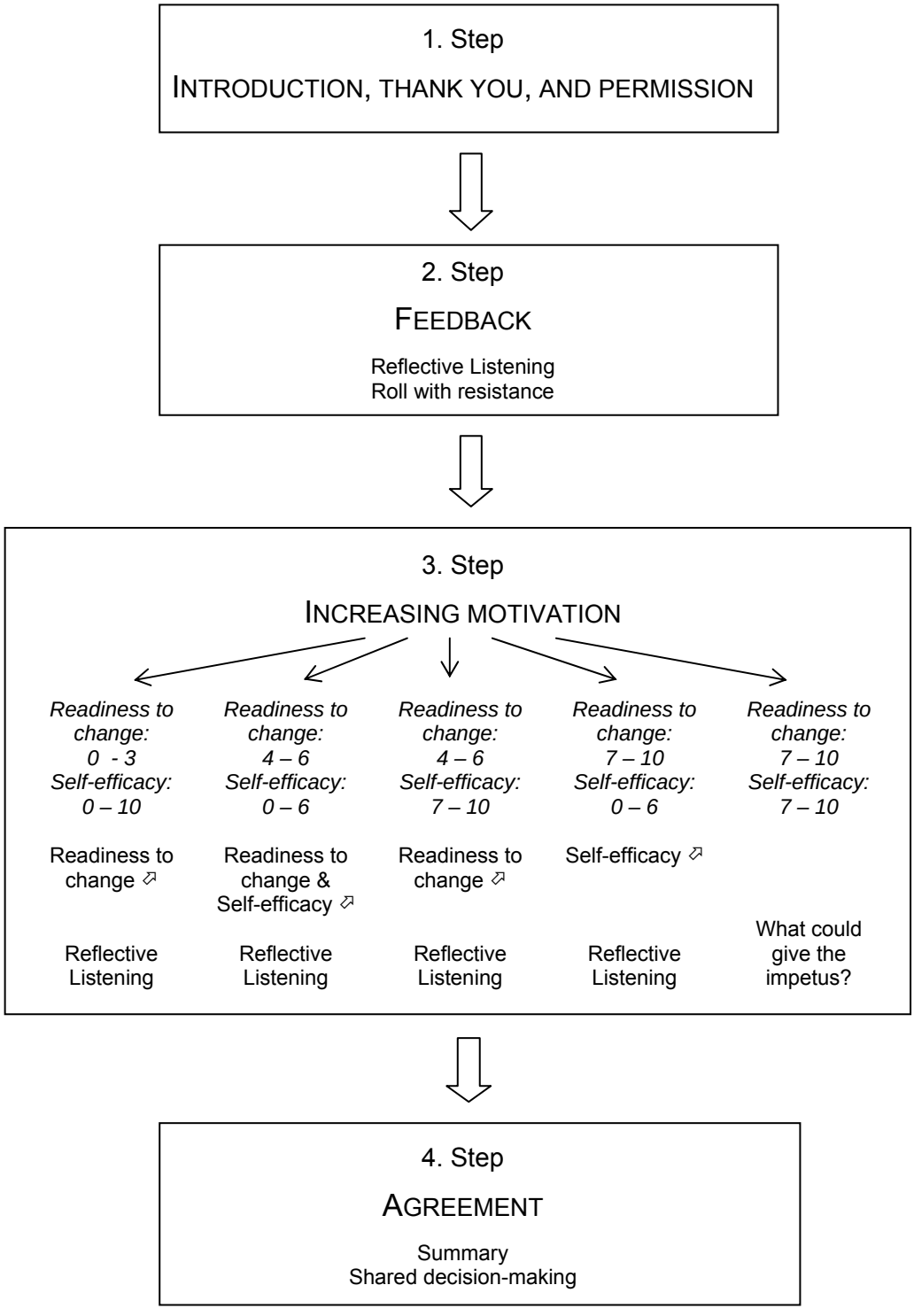

Figure 1. Intervention sequence according to the interview guideline

Over the course of each interview the doctor was also expected to discuss the topic of tobacco use in the same manner as alcohol use if the patient stated that he or she was a regular or occasional smoker. The given guideline reminded the doctor to avoid behaviours that could lead to patients' resistance, the *DONTs.*

After the interview, the doctor had to document certain aspects of the interview by completing a given form (see Assessment).

Implementation and Randomisation

During the course of Project BrIAN 27,356 screening questionnaires were sent to 26 doctors from 20 general practices. For a maximum of 12 months, each practice received a monthly package containing screening questionnaires coded for the respective practice and numbered consecutively. The doctors' receptionists were asked to hand out up to eight questionnaires per day to the patients. White paper was used for the control group and yellow paper for the intervention group. A slightly larger number (60%) of white than yellow questionnaires were handed out. Receptionists had no influence on the colour of the questionnaire a patient received because questionnaires were arranged in a given order. However, receptionists were asked to pay attention to the following exclusion criteria: (a) emergency visits; (b) low life expectancy because of serious illness; (c) if a patient was younger than 18 or older than 60; (d) visits to pick up prescriptions or for laboratory tests; (e) pregnancy; (f) family members and friends of the doctor or receptionists; (g) insufficient knowledge of the German language; (h) reduced consciousness due to high temperature, intoxication or similar. Nevertheless, these criteria were sometimes disregarded, and further exclusion criteria had to be considered. Therefore, only data from 8,089 participants could be entered into the data file (see Table 23).

Table 23

Basic Sample: Exclusion Criteria and Numbers of the Excluded Patients

		Number of questionnaires sent to the doctors practices *n* = 27 356
Exclusion criteria	Excluded	Remaining
Not sent back	*n* = 272	*n* = 27 084
Not handed out	*n* = 15 615	*n* = 11 469
Refusals	*n* = 2 820	*n* = 8 649
No informed consent	*n* = 120	*n* = 8 529
Age unknown	*n* = 14	*n* = 8 515
Age < 18 years	*n* = 21	*n* = 8 494
Age > 60 years	*n* = 54	*n* = 8 440
Native language unknown	*n* = 20	*n* = 8 420
< 3 years of German education	*n* = 266	*n* = 8 154
Pregnant	*n* = 13	*n* = 8 141
Relative / Employee of the doctor	*n* = 2	*n* = 8 139
2 questionnaires, same patient, same time	*n* = 10	*n* = 8 129
2 questionnaires, same patient, different times	*n* = 15	*n* = 8 114
Inconsistent / missing details of gender	*n* = 5	*n* = 8 109
Uncompleted	*n* = 18	*n* = 8 091
Inadvertently shredded	*n* = 2	Basic sample: *n* = 8 089

Together with the screening questionnaire, patients received a handout outlining the goals of the study as well as further procedures (interview by the doctor, interview with a project collaborator within the next four weeks, follow-up questionnaire after 24 weeks, etc.). Additionally, a written consent form to be signed by the patients was added to every questionnaire. If a patient refused to give his or her consent, the questionnaire was marked accordingly and sent back to the project collaborators together with the completed questionnaires. Consequently, no questionnaire was handed out twice, and it was possible to estimate patients' general willingness to participate in the study. After the patients had filled in their questionnaires, the receptionists were asked to check for completeness and to ask for missings details if necessary and possible. In cases concerning yellow questionnaires, receptionists subsequently had to compute an AUDIT total score by adding up the points of each item. If this score was eight points or more, patients were then supposed to receive the intervention by the doctor. In order to fulfil the requirements of the intervention the receptionists also calculated the QFI and took the corresponding percentile range from the provided tables (see Appendix C). QFI and percentile range were written on the questionnaire which was then handed to the doctor who conducted the intervention.

All questionnaires, completed and uncompleted, were sent back to the project collaborators. At this point, the written consent forms were separated from the screening questionnaires and stored seperately to ensure anonymity. The screening questionnaires were then checked with regard to the criteria described above and the data entered into the data file accordingly. In order to avoid calculation errors, variables like the AUDIT total score and the QFI were computed again by the collaborators.

A subsample of patients were recruited for a validation study on the AUDIT. During an extra appointment the computerised version of the Composite International Diagnostic Interview DIA-X (Wittchen & Pfister, 1997) was employed.

Follow-up

When the baseline questionnaire was entred into the data file it was also decided whether the patients could be considered for the follow-up assessment. They had to fulfill the inclusion criteria and had to have an AUDIT total score of at least eight. If there were omissions in the AUDIT but the given answers were already adding up to eight or more points, the data of the participant entered the follow-up file. If it was still unclear whether the patient had obtained a total score of at least eight, he or she was not considered for the follow-up. Furthermore, complete quantity and frequency measures of alcohol use were needed.

About 24 weeks after the screening questionnaire had been completed the follow-up questionnaire was sent to the patients. They were asked to answer all the questions and to send the questionnaire back to the University of Münster in a prepaid and preaddressed envelope. If this did not happen collaborators tried to telephone these patients, five times at most, or wrote at most two reminders. In the case of missing answers details were ascertained by telephone if possible. Financial incentives were leveraged to increase the rate of return. Every patient who sent back a follow-up questionnaire received a 10-€ voucher for a department store. Furthermore, a prize draw took place every three months where patients who sent back the follow-up questionnaire could win 250 €, 125 €, or 75 €. This procedure for follow-up assessment which helped to keep attrition rates as small as possible complied with common recommendations (e. g. Boys et al., 2003; Fischer et al., 2001).

Assessment

The Screening Questionnaire

As described above, the screening questionnaire was filled in by the patients in the surgery. It consisted of several sections asking for different kinds of information (see Table 24). The complete questionnaire can be found in Appendix D.

Table 24

Assessment Instruments at Baseline, after the Intervention and at Follow-up

Screening questionnaire	Interview documentation	Follow-up questionnaire
Sociodemographic form		Current relationship
Health care utilisation		Health care utilisation
AUDIT		AUDIT
Quantity/frequency of alcohol use		Quantity /frequency of alcohol use
DrInC-items		DrInC-items
Tobacco use		Tobacco use
Readiness to change alcohol use	Readiness to change alcohol use & alcohol moderation self-efficacy	Readiness to change alcohol use & alcohol moderation self-efficacy
	Readiness to quit smoking & tobacco abstinence self-efficacy	Readiness to quit smoking & tobacco abstinence self-efficacy
Current treatment		
		Behaviour change items
	Evaluation	
	Documentation	
	International Diagnostic Check Lists	

Health care utilisation

First, patients were asked for how many years they had been consulting this particular doctor. Additionally, patients were asked when the last visit to this doctor took place (during the last three months, between three and six months ago, or more than six months ago) as well as how often the patients had consulted the doctor during the last twelve months (zero to four times, five to eight times, nine to twelve times, or more than twelve times).

Demographic characterstics

This section was intended to gather all relevant information to describe the participants and to compare them to other representative samples (Deutsche Gesellschaft für Suchtforschung und Suchttherapie e. V., 2001). Therefore, age, height, weight, gender, marital status, nationality, native language, religion, educational status, and employment status were ascertained.

Alcohol Use Disorders Identification Test

A German-language version of the AUDIT (Rist, Scheuren, Demmel, Hagen, & Aulhorn, 2003) was inserted into the screening questionnaire. Like the original version, the test consists of 10 items with five or three possible answers each, counting from zero to four points. For item 1 there is no timeframe stated, whereas the timeframe for items 4 to 10 is 12 months. A total score can be computed by adding the points of each item. WHO recommends a cut-off score of eight for hazardous drinking (Saunders et al., 1993) which was therefore used in the course of Project BrIAN. It has been shown that the AUDIT works as effectively when imbedded within a broader questionnaire, compared to being administered as a stand-alone scale (Daeppen, Yersin, Landry, Pecoud, & Decrey, 2000).

Quantity and frequency of alcohol use

Alcohol use was assessed amongst others by the following measures: the number of drinking days during the past months (frequency), and the number of drinks consumed (beer, wine, or distilled spirits) on an average drinking day during the past months (quantity). Responses to these items were transformed into grams of pure alcohol following the guidelines outlined in Bühringer et al. (2002).

Drinker's Inventory of Consequences

In the context of Project MATCH (Miller, Tonigan, & Longabaugh, 1995), the Drinker's Inventory of Consequences (DrInC) was developed as an instrument to assess the adverse consequences of alcohol use and misuse. It can be used as a measure of the severity of alcohol problems and therefore serve as a screening instrument as well as an outcome measure to evaluate treatment effects.

The original version consists of 50 items which are combined into five a priori subscales: social responsibility, physical, intrapersonal, interpersonal, and impulse

control consequences, and control items. Two different versions cover recent and lifetime consequences. The Recent Consequences version (3-months asessment window) is answered on a 4-point Lickert-scale for each item, whereas the Lifetime Consequences Scale has binary responses (yes or no). For both versions psychometric properties were satisfactory (Miller et al., 1995).

The German version contains 46 slightly different items due to adaption to German society, culture, and legal system (Laumeyer, 2002). The original five control items were not adopted. Furthermore, only binary responses are offered for both the Recent Consequences scale and the lifetime version. No empirical evidence could be gained for the five-factor structure of the original DrInC, but the two-factor-model revealed by a principal component analysis was difficult to interpret (Laumeyer, 2002). The psychometric characteristics of the German version are satisfactory (Laumeyer, 2002).

Only five items of the German DrInC version were inserted into the screening questionnaire (see Table 25) to prevent it from becoming too long. These items were selected to meet the following criteria: (a) moderately difficult, (b) presuppositionless, and (c) sensitive to change. The timeframe for these items was six months.

Table 25

Original Version and German Version of the Five DrInC Items

Original English Items[a]	German Items[b]
I have driven a motor vehicle after having three or more drinks.	Ich bin mit dem Auto oder Motorrad gefahren, obwohl ich etwas getrunken habe.
While drinking, I have said or done embarrassing things.	Ich habe etwas Peinliches gesagt oder getan, weil ich zu viel getrunken habe.
After drinking, I have had trouble with sleeping, staying asleep, or nightmares.	Ich habe schlecht geschlafen, weil ich zu viel getrunken habe.
I have had a hangover or felt bad after drinking.	Ich hatte einen Kater.
I have been sick and vomited after drinking.	Ich habe mich übergeben müssen, weil ich zu viel getrunken habe.

Note. [a] Miller, Tonigan & Longabaugh (1995). [b] Laumeyer (2002).

Tobacco use

Tobacco use was assessed using the following measures: (a) smoking status (non smoker, former smoker, occasional smoker or regular smoker); (b) the number of smoking days during the past months (frequency of smoking, to be answered by occasional and regular smokers); (c) the number of cigarettes or pipes smoked on an average smoking day during the past months (quantity of smoking; to be answered by occasional and regular smokers), and (d) the age at which smokers began to smoke cigarettes regularly (to be answered by regular smokers only).

Readiness to change and current treatment

Apart from the sections described above, there were two additional items in the screening questionnaire. One was concerned with assessing readiness to change alcohol use, which was indicated on an 11-point scale (0 = *not at all important* to 10 = *extremely important*; adapted from Miller & Rollnick, 2002; see also Demmel, 2005a). The other item was about whether the patient was already undergoing treatment for alcohol problems (yes or no).

Interview Materials

The interview materials consisted of four parts (see Table 24) and had to be filled out by the doctors during and after the intervention. All parts are presented in Appendix E.

Readiness to change and Self-efficacy

During the interview participants were asked to indicate their level of readiness to change their alcohol use and level of readiness to quit smoking respectively, on an 11-point rating scale (0 = *not at all important*, 10 = *extremely important*) adapted from Miller and Rollnick (2002). Similarly, participants indicated their level of alcohol moderation and tobacco abstinence self-efficacy on an other 11-point rating scale (0 = *not at all confident*, 10 = *extremely confident*). Patients who were non-smoker or former smokers only answered the questions relating to alcohol use.

Evaluation

To evaluate the interview the Rating Scales for the Assessment of Empathic Communication in Medical Interviews (REM; Nicolai & Demmel, 2006), consisting of six items with rating scales was employed: (a) enhancement of the patient's motivation

to stop or reduce smoking (1 = *not enhanced* to 7 = *strongly enhanced*), (b) enhancement of the patient's motivation to reduce alcohol use (1 = *not enhanced* to 7 = *strongly enhanced*), (c) annoyed by the patient (1 = *not annoyed* to 7 = *very annoyed*), (d) cooperativeness of the patient (1 = *not cooperative* to 7 = *very cooperative*), (e) relationship between doctor and patient (1 = *cooperation* to 7 = *conflict*), and (f) proportion of time doctor spoke (0 to 100%).

Documentation

This section noted whether it was a first or second intervention, when the interview began, and when it finished. Additionally, it asked which (if any) further steps were agreed on: (a) another interview, (b) further labotary tests, (c) behaviour change (e. g. reduction of use), (d) other treatment (e. g. smoking cessation programme) (e) referral to other services (e. g. advice centre), (f) self-help group, (g) other, (h) nothing. It also asked whether the doctor handed out an information leaflet about smoking cessation. Finally, there was room for doctors' additional notes.

International Diagnostic Check Lists

The last section consisted of the *International Diagnostic Check list* (IDCL) *for ICD-10* for alcohol dependence and misuse. Previously defined criteria allow doctors and psychologists to undertake a systematic exploration of the respective disorder as well as to state a diagnosis in line with the International Classification of Diseases (ICD; Hiller, Zandig & Mombour, 1997). Criteria for alcohol dependence are said to include the following: (1) craving, (2) weakened control over alcohol consumption, (3) physical withdrawal symptoms, (4) enhanced tolerance, (5) concentration on alcohol consumption and neglect of other interests, and (6) prolonged drinking despite negative consequences. There are also four criteria for harmful alcohol use: (A) evidence for physical or psychological impairments due to alcohol consumption, (B) description of the respective impairment, (C) the drinking pattern persisted for at least a month or was repeated during the last twelve months, and (D) the disorder does not fulfill criteria for other disorders during the same time. All items have three response options (no, suspicion and yes). After answering all items the doctor should form his/her diagnosis in accordance to his/her responses.

Reliability, in a sense of raters' agreement, for this section was earlier found to be excellent ($\kappa = .80$; Hiller et al., 1997).

The follow-up Questionnaire

The follow-up questionnaire was sent to the patients 24 weeks after they had filled in the screening questionnaire. It contained many of the sections of the screening questionnaire which therefore are not described again (see Table 24). These included the AUDIT, quantity and frequency measures, the DrInC and the smoking items. Some items were added to those sections and will be described below, as well as some new parts. The whole questionnaire can be seen in Appendix F.

Health care utilisation

The first item asked how often the patients had been to their family doctor, and the second question asked how often they had visited another doctor. Furthermore, the patients were asked to state if, how often, and how long they had been in hospital as an inpatient, whether they had consulted emergency services, whether they had been admitted to an emergency ward, and whether they had been on sick leave.

Alcohol Use Disorder Identification Test

The follow-up AUDIT differed from the screening questionnaire regarding the respective timeframes, which were six months for all items at follow-up. Furthermore, there were only two response options for items 9 and 10 (yes and no).

Tobacco use

The first three smoking items (smoking status, frequency and quantity) were the same as in the screening questionnaire, but four more items were added: (a) readiness to quit smoking, (b) tobacco abstinence self-efficacy, (c) number of attempts to quit smoking over the last six months, and (d) number of successful attempts to quit smoking for at least 24 hours.

Current relationsship, readiness to change, self-efficacy, and behaviour change

A substantial number of items were added to the already existing sections. Since all relevant demographic information had been assessed at baseline there was only one new item which asked if the patients had split up with their partners over the last six months.

In contrast to the screening, readiness to change alcohol use and alcohol moderation self-efficacy were assessed (0 = *not at all important/confident*, 10 = *extremely important/confident*), as well as five items about possible behaviour change

(binary responses: no or yes, six-month timeframe): (a) attempts to cut down on alcohol, (b) no alcohol for at least seven consecutive days, (c) attendance at a self-help group (d) visit to an advice centre, and (e) consultation of a doctor or psychologist.

Rationale of Analysis

Figure 2 provides an overview of the different samples and the corresponding analyses that were carried out. All statistical analyses were performed with the SPSS software package (Version 13.0).

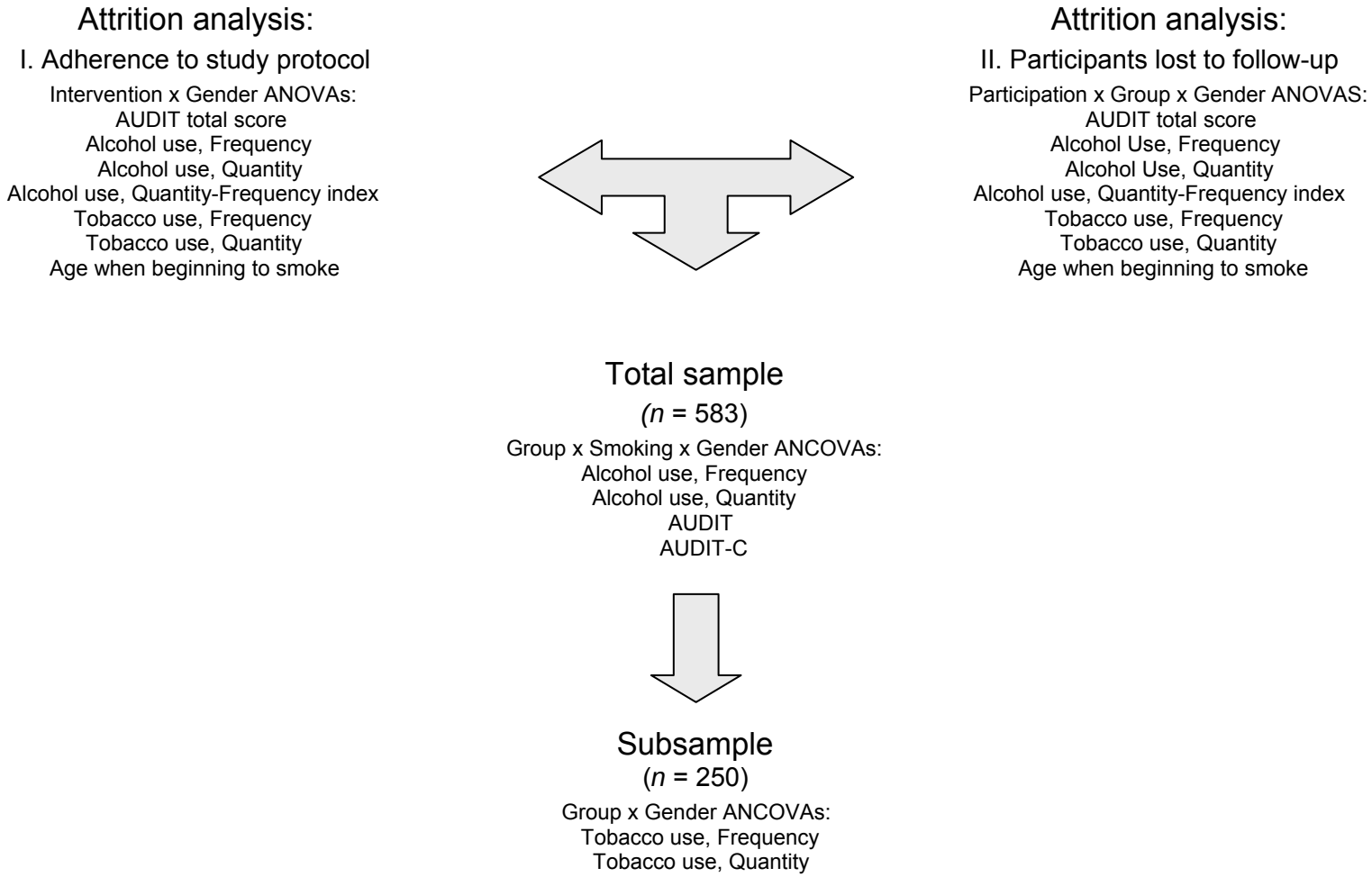

Figure 2. Rationale of analysis

Results

Alcohol use

All analyses were carried out for the total sample (n = 583). The primary outcome measures were: (a) frequency of alcohol use, (b) quantity of alcohol use, (c) the AUDIT total score, and (d) the AUDIT-C score. To adjust for the skewness of the distributions, the frequency and quantity data were log transformed but this did not lead to different results of the baseline ANOVAs and the follow-up ANCOVAs in terms of significant effects. Independent variables in the analyses were group (control vs. intervention), smoking status (non-smoker vs. smoker), and gender (male vs. female).

Baseline Alcohol Use

A significant main effect of group was found only on frequency of alcohol use (see Table 26). Participants of the intervention group drank more often at baseline than participants of the control group (see Table 27).

Significant main effects of smoking on frequency of alcohol use and on the AUDIT total score were found (see Table 1). Non-smokers drank more often than smokers, but scored lower on the AUDIT (see Table 27).

Significant main effects of gender on quantity of alcohol use and on the AUDIT-C score were found (see Table 26). Women drank less alcohol on one occasion and scored lower on the AUDIT-C (see Table 27).

Group x Gender interactions were significant with respect to quantity of alcohol use and the AUDIT-C score (see Table 26). Women of the control group drank more alcohol on one occasion than women of the intervention group (85.75 vs. 66.48 g), whereas the difference between men of both groups was small (99.16 vs. 93.32 g). Post-hoc analyses of the log-transformed data confirmed that the difference between women of both groups was statistically significant at the .05 significance level, $t(139) = 2.43$, $p = .02$. In addition, women of the control group had slightly higher AUDIT-C scores compared to women of the intervention group (6.20 vs. 5.96), whereas the AUDIT-C scores of men were lower in the control group than in the intervention group (6.93 vs. 7.27). Post-hoc analyses revealed that the difference between men of both groups was statistically significant, $t(440) = -2.10$, $p = .04$.

A significant Group x Smoking interaction was found only on the AUDIT-C score (see Table 26). Non-smokers of the control group scored higher than non-smokers of the intervention group (6.88 vs. 6.75). Conversely, smokers of the control group scored lower than smokers of the intervention group (6.69 vs. 7.06). However, post-hoc analyses showed that these differences were not statistically significant at the .05 significance level.

Table 26

Three-Way Analyses of Variance for Alcohol Use at Baseline

Source	*df*	*MS*	*F*
		Frequency, log transformed	
Group (GR)	1	0.73	6.76*
Smoking status (S)	1	0.50	4.64*
Gender (GE)	1	0.07	0.62
GR x S	1	0.02	0.22
GR x GE	1	0.09	0.80
S x GE	1	0.01	0.08
GR x S x GE	1	0.06	0.55
Error	575	0.11	
		Quantity, log transformed	
Group (GR)	1	0.27	2.04
Smoking status (S)	1	0.09	0.71
Gender (GE)	1	0.65	4.99*
GR x S	1	0.00	0.47
GR x GE	1	0.79	6.10*
S x GE	1	0.01	0.04
GR x S x GE	1	0.06	0.42
Error	575	0.13	
		AUDIT[a]	
Group (GR)	1	0.53	0.04
Smoking status(S)	1	77.74	5.79*
Gender (GE)	1	47.71	3.56
GR x S	1	15.54	1.16
GR x GE	1	9.49	0.71
S x GE	1	13.50	1.01
GR x S x GE	1	8.91	0.66
Error	575	13.42	
		AUDIT-C[b]	
Group (GR)	1	0.48	0.17
Smoking status (S)	1	3.84	1.41
Gender (GE)	1	94.46	34.45**
GR x S	1	11.30	4.13*
GR x GE	1	11.92	4.36*
S x GE	1	0.13	0.05
GR x S x GE	1	0.66	0.24
Error	575	2.73	

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.
*$p < .05$. **$p < .01$.

Table 27

Alcohol Use at Baseline as a Function of Group, Smoking Status, and Gender

		Control group			Intervention group		
Smoking Status	Gender	*M*	*SD*	*n*	*M*	*SD*	*n*
				Frequency, days			
Non-smoker	Women	10.30	8.48	23	13.29	6.70	14
	Men	10.41	8.18	105	13.32	9.00	71
Smoker	Women	8.68	6.69	63	9.34	7.50	41
	Men	8.73	7.30	175	11.91	8.44	91
				Quantity, g			
Non-smoker	Women	84.68	47.51	23	53.91	34.21	14
	Men	87.32	56.52	105	87.37	52.40	71
Smoker	Women	86.14	50.28	63	70.78	40.52	41
	Men	106.26	86.25	175	97.97	53.44	91
				AUDIT[a]			
Non-smoker	Women	9.87	2.53	23	10.21	2.05	14
	Men	11.03	2.86	105	11.39	3.72	71
Smoker	Women	12.02	4.29	63	10.83	3.60	41
	Men	11.70	4.05	175	11.86	3.63	91
				AUDIT-C[b]			
Non-smoker	Women	6.35	1.67	23	5.43	1.34	14
	Men	6.99	1.50	105	7.01	1.55	71
Smoker	Women	6.14	1.63	63	6.15	1.59	41
	Men	6.89	1.83	175	7.47	1.63	91

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.

Alcohol Use at Follow-up

The corresponding baseline measures of frequency and quantity of alcohol use, of the AUDIT and the AUDIT-C were included as covariates into the analyses of follow-up measures. All effects of the covariates were highly significant (see Table 28).

Only one significant main effect was found for gender with respect to frequency of alcohol use (see Table 28). When baseline frequency was not considered as a covariate, women drank less often than men (see Table 29). However, when the baseline frequency is taken into account, women drank more often than men (see Table 30).

Table 28

Three-Way Analyses of Covariance of Alcohol Use at Follow-up

Source	*df*	*SS*	*MS*	*F*
		Frequency, log transformed		
Baseline Frequency (covariate)	1	29.85	29.85	359.71**
Group (GR)	1	0.04	0.04	0.53
Smoking status (S)	1	0.04	0.04	0.44
Gender (GE)	1	0.36	0.36	4.37*
GR x S	1	0.02	0.02	0.19
GR x GE	1	0.10	0.10	1.25
S x GE	1	0.32	0.32	3.80
GR x S x GE	1	0.07	0.07	0.83
Error	574	47.63	0.08	
Total	583	600.08		
		Quantity, log transformed		
Baseline Quantity (covariate)	1	4.52	4.52	28.75**
Group (GR)	1	0.42	0.42	2.64
Smoking status (S)	1	0.11	0.11	0.71
Gender (GE)	1	0.00	0.00	0.01
GR x S	1	0.10	0.10	0.60
GR x GE	1	0.03	0.03	0.20
S x GE	1	0.28	0.28	1.77
GR x S x GE	1	0.11	0.11	0.72
Error	574	90.25	0.16	
Total	583	2004.30		
		AUDIT[a] total score		
Baseline AUDIT (covariate)	1	4098.95	4098.95	263.61**
Group (GR)	1	8.27	8.27	0.53
Smoking status (S)	1	50.18	50.18	3.23
Gender (GE)	1	36.80	36.80	2.37
GR x S	1	3.83	3.83	0.25
GR x GE	1	70.49	70.49	4.53*
S x GE	1	10.11	10.11	0.65
GR x S x GE	1	15.85	15.85	1.02
Error	574	8925.48	15.55	
Total	583	60534.00		
		AUDIT-C[b] score		
Baseline AUDIT-C (covariate)	1	750.87	750.87	228.57**
Group (GR)	1	1.84	1.84	0.56
Smoking status (S)	1	7.00	7.00	2.13
Gender (GE)	1	2.59	2.59	0.79
GR x S	1	0.00	0.00	0.00
GR x GE	1	6.59	6.59	2.01
S x GE	1	0.32	0.32	0.10
GR x S x GE	1	0.00	0.00	0.00
Error	574	1885.67	3.29	
Total	583	25067.00		

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.
*$p < .05$. **$p <$,01.

A significant Group x Gender interaction was found for the AUDIT total score (see Table 28). Women of the intervention group scored lower than women of the control group (7.79 vs. 9.03), whereas men of the intervention group scored higher than men of the control group (9.39 vs. 8.78). However, post-hoc analyses of the confidence intervals of the estimated means suggest that these differences were not statistically significant.

Table 29

Alcohol Use at Follow-up as a Function of Group, Smoking Status, and Gender

		Control group			Intervention group		
Smoking status	Gender	*M*	*SD*	*n*	*M*	*SD*	*n*
				Frequency, days			
Non-smoker	Women	12.09	8.54	23	13.79	9.91	14
	Men	10.17	8.67	105	12.07	10.43	71
Smoker	Women	9.29	7.50	63	11.37	8.73	41
	Men	10.67	8.07	175	12.25	9.86	91
				Quantity, g			
Non-smoker	Women	83.69	35.89	23	51.15	23.63	14
	Men	79.64	64.17	105	84.23	76.60	71
Smoker	Women	79.88	51.14	63	65.70	37.72	41
	Men	96.32	70.69	175	84.90	48.25	91
				AUDIT[a]			
Non-smoker	Women	7.65	2.69	23	6.00	2.86	14
	Men	8.15	3.52	105	9.25	5.50	71
Smoker	Women	9.70	5.83	63	8.24	4.75	41
	Men	9.30	4.99	175	9.80	5.09	91
				AUDIT-C[b]			
Non-smoker	Women	5.78	1.45	23	4.71	1.38	14
	Men	6.07	2.00	105	6.21	2.52	71
Smoker	Women	5.87	1.98	63	5.44	2.05	41
	Men	6.34	2.17	175	6.89	2.30	91

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.

Table 30

Estimated Means of Alcohol Use at Follow-up as a Function of Group, Smoking Status, and Gender

		Control group			Intervention group		
Smoking status	Gender	*M*	*SE*	*n*	*M*	*SE*	*n*
				Frequency, days			
Non-smoker	Women	12.08	1.29	23	11.40	1.65	14
	Men	10.08	0.60	105	9.65	0.74	71
Smoker	Women	10.58	0.78	63	12.13	0.97	41
	Men	11.93	0.47	175	10.96	0.65	91
				Quantity, g			
Non-smoker	Women	86.23	12.07	23	63.72	15.53	14
	Men	81.32	5.65	105	85.90	6.87	71
Smoker	Women	81.95	7.29	63	72.78	9.07	41
	Men	91.83	4.40	175	83.11	6.07	91
				AUDIT[a]			
Non-smoker	Women	8.79	0.83	23	6.89	1.06	14
	Men	8.45	0.39	105	9.28	0.47	71
Smoker	Women	9.27	0.50	63	8.68	0.62	41
	Men	9.11	0.30	175	9.49	0.41	91
				AUDIT-C[b]			
Non-smoker	Women	6.11	0.38	23	5.68	0.49	14
	Men	5.95	0.18	105	6.08	0.22	71
Smoker	Women	6.34	0.23	63	5.91	0.29	41
	Men	6.30	0.14	175	6.44	0.19	91

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.

Tobacco use

Smoking status

First of all, we looked at changes in self-assigned smoking status from baseline to follow-up in the subsample of regular smokers (see Table 31). There appeared to be a tendency for more positive changes in the intervention group compared to the control group (10.2% vs. 9.2%). However, absolute numbers of participants were too small to conduct further analyses. The vast majority of baseline regular smokers in the control and intervention group still smoked regularly at follow-up (89.7% and 90.1%, respectively).

Table 31

Changes in Self-assigned Smoking Status as a Function of Group

Smoking status at baseline	Smoking status at follow-up	Control group		Intervention group	
		n	%	*n*	%
No changes					
Occasional smoker	Occasional smoker	0	0.0	1	1.1
Regular smoker	Regular smoker	146	90.1	78	88.6
Negative changes					
Occasional smoker	Regular smoker	1	0.6	0	0.0
Positive changes					
Occasional smoker	Former smoker	1	0.6	0	0.0
Regular smoker	Occasional smoker	7	4.3	5	5.7
Regular smoker	Former smoker	7	4.3	3	3.4
Regular smoker	Non-smoker	0	0.0	1	1.1

Baseline Tobacco Use

In order to analyse frequency and quantity of smoking, the data of 10 participants of the subsample were no longer considered because they had become non-smokers by the time of the follow-up and had not smoked during the past month. Independent variables in all analyses were group and gender. Log transforming the data to normalise the distributions did not lead to different results of the baseline ANOVAs and the follow-up ANCOVAs in terms of significant effects.

The only significant effect of the baseline ANOVAs was a Group x Gender interaction on frequency of smoking (see Table 32). Women of the control group were smoking slightly less often than women of the intervention group, whereas the difference between men of both groups was very small (see Table 33). Post-hoc analyses of the log-transformed data confirmed that the difference between women of both groups was statistically significant, $t(42) = -2.07$, $p < .05$.

Table 32

Two-Way Analyses of Variance for Tobacco Use at Baseline

Source	*df*	*MS*	*F*
		Frequency, log-transformed	
Group (GR)	1	0.00	1.89
Gender (GE)	1	0.00	0.16
GR x GE	1	0.00	4.27*
Error	236	0.00	
		Quantity, log-transformed	
Group (GR)	1	0.00	0.01
Gender (GE)	1	0.03	0.96
GR x GE	1	0.01	0.23
Error	236	0.04	

*$p < .05$.

Table 33

Tobacco Use at Baseline as a Function of Group and Gender

		Control group			Intervention group		
Tobacco use measure	Gender	*M*	*SD*	*n*	*M*	*SD*	*n*
Frequency, days							
	Women	29.53	1.45	43	30.00	0.00	29
	Men	29.87	0.73	112	29.77	0.96	57
Quantity, number of cigarettes	Women	20.07	7.55	43	20.86	8.58	28
	Men	22.74	10.73	112	22.11	11.15	57

Tobacco Use at Follow-up

The corresponding baseline measures of frequency and quantity of smoking were included as covariates into the analyses of follow-up measures. All effects of the covariates were highly significant (see Table 34).

The descriptive data (see Table 35) as well as the estimated means (Table 36) showed a tendency for a reduction on frequency and quantity of smoking among women of the intervention group. Nevertheless, no significant effects were found (see Table 34).

Table 34

Two-Way Analyses of Covariance for Tobacco Use at Follow-up

Source	*df*	*SS*	*MS*	*F*
		Frequency, log-transformed		
Baseline Frequency (covariate)	1	0.05	0.05	19.78**
Group (GR)	1	0.01	0.01	2.28
Gender (GE)	1	0.00	0.00	0.85
GR x GE	1	0.00	0.00	0.94
Error	235	2.63	0.00	
Total	240	524.73		
		Quantity, log-transformed		
Baseline Quantity (covariate)	1	7.41	7.41	399.46**
Group (GR)	1	0.01	0.01	0.54
Gender (GE)	1	0.01	0.01	0.59
GR x GE	1	0.00	0.00	0.16
Error	235	4.36	0.02	
Total	240	417.98		

**$p < .01$.

Table 35

Tobacco Use at Follow-up as a Function of Group and Gender

		Control group			Intervention group		
Tobacco use measure	Gender	*M*	*SD*	*n*	*M*	*SD*	*n*
Frequency, days							
	Women	29.09	2.42	43	28.86	4.42	28
	Men	29.43	2.17	112	29.07	2.58	57
Quantity, number of cigarettes	Women	21.23	10.51	43	20.54	9.57	28
	Men	21.84	10.91	112	21.88	13.13	57

Table 36

Estimated Means of Tobacco Use at Follow-up as a Function of Group and Gender

		Control group			Intervention group		
Tobacco use measure	Gender	*M*	*SE*	*n*	*M*	*SE*	*n*
Frequency, days							
	Women	29.36	0.38	43	28.66	0.47	28
	Men	29.36	0.24	112	29.10	0.33	57
Quantity, number of cigarettes	Women	22.85	1.05	43	21.45	1.30	28
	Men	21.09	0.65	112	21.69	0.91	57

Discussion

The present study is the worldwide first randomised controlled trial of a conjoint brief intervention for hazardous drinking and smoking. Furthermore, this study is the first brief intervention trial conducted in German primary health care. Participants were randomised before screening was conducted in order to prevent randomisation from being influenced by the screening result. The AUDIT, a highly recommended screening instrument (e. g. Fiellin et al., 2000), was used to screen for potential alcohol problems. Doctors employed a sound intervention adapted from MI (Miller & Rollnick, 2002) that was not too complex, but was well structured, reliant upon a written manual, and therefore relatively easy to learn. Similarly, the training of the doctors - consisting of simulated patient encounters, workshops, and booster sessions - was well structured and effective (Demmel et al., 2005). Doctors and receptionists received an in-depth introduction to all necessary procedures and were continually supported by the project's collaborators throughout the implementation of the intervention. Additionally, clear and helpful materials were provided. A large sample was obtained and individuals with hazardous alcohol use were reached somewhat early (at an average age of 35 years) compared to patients visiting out-patient or in-patient specialist treatment services (average age of 43 and 45 years, respectively; Sonntag, Welsch, & Bauer, 2005).

Despite the diligently planned design and implementation, the results of the study are rather discouraging. With respect to alcohol use, neither significant effects of the intervention on frequency and quantity of alcohol consumption, nor on the AUDIT-C score were found, even though baseline group differences were taken into account. However, a significant Group x Gender interaction on the AUDIT total score appeared. On average, women of the intervention group scored lower than women of the control group, whereas the opposite was found for men. The effect of lower AUDIT scores in the intervention group was more pronounced among non-smoking women than smoking women (8.79 and 6.89 compared to 9.27 and 8.68). However, post-hoc analyses revealed that these differences were not significant. The present results therefore provide only a slight indication that this brief intervention might somehow improve non-smoking women's drinking behaviour, even though the effect is not reflected by quantity and frequency measures of alcohol use.

Significant main effects of gender were found with respect to quantity of alcohol use and the AUDIT-C score at baseline and with respect to frequency of alcohol use at follow-up. At baseline, women reported drinking less alcohol on a single occasion than men and likewise scored lower on the AUDIT-C. These findings correspond to the results of epidemiological surveys (e. g. Augustin & Kraus, 2005). With respect to the significant gender effect at follow-up however, results were rather confusing. If baseline frequency was not inserted into the analysis as a covariate, women reported drinking on average less often than men. However, if baseline frequency functioned as a covariate, estimated means of the frequency of alcohol use were higher for women than for men. This effect is difficult to interpret and demonstrates one of the problems that might arise when interpreting the results of an ANCOVA with differences on the covariate (see e. g. Miller & Chapman, 2001); even though these initial differences were not significant in our case.

Looking at the results for tobacco use, no relevant changes of smoking status were detected (most smokers continued to smoke), but subgroups, however, were too small for further statistical analyses. In addition, no significant effects with respect to frequency and quantity of smoking were found. Only the descriptive data showed a very small reduction in frequency and quantity of smoking among women of the intervention group. It therefore has to be concluded that the brief intervention did not significantly affect smokers' tobacco use.

Many recent studies have suggested that brief interventions can be effective in reducing alcohol consumption (e. g. Wutzke et al., 2002) and smoking (e. g. Rubek et al., 2005). However, the present study does not support this optimism and a variety of different aspects might be responsible for the inefficacy of the implemented brief intervention in reducing alcohol and tobacco use.

Potential Sources of the Brief Interventions' Inefficacy

Adherence to Study Protocol

First of all, it was examined if there were any significant differences between those participants of the intervention group that received an intervention from their doctors and those who did not (Attrition analysis: I. Adherence to study protocol).

This analysis revealed three significant differences between the two groups at baseline. Participants who received the intervention were on average older than participants who did not receive the intervention, they reported drinking more often, and scored higher on the readiness to change scale. These results suggest that a deliberate selection of patients for the intervention had taken place. It can not be clarified with hindsight whether it was the doctors, or the receptionists, or even both, who were responsible for this selection. Either way, there is hardly any doubt that not all patients had the same opportunity of receiving an intervention despite being assigned to the intervention group. Patients who received the intervention drank significantly more often, tended to drink more on average and therefore showed a higher percentage of hazardous drinking than patients who did not receive an intervention. It could therefore have been more important to this group of patients to cut down on their drinking; as reflected by their scores on the readiness to change scale.

There are some possible explanations for this selection process. Reasons given by the doctors or receptionists included: lack of time, lack of time of the patient, or patients refusing to participate. Indeed such claims cannot be proved wrong. A further, speculative reason for selecting patients who drink more could be accounted for by the wish of doctors and receptionists to help the investigators. This necessitates the underlying assumption that the intervention could work better for patients with more severe problems and effects would therefore be augmented. Another explanation would be the attempt not to impair the doctor's relationship with the patients. If this is indeed the case, it is assumed that patients who do not drink as much might be irritated by the intervention and even show resistance to it. This could harm the doctor's relationship with the patient, as well as negatively influence the study's results. On the other hand, patients who drink more might show deeper insight into their problems and therefore be

more cooperative and motivated during the course of the intervention; as appears to be reflected by the higher readiness to change score. One last explanation could simply be human kindness: whoever drinks more needs the intervention more urgently.

To summarise, it must be stated that a deliberate selection of patients for the intervention has been performed despite the clear and strict instructions provided by the project's collaborators. It can not therefore be precluded that this fact influenced the intervention's effect.

Another important finding is that the randomisation of participants to study groups was not completely successful. Participants of the intervention group were significantly older and reported to drink more often at baseline than participants of the control group. This is actually very suprising because participants were randomised even before the screening was conducted. It therefore appears rather unlikely that receptionists selectively chose participants for the intervention group because they did not have the screening results. However, it cannot be ruled out that receptionists knew the patients well enough to make such a selection. We tried to account for this baseline difference in frequency of alcohol use by conducting an analysis of covariance, but this is a debatable method (e. g. Miller & Chapman, 2001) which cannot estimate the broad effect of this baseline difference. Therefore, it is possible that participants of the intervention group had more serious alcohol problems, preventing the intervention's effect from becoming significant.

The Screening

Other problems might be found within the screening context. The screening instrument used for the present study was the generally approved AUDIT (e. g. Fiellin et al., 2000; Rist et al., 2004) with a cut-off score of eight as recommended by the WHO (Saunders et al., 1993). However, analyses revealed that this cut-off score or even the AUDIT itself might not be appropriate for detecting hazardous drinkers as defined by their self-reports of alcohol consumption (Women: QFI > 20 g; men: QFI > 30 g). Only 51% of women in the control group and 40% in the intervention group had a QFI above 20 grams and were therefore categorised as hazardous drinkers. For men, it was 31% and 45%, respectively. These findings suggest that the AUDIT total score does not correspond to the QFI and that a high percentage of participants in the intervention

group received an intervention despite their harmless use of alcohol according to the QFI. This might not only have been irritating for the patients, but may have also augmented the intervention's ineffectiveness.

In order to gain clarity, the variable 'hazardous drinking' (defined by the QFI as above) was inserted into the analyses of the primary outcome measures (frequency and quantity of alcohol use, AUDIT total score, and AUDIT-C score), but no significant effects of this variable were found (see Appendix G). Additionally, separate analyses of harmless and hazardous drinkers (according to the QFI) did not lead to different results with respect to outcome measures (see Appendix G). These analyses might at first glance suggest that the intervention's effect was not influenced by the high percentage of harmless drinkers (according to their QFI). It should not be overlooked, however that splitting the total sample is linked with a loss of statistical power. Additionally, it should be noted that the sample was obviously very heterogenous with respect to alcohol use and that it consisted of two very different subgroups (see Appendix G). Harmless drinkers reported to drink significantly less often (6.28 vs. 16.69 drinking days over the past 30 days) and smaller amounts at a time (78.59 vs. 114.57 g), and they also scored significantly lower on the AUDIT (10.46 vs. 12.98) and the AUDIT-C (6.33 vs. 7.60). Thus, it seems very likely that the brief intervention affected alcohol use differently in these subgroups and that the overall effect was obscured.

The question arises as to what constitutes a hazardous drinker and how hazardous drinking can be assessed. Can a simple QFI be enough, or is a more comprehensive instrument assessing consumption habits and consequences, like the AUDIT, needed? With respect to the efficacy of the brief intervention of the present study no difference could be detected. It is possible, however, that there was a subgroup of participants with a harmless QFI, but who by consequence of their alcohol use still had a high enough AUDIT total score to be suitable for the intervention. On the other hand, it is possible that some participants were particularly health-conscious, reflected by higher scores on items like " How often during the last year have you had a feeling of guilt or remorse after drinking?" despite lower scores on items 1 to 3. Maisto, Conigliaro, McNeil, Kraemer, and Kelley (2001) explored the relationship between different eligibility criteria (AUDIT, QFI, and AUDIT plus QFI) and alcohol-related outcome measures. They found that the three groups of participants differed with

respect to alcohol consumption and alcohol-related consequences both at baseline and follow-up. The authors recommend that these differences have to be taken into account when interpreting the results of alcohol brief intervention trials. Furthermore, they suggest that alcohol-related consequences might be more sensitive measures of brief intervention outcome than alcohol consumption if participants were selected on the basis of their AUDIT score. This corresponds to the results of the present study where a significant Group x Gender interaction was found only with respect to the AUDIT total score.

Whereas the comparison of AUDIT scores with the QFI in the present study suggests that a cut-off score of eight is too low, analyses of sensitivity and specifity have shown that the cut-off score for hazardous drinking should be much lower than eight and additionally, that gender-specific cutoff scores are needed (e. g. Reinert & Allen, 2002; Scheuren, Demmel, & Rist, 2004). All these aspects underline how difficult it is to interprete a total score that is based on such heterogeneous items. It would be interesting to analyse which items lead to higher total scores in different subgroups of participants (e. g. men vs. women). These considerations, however, are beyond the scope of the present work.

Regarding the analyses of tobacco use, another screening problem became apparent. All regular smokers of our subsample were selected on the basis of their alcohol consumption (AUDIT ≥ 8) and not on account of their smoking. This subsample was therefore not representative for the population of regular smokers because only smokers with hazardous drinking habits were included. These individuals might be worse off than smokers without hazardous drinking habits and therefore have a worse prognosis. As John et al. (2003) have stated, alcohol use increases the craving to smoke and smokers are more successful in reducing their tobacco use if they mangage to avoid drinking alcohol (Battjes, 1988). These aspects could, at least to some extent, explain the ineffectiveness of our intervention in reducing tobacco use.

Another disadvantage is presented by the relatively small subsample of regular smokers that did not allow statistical analyses of changes in smoking status.

The Intervention

Plausible reasons for the intervention's inefficacy can also be detected within the brief intervention itself. The fact that the intervention of the present study was designed to address both alcohol and tobacco use, while being novel and unique, nevertheless may also have caused major problems. As suggested by Stotts et al. (2003), the conjoint treatment of alcohol and tobacco use might pose specific problems in terms of excessive demands.

To gain further insight, the Group x Gender x Smoking ANCOVAs were compared to simple Group x Gender ANCOVAs. The underlying assumption was that the brief intervention might work differently for non-smokers who received an intervention solely for their alcohol use than for smokers who received the conjoint treatment. Supporting the relevance of smoking status to the brief intervention's efficacy, the Group x Gender interaction on the AUDIT total score was only significant in the 2 x 2 x 2 analysis (see Appendix H), and not if smoking status was ignored as in the 2 x 2 analysis. As stated above, non-smoking women of the intervention group had on average the lowest AUDIT score, whereas for men AUDIT scores were generally higher in the intervention group compared to the control group. This can be interpreted as another hint that conjoint screening and intervention for alcohol and tobacco use might be too demanding, probably for both doctors and patients.

In their qualitative study Aira et al. (2004) explored differences between the implementation of brief interventions for hazardous drinking and smoking by primary care physicians. The authors found that smoking was discussed more frequently than drinking for several reasons:

(1) Recognition

Doctors find it easier to recognise smoking than hazardous drinking (e. g. by the smell of tobacco and by the yellow pigmentation on fingers and teeth). Additionally, patients often try to hide their excessive alcohol use, but are less reluctant to admit they are smokers.

(2) Importance as a risk factor
Many doctors judge smoking to be more harmful than drinking at any level of consumption, whereas moderate amounts of alcohol might have benefical effects.

(3) Tools available
Doctors missed medication or leatlets for alcohol misuse, whereas for smoking they could prescribe nicotine chewing gum, patches etc.

(4) Stigmatising label
Doctors felt hazardous drinking a more sensitive issue than smoking, and therefore more difficult to discuss.

(5) Effectiveness of counselling
Doctors believed advice to quit smoking to be more effective than advice to reduce or quit drinking.

With respect to the present study, some of these aspects were considered by the project collaborators, whereas others might have been a problem. Since a screening instrument for hazardous drinking was offered, doctors should have felt confident to recognise alcohol problems. Additionally, doctors were trained to conduct a well structured intervention for drinking and smoking so that they could feel competent discussing both behaviours. However, how doctors felt about the potential health risk of alcohol or tobacco use, and how effective they expected the intervention to be with respect to a reduction in alcohol or tobacco use was not ascertained. As outlined above, these aspects might have led to differences in discussion of the two problematic behaviours. Similarly, it is thought that doctors were more inhibited discussing alcohol use due to the social stigma attached to it. All these problems could have a potential influence on the effectiveness of the brief intervention, particularly in the case of smokers with whom doctors were supposed to discuss both alcohol and tobacco use.

The optimal extent or ‘dose’ of brief interventions is another aspect often discussed in the literature and the evidence to date is still ambiguous. Ockene et al. (1999), for example, found that even a very brief (5- to 10-minute) counselling session can significantly reduce alcohol consumption of hazardous drinkers. Similarly, Alto et al. (2000) and Wutzke et al. (2002) reported that minimal advice (< 5 min.) can be as

effective in reducing alcohol consumption as several brief intervention sessions. On the other hand, several studies (e. g. Grossberg, Brown, & Fleming, 2004; Senft et al., 1997; Fleming et al., 1997) supporting the efficacy of brief interventions report longer intervention times of 10 to 15 minutes and of one or two sessions. Furthermore, reviews and meta-analyses exploring the efficacy of brief interventions adapted from MI present much longer intervention times (e. g. an average of 87 minutes; Vasilaki et al., 2006). Similarly, Dunn et al. (2001) support the effectiveness of brief motivational interventions and found an average intervention time of 104 minutes while concurrently considering that this is too long for opportunistic interventions in most medical settings. In the context of their homogeneity analyses, Burke et al. (2003) maintain that adaptations of MI for drug addiction gained larger effect sizes when they took longer than 60 minutes. In contrast, Hettema et al. (2005) report that effect sizes of MI interventions were not significantly predicted by intervention duration. However, among the analysed studies the miminum intervention time was 15 minutes with an average time of 144 minutes. In the present study interventions took from two to 30 minutes (M = 13.83, SD = 5.55), and only 16 (2.7%) participants received a second intervention session (duration: M = 15.67, SD = 1.76). Due to the conjoint intervention for smoking and drinking, this short time was, moreover, divided with respect to both behaviours for the subgroup of smoking participants, leaving even less time for each topic. This relatively low intervention dose might have been another reason for weakening the intervention's effect, particularly because the intervention was adapted from MI and not just offering 'simple advice'. Doctors might therefore have felt overly pressurised by the demand to achieve so much in such a short space of time. Additionally, patients might have needed a longer interview or multicontact interventions (e. g. Whitlock et al., 2004) in order to change their drinking and smoking behaviour. However, it is counterintuitive to implement interventions of more than 15 minutes into primary health care routine, at least if these interventions were to be conducted by doctors or other health care providers. Indeed, these considerations represent the dilemma between an ideal intervention and real life conditions found in primary health care.

One last aspect to consider in the context of the brief intervention is the implementation of an intervention manual. Interestingly, Hettema et al. (2005) found that interventions adapted from MI gained higher effect sizes if they were not manual-guided compared to interventions reporting the use of a manual (d_c = 0.65 vs. d_c = 0.37). The difference, however, was not statistically significant (t = 1.53, p = 0.28). Correspondingly, the authors point out that this was only a between-study comparison and that it cannot be precluded whether there were other relevant characteristics of the selected studies leading to the difference in effect size. Additionally, Burke et al. (2003) investigated the effectiveness of adaptations of MI across behavioural domains and found that in the context of diet and exercise a study with lower quality produced larger effect sizes than studies with higher quality. Of course, the quality score coding system contained many different methodological aspects, but one of them was quality control and covered aspects as "treatment standardised by manual" and "specific training".

However, in the present study the brief intervention was reliant upon a written manual in order to simplify the acquisition and implementation of the intervention, thus enhancing the internal validity. The strict guidelines may however have prevented the doctors from putting into practice the MI spirit (evocation, collaboration, and support of autonomy; e. g. Moyers et al. (2005) and therefore, decreased the intervention's effect.

The Follow-up

There are several indications in the literature that participants and subjects lost to follow-up differ on certain variables which can have a potential effect on the results of outcome studies. For example, Vannicelli, Pfau, and Ryback (1976) found that according to staff ratings, subjects lost to follow-up after treatment for alcohol dependence showed less improvement than responders. Furthermore, among previously hospitalised psychiatric patients, those who had dropped out of the study tended to be male, live in less stable social surroundings, and have a higher rate of substance misuse (Fischer, Dornelas, & Goethe, 2001). Assuming that subjects lost to follow-up had more serious alcohol problems and less social resources implies that the results of an intervention study could be distorted towards better outcomes since the participants not lost to follow-up would have less severe problems. Consequently, it appeared necessary

to examine if and in which way participants at follow-up and those who dropped out differed in the present study (Attrition analysis: II. Participants lost to follow-up).

As expected several differences were identified. First of all, there were significantly more women among patients participating at follow-up. Additionally, this group tended to have a higher level of education, and comprised of more students, apprentices, trainees, and more non-denominational individuals. On the other hand, participants lost to follow-up drank significantly larger amounts of alcohol at a time and scored higher on the AUDIT at baseline. It can therefore be assumed that these subjects would have had worse outcomes than those participating at follow-up. Thus, a distortion towards favourable outcomes in the present study cannot be precluded, jeopardising even the small interaction effect that was found on the AUDIT total score. This assumption is supported by the same finding of two different meta-analyses (Vasilaki et al., 2006; Moyer et al, 2002). The authors were able to show that the effect of MI compared with a control condition was significantly larger when individuals with more severe problems were excluded.

Surrounding Conditions

Another associated aspect hampering the success of the present intervention might be found within the settting of primary care practice where many different prevention programmes are expected to be integrated into daily routine. The US Preventive Services Task Force (1996), for example, has published a guide recommending so many preventive services (e. g. screening for cancer, counselling to prevent tobacco use, counselling to prevent injuries), that it would take a GP about 7.4 hours per working day to conduct only the minimum (Yarnall, Pollak, Østbye, Krause, & Michener, 2003). Since this can obviously not be achieved, German GPs might also be overstrained by the amount of preventive services they are supposed to deliver. This might be reflected by the present study where nine of 23 (39%) doctors conducted less than five interventions, another six (26%) doctors conducted less than 10 interventions, and only two (9%) doctors conducted more than 20 interventions. Moreover, it seems possible that these infrequently employed interventions were less effective, which might have influenced the overall study results.

Even though some studies (e. g. Córdoba et al., 1998; Fleming et al., 1997; Ockene et al., 1999) report that brief interventions for hazardous drinking can be effective in primary care settings, others highlight difficulties in implementing brief interventions into primary care routine. For example, Whitlock et al. (2004) state in the context of their review that brief multicontact interventions can be successfull in reducing hazardous drinking, but that more research is needed on effective strategies for the implementation of screening and brief intervention into physicians' daily routine. Similarly, Aalto et al. (2000) suggest that brief interventions in primary care settings might not be as effective as in special research conditions, and that different methods of implementing brief interventions into general practice need to be evaluated in order to offer better support to primary care personnel. In another study, Aalto, Pekuri, and Seppä (2003) found no increase in brief intervention activity (asking or advising about alcohol) of primary health care professionals taking part in a brief intervention project according to patients' reports. One reason for this finding cited by the authors could be a general saturation in brief intervention activity; an aspect corresponding to the variety of prevention programmes discussed above.

To summarise, it can be claimed that the immense workload of primary care physicians and other health care professionals enhanced by prevention programmes complicate the implementation of effective brief interventions into primary care routines. Interesting screening and brief intervention dissemination strategies with respect to three target groups (patients and practitioners, health care settings and systems, communities and the general population) are presented in a review by Babor and Higgins-Biddle (2000).

When considering the patients' perspective, it is similarly possible that patients lose interest in and motivation to reduce alcohol use due to the degree of behaviour change expected. It has been shown that hazardous drinkers tend to engage in more adverse health-related behaviours (e. g. smoking, unhealthy diet, dangerous driving) than individuals with a low-risk level of alcohol consumption (Fertig & Allen, 1996; Jonas, Dobson, & Brown, 2000; Moore et al., 2001). It can therefore be reasoned that some patients of the present study might already have been approached by their doctors with respect to other behaviour changes, such as diet. Therefore, these patients might also have felt under undue pressure and were consequently less motivated to change

their drinking and smoking behaviour, which in turn could have contributed to the brief intervention's ineffectiveness.

One last important aspect should be considered. Compared to other countries where the efficacy of screening and brief intervention has been examined, Germany is a country with a very high alcohol consumption (rank 5 among 45 countries; Meyer & John, 2007). Moderate alcohol use is generally accepted and considered normal in a variety of situations (e. g. with meals, during festivities, in the evenings, in restaurants and bars). Even binge drinking is not a matter of concern for certain subpopulations. Attitudes about drinking are therefore likely to be different compared to countries with lower consumption levels; the motivation to change 'normal' drinking behaviour might correspondingly be lower. This could be another explanation why the brief intervention adapted from MI conducted in the present study was not effective, despite similar successful interventions in other countries like the United States (rank 26; e. g. Senft et al., 1997; Fleming et al., 1997) and Australia (rank 22; e. g. Wutzke et al., 2002). Cultural factors and mechanisms potentially moderating the efficacy of brief interventions require further research.

Conclusions

Despite excellent planning and implementation of a brief intervention adapted from MI for alcohol misuse and smoking in German primary health care no convincing results were found documenting the efficacy of the intervention with respect to different outcome measures. Explanations might be found within the sample (selective biases), the screening procedure (in particular, the unsuitability of the AUDIT), the intervention itself (in particular, the conjoint intervention for drinking and smoking), the setting of primary health care, or within the cultural indentity of the German population.

However, there is an intimation from the figures that there could be a possible effectiveness for non-smoking women. Several explanations regarding this potential effect have to be considered.

First of all, it should be discussed whether brief interventions in general are more effective for women. Unfortunately, the empirical evidence is still ambiguous. For example, Fleming et al. (2002) found that women responded as well as men to a brief

intervention conducted by a physician. Similarly, Dunn et al. (2001) and Vasilaki et al. (2006), who reviewed studies examining the effectiveness of brief interventions adapted from MI, stated that brief MI was equally effective for both genders. On the other hand, Chang (2002) reviewed brief intervention studies with particular respect to the efficacy for women and identified three types of study results: (a) Brief interventions to which both women and men responded, (b) Brief interventions to which women responded better than men., and (c) Trials where women responded to both control and intervention conditions. The author concludes that brief interventions are not consistently helpful to women drinkers. The results of the present study seem to support a stronger efficacy of brief interventions for women but further research with respect to gender differences is needed.

Second, it needs to be explored why the effect for women was more pronounced in the non-smoking group. On one hand, it is possible that the intervention worked in general better for non-smokers than for smokers. It has already been shown that alcohol treatment can be more effective if patients quit smoking (e. g. Kohn et al., 2003); however, how this can be applied to brief interventions still needs to be explored. On the other hand, it cannot be precluded that the underlying factor of the effect is just the intervention's extent. Since the doctors obviously did not discuss smoking with non-smoking patients, more time was left to talk about alcohol use. This could indeed lead to a more successful intervention, as has been shown above (e. g. Whitlock et al., 2004).

Future research needs to explore possible gender effects and the underlying factors and mechanisms responsible for potential differences. Additionally, it should be examined whether and how brief interventions for alcohol misuse work differently for smokers or nonsmokers. Finally, another issue worth exploring would be to consider how relevant cultural differences are with respect to alcohol use (manifested in attitudes, values, and habits of doctors and patients) for the efficacy of brief interventions.

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Appendix A: Subsample Description

Table A1

Subsample: Level of Education, Current Employment Status, Nationality, and Native Language as a Function of Group

	Control group		Intervention group			
	%	n	%	n	χ^2	df
Level of education					.22[a]	2
No certificate	1.9	3	2.3	2		
Special school	1.9	3	1.1	1		
Elementary/secondary school	39.5	64	25.0	22		
Grammar school	21.6	35	34.1	30		
University entrance qualification	22.8	37	25.0	22		
University degree	11.1	18	11.4	10		
Other	1.2	2	1.1	1		
Current employment					4.12[b]	3
Trainee	10.5	17	10.2	9		
Clerk/civil servant	29.0	47	39.8	35		
Worker/skilled worker	25.9	42	22.7	20		
Self-employed	6.8	11	10.2	9		
Unemployed	8.0	13	3.4	3		
Pupil/student	10.5	17	4.5	4		
Housewife/househusband	1.2	2	3.4	3		
Pensioner	2.5	4	2.3	2		
Other	5.6	9	3.4	3		
Nationality					1.14	2
German	93.8	152	96.6	85		
Other	5.6	9	3.4	3		
Two or more (incl. German)	0.6	1	--	--		
Native language					2.05	2
German	92.0	149	96.6	85		
Other	4.9	8	2.3	2		
Bilingual (incl. German)	3.1	5	1.1	1		

Note. [a] For the purpose of this analysis the original seven categories were summarised into three (no certificate = no certificate; no university entrance qualification = special school, elementary/secondary school, grammar school, and other; university entrance qualification = university entrance qualification, and university degree). [b] For the purpose of this analysis the original nine categories were summarised into four (learners = trainee and pupil/student; employed = clerk/civil servant, worker/skilled worker, and self-employed; not employed = homemaker, pensioner, and others; unemployed = unemployed).

Table A2

Subsample: Age, Height, Weight, Gender, Marital Status, and Religion as a Function of Group

	Control group				Intervention group						
	M	SD	%	n	M	SD	%	n	t	χ^2	df
Age, years											
Whole sample	34.33	11.31	--	162	36.41	11.26	--	88	-1.39	--	248
Women	35.52	11.51	--	44	33.23	10.85	--	30	-86	--	72
Men	33.89	11.26	--	118	38.05	11.21	--	58	-2.31*	--	174
Height, cm											
Whole sample	176.09	8.68	--	161	177.91	8.72	--	87	-1.57	--	246
Women	167.34	5.70	--	44	169.55	6.51	--	29	-1.53	--	71
Men	179.38	7.20	--	117	182.09	6.38	--	58	-2.42*	--	173
Weight, kg											
Whole sample	77.36	15.10	--	161	77.21	14.96	--	87	.08	--	246
Women	66.64	11.45	--	44	62.93	7.44	--	29	1.68	--	71
Men	81.39	14.35	--	117	84.34	12.46	--	58	-1.34	--	173
Gender									--	1.31	1
Men	--	--	72.8	118	--	--	65.9	58			
Marital status									--	.32	1
Married, living together	--	--	25.3	41	--	--	30.7	27			
Married, separated	--	--	3.1	5	--	--	1.1	1			
Divorced	--	--	13.6	22	--	--	15.9	14			
Widowed	--	--	0.6	1	--	--	--	--			
Never married	--	--	57.4	93	--	--	52.3	46			
Religion									--	2.75	3
Christian	--	--	67.9	110	--	--	70.1	61			
Muslim	--	--	4.9	8	--	--	2.3	2			
Other	--	--	1.9	3	--	--	--	--			
Nondenominational	--	--	25.3	41	--	--	27.6	24			

Note. [a] For the purpose of this analysis the original five categories were summarised into two (married = married, living together and married, separated; not married = divorced, widowed, and never married).
* $p < .05$.

Table A3

Subsample: Consultions of the Particular Doctor as a Function of Group

	Control group				Intervention group						
	M	SD	%	n	M	SD	%	n	t	χ^2	df
Period consulting the doctor, years	6.18	7.63	-	145	6.27	7.42	--	83	-.09	--	226
Last consultation									--	.18	2
During the last 3 months	--	--	49.0	77	--	--	49.4	41			
3 to 6 months ago	--	--	19.1	30	--	--	25.3	21			
more than 6 months ago	--	--	31.8	50	--	--	25.3	21			
Number of consultations over the last 12 months									--	3.87	3
0 to 4 times	--	--	71.9	110	--	--	61.7	50			
5 to 8 times	--	--	19.6	30	--	--	22.2	18			
9 to 12 times	--	--	3.9	6	--	--	8.6	7			
more than 12 times	--	--	4.6	7	--	--	7.4	6			

Table A4

Subsample: Alcohol Use and Readiness to Change as a Function of Group

	Control group				Intervention group						
	M	SD	%	n	M	SD	%	n	t	χ^2	df
AUDIT[a] total-score											
Whole sample	11.99	4.13	--	161	11.68	3.50	--	87	.61	--	246
Women	12.65	4.52	--	43	11.27	3.77	--	30	1.38	--	71
Men	11.75	3.97	--	118	11.89	3.37	--	57	-.23	--	173
Alcohol use											
Frequency, days											
Whole sample	8.56	7.33	--	162	11.40	8.62	--	888	-2.62*	--	156
Women	9.27	7.55	--	44	10.00	7.80	--	30	-.40	--	72
Men	8.30	7.26	--	118	12.12	8.99	--	58	-2.82**	--	95
Quantity, grams											
Whole sample	94.11	65.80	--	162	86.43	45.60	--	88	.98	--	248
Women	85.77	53.39	--	44	79.17	43.26	--	30	.56	--	72
Men	97.21	69.82	--	118	90.18	46.68	--	58	.69	--	174
QFI[b], grams											
Whole sample	25.42	23.59	--	162	29.41	22.84	--	88	-1.29	--	248
Women	26.58	24.70	--	44	24.23	21.10	--	30	.43	--	72
Men	24.99	23.26	--	118	32.09	23.42	--	58	-1.90	--	174
Readiness to change[c]											
Whole sample	4.23	3.08	--	162	4.47	3.05	--	87	-.60	--	247
Women	4.80	3.04	--	44	4.45	3.07	--	20	.48	--	71
Men	4.02	3.09	--	118	4.48	3.07	--	58	-.94	--	174
Hazardous drinking[d]											
Whole sample	--	--	34.6	56	--	--	43.2	38	--	1.80	1
Women	--	--	52.3	23	--	--	43.3	13	--	.57	1
Men	--	--	28.0	33	--	--	43.1	25	--	4.03*	1

Note. [a] AUDIT: Alcohol Use Disorders Identification Test. [b] QFI: Quantity-Frequency-Index. [c] readiness to change: range 0 – 10. [d] Hazardous drinking: women: QFI > 20 grams, men: QFI > 30 g.
* p<.05 ** *p*<.01.

Table A5

Subsample: Tobacco Use and Age when Beginning to Smoke as a Function of Group

	Control group			Intervention group				
	M	SD	n	M	SD	n	t	df
Tobacco use								
Frequency, days								
Whole sample	29.69	1.17	162	29.81	.88	88	-.81	248
Women	29.43	1.59	44	29.87	.73	30	-1.59	65
Men	29.79	.95	118	29.78	.96	58	.08	174
Quantity, number of cigarettes								
Whole sample	22.06	10.08	162	21.64	10.27	88	.31	248
Women	19.75	7.76	44	20.47	8.51	30	-.38	72
Men	22.92	10.72	118	22.24	11.10	58	.39	174
Age when beginning to smoke, years								
Whole sample	16.70	4.68	161	16.72	3.13	88	-.04	247
Women	17.34	5.42	44	15.93	1.87	30	1.59	57
Men	16.45	4.37	117	17.12	3.55	58	-1.01	173

Table A6

Subsample: Smoking Status as a Function of Group

	Control group		Intervention group			
	%	n	%	n	χ^2	df
Smoking status					.01	1
Occasional smoker	1.2	2	1.1	1		
Regular smoker	98.8	160	98.8	87		

Note. Smoking status according to self-assigment.

Appendix B: Training

Interview Guideline

Leitfaden für die Kurzintervention (1. Sitzung)

1. Schritt: Einleitung, Dankeschön & Erlaubnis

Sie haben sich bereit erklärt, an dieser Studie teilzunehmen. Vielen Dank! Das ist wirklich sehr freundlich von Ihnen. Es kostet ja doch etwas Zeit, den Fragebogen auszufüllen. Ich wollte mit Ihnen noch mal kurz darüber reden. Einverstanden?

Ich möchte Ihnen noch mal dafür danken, dass Sie sich Zeit für diese Untersuchung nehmen. Je mehr Patienten daran teilnehmen, desto aussagekräftiger sind die Ergebnisse.

2. Schritt: Feedback

Wir haben Ihren Alkoholkonsum mit dem anderer Männer (Frauen) Ihrer Altersgruppe verglichen. Nach unseren Tabellen trinken Sie mehr als 87% der Männer Ihrer Altersgruppe. Das ist recht viel. Was meinen Sie dazu?

Reflective Listening!
Das überrascht Sie!
Das können Sie kaum glauben!
Das haben Sie nicht erwartet!
Das sehen Sie anders!
Sie finden nicht, dass Sie besonders viel trinken.
…

Reaktanz reduzieren!
Aus medizinischer Sicht ist es auch nicht so wichtig, ob Sie mehr oder weniger trinken als andere Leute. Darauf kommt es letztlich nicht an! Viel wichtiger ist, ob Alkohol Ihrer Gesundheit schadet oder irgendwann einmal Ihrer Gesundheit schaden könnte.
Sie müssen schlucken… Sie haben nicht erwartet, dass Sie mehr trinken als 94% der Frauen Ihres Alters. Und Sie dachten bislang auch nicht, dass Ihre Freunde und Bekannten besonders viel trinken… Sie haben hier eben eine “3” angekreuzt. Wie sehen Sie das jetzt?
…

3. Schritt: Veränderungsbereitschaft erhöhen

(A) Wichtig 0 – 3, Zuversicht 0 – 10

OK, eine “2”… Es ist Ihnen also nicht völlig unwichtig. Warum nicht “0”?

Andere Dinge sind zur Zeit wahrscheinlich wichtiger. Können Sie sich vorstellen, dass sich das mal ändert. Dass Sie also sagen: Ich sollte vielleicht doch weniger trinken. Wann würde aus der “3” zum Beispiel eine “7” oder “8” werden?

Im Moment denken Sie nicht darüber nach, Ihren Konsum zu reduzieren. Was sind denn die guten Seiten am Alkohol? … Und was ist nicht so gut?

Reflective Listening!
Wenn Sie erfahren würden, dass Sie schwer krank sind.
Wenn Ihnen das Atmen schwer fallen würde.
Wenn Sie nicht mehr dürften!
Wenn die Gesundheit Ihrer Kinder es verlangen würde.
Wenn die Gesundheit Ihrer Kinder gefährdet wäre.
Wenn Sie schwanger wären.
…

(B) Wichtig 4 – 6, Zuversicht 0 – 6

Einerseits ist es Ihnen nicht ganz unwichtig, weniger zu trinken. Andererseits sind Sie sich aber nicht so sicher, ob Sie das schaffen würden. Lassen Sie mich zunächst mal fragen: Was sind denn die guten Seiten am Alkohol? … Und was ist nicht so gut? … Was würde Sie denn zuversichtlicher stimmen? Was würde es Ihnen leichter machen, weniger zu trinken?

Reflective Listening!
Sie sprechen einen wichtigen Punkt an: den Zusammenhang zwischen Stress und Alkohol.
Wenn Sie mehr Zeit für sich und Ihre Familie hätten.
Wenn Sie wieder mehr Sport treiben würden, würde es Ihnen leichter fallen, weniger zu trinken.
Wenn Sie nicht mehr rauchen würden, würden Sie automatisch weniger trinken.
Sie sind also nicht sehr zuversichtlich, aber auch nicht völlig hoffnungslos.
Sie wissen nicht so recht.
…

(C) Wichtig 4 – 6, Zuversicht 7 – 10

Es ist Ihnen nicht ganz unwichtig, weniger zu trinken. Und Sie sind sich auch ziemlich sicher, dass Sie das schaffen würden. Was müsste geschehen, damit es Ihnen (noch) wichtiger wird, weniger zu trinken. Wann würden Sie "8" oder "9" oder "10" ankreuzen?

Reflective Listening!
Sie sind also sehr guter Dinge!
Sie sind sich also ziemlich sicher, dass Sie das schaffen würden!
…

(D) Wichtig 7 – 10, Zuversicht 0 – 6

Es ist Ihnen offensichtlich ziemlich (sehr) wichtig, mit dem Rauchen aufzuhören. Aber Sie sind nicht besonders zuversichtlich. (Aber Sie sind sich nicht ganz sicher, ob Sie das schaffen.) Was würde Sie optimistischer stimmen? Was würde es Ihnen leichter machen, mit dem Rauchen aufzuhören?

Reflective Listening!
Einerseits möchten Sie schon mit dem Rauchen aufhören, andererseits glauben Sie aber nicht, dass die Erfolgsaussichten im Moment sehr groß wären.
…

(E) Wichtig 7 – 10, Zuversicht 7 – 10

Sie denken, dass Sie weniger trinken sollten, und Sie sind auch ganz optimistisch, dass Sie das schaffen könnten. Was könnte der letzte Anstoß sein?

4. Schritt: Vereinbarung

Darf ich noch mal zusammenfassen, was wir bisher besprochen haben? Unterbrechen Sie mich bitte, wenn Sie etwas ergänzen möchten. Einerseits… andererseits…
Wie wollen wir weiter machen? … Darf ich Ihnen ein paar Vorschläge machen?
Wollen Sie noch mal drüber schlafen? Wollen wir nächste Woche noch mal darüber reden?

Noch mal zur Erinnerung…
Lassen Sie den Patienten bitte während des Gesprächs "Wichtigkeit" und "Zuversicht" einschätzen. Beziehen Sie sich bitte auf diese Angaben! Reduzieren Sie Reaktanz ("Widerstand") und vermeiden Sie typische Fallen der Gesprächsführung (siehe die DONTs).

Viel Erfolg!

Appendix B: Training

List of DONT's

DONTs

(1) Nicht zu viel in zu kurzer Zeit erreichen wollen!
(2) Patienten nicht im Unklaren über die Ziele der Intervention lassen!
(3) Nicht “um den heißen Brei reden”!
(4) Nicht pathologisieren!
(5) Keine “Krankheitseinsicht” erzwingen!
(6) Nicht moralisieren!
(7) Nicht “überführen” oder “entlarven”!
(8) Nicht “verordnen”!
(9) Nicht zu viel reden!
(10) Nicht drängen!
(11) Nicht “in die Enge treiben”!
(12) Nicht “ausfragen” oder “verhören”!
(13) Nicht ohne Erlaubnis loslegen!
(14) Nicht (ab)werten!
(15) Nicht “übereifrig” sein!
(16) Nicht plötzlich das Thema wechseln!
(17) Keine Vorwürfe machen!
(18) Den Patienten nicht “in eine Schublade stecken”!
(19) Keine Anschuldigungen machen!
(20) Nicht (herum)argumentieren!
(21) Nicht ermahnen!
(22) Nicht “dozieren”!
(23) Kein schlechtes Gewissen machen!
(24) Nicht durch “Logik” überzeugen wollen!
(25) Nicht “das letzte Wort haben wollen”!
(26) Nicht “pfiffiger” oder “schlauer” sein wollen!
(27) Nicht “die Richtung verlieren”!
(28) Den Patienten nicht “schwimmen” lassen!
(29) Nicht “predigen”!
(30) Nicht “herumdeuteln”!
(31) Nicht “abwürgen”!
(32) Nicht ins Wort fallen!

Appendix C: Implementation

Conversion Table

Umrechnungstabelle

der Alkoholmengen in Gramm Reinalkohol

Anzahl Gläser	Bier (0,33 l)	Bier (0,5 l)	Wein/Sekt (0,25 l)	Spirituosen (0,02 l)
1	12,58	19,06	21,84	5,24
2	25,15	38,11	43,67	10,48
3	37,73	57,12	65,51	15,72
4	50,31	76,22	87,34	20,96
5	62,88	95,28	109,18	26,20
6	75,46	114,34	131,01	31,44
7	88,04	133,39	152,85	36,68
8	100,62	152,45	174,68	41,92
9	113,19	171,50	196,52	47,16
10	125,77	190,56	218,35	52,40
11	138,35	209,62	240,19	57,64
12	150,92	228,67	262,02	62,88
13	163,50	247,73	283,86	68,13
14	176,08	266,78	305,69	73,37
15	188,65	285,84	327,53	78,61
16	201,23	304,90	349,36	83,85
17	213,81	323,95	371,20	89,09
18	226,39	343,01	393,03	94,33
19	238,96	362,06	414,87	99,57
20	251,54	381,12	436,70	104,81

↳ Sollten die angegebenen Werte nicht ausreichen, finden Sie auf der Rückseite eine Fortsetzung der Tabelle.

1. Lesen Sie in der Tabelle für die angegebenen Alkoholmengen in Gläsern (siehe Screeningfragebogen S. 4, *Frage B2*) für jedes Getränk die Mengen in Gramm Reinalkohol ab.
2. Summieren Sie die Reinalkoholmengen aller konsumierten Getränke auf.
3. Multiplizieren Sie diesen Wert mit der Anzahl der Trinktage (siehe S. 4, *Frage B1*).
4. Teilen Sie diese Zahl durch 30.
5. Tragen Sie diesen Wert in das schwarz umrandete Feld auf der letzten Seite des Screeningfragebogens ein.

Umrechnungstabelle (2)

der Alkoholmengen in Gramm Reinalkohol

Anzahl Gläser	Bier (0,33 l)	Bier (0,5 l)	Wein/Sekt (0,25 l)	Spirituosen (0,02 l)
21	264,12	400,18	458,45	110,05
22	276,69	419,23	480,37	115,29
23	289,27	438,29	502,21	120,53
24	301,85	457,34	524,04	125,77
25	314,45	476,40	545,88	131,01
26	327,00	495,46	567,71	136,25
27	339,58	514,51	589,55	141,49
28	352,15	533,57	611,38	146,73
29	364,73	552,62	633,22	151,97
30	377,31	571,68	655,05	157,21
31	389,89	590,74	676,89	162,45
32	402,46	609,79	698,72	167,69
33	415,04	628,85	720,56	172,93
34	427,62	647,90	742,39	178,17
35	440,19	666,96	764,23	183,41

Eine Flasche Spirituosen (0,7 l) entspricht 35 Gläsern à 0,02 l.
Eine Flasche Wein/Sekt (0,7 l) entspricht etwa 3 Gläsern à 0,25 l.

Appendix C: Implementation

Calculation of Alcohol Use

Praxis: Kennung:

Berechnung des Alkoholkonsums

	Gläser		Gramm Reinalkohol
Bier (0,33 l)		=	
Bier (0,5 l)		=	
Wein/Sekt		=	
Spirituosen		=	

SUMME: x Trinktage: = / 30 =

Appendix C: Implementation

Alcohol Use

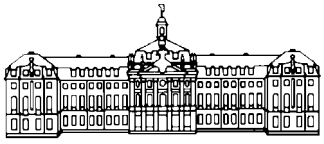
Alkoholkonsum bei Männern (in Gramm Reinalkohol pro Tag)

Altersgruppe		Kumulierte Prozente
18 – 29 Jahre	Abstinent	–
	1 – 10 g	18,7
	11 – 20 g	55,5
	21 – 30 g	72,7
	31 – 40 g	83,4
	41 – 50 g	90,4
	51 – 60 g	93,1
	61 – 70 g	95,6
	71 – 80 g	96,5
	81 – 90 g	97,2
	91 – 100 g	97,4
	101 – 120 g	98,1
	über 120 g	98,7
30 – 49 Jahre	Abstinent	–
	1 – 10 g	13,8
	11 – 20 g	46,0
	21 – 30 g	67,2
	31 – 40 g	78,1
	41 – 50 g	86,3
	51 – 60 g	90,5
	61 – 70 g	93,7
	71 – 80 g	95,4
	81 – 90 g	96,4
	91 – 100 g	97,1
	101 – 120 g	97,8
	über 120 g	98,5
50 – 60 Jahre	Abstinent	–
	1 – 10 g	12,9
	11- 20 g	38,8
	21 – 30 g	59,0
	31 – 40 g	72,6
	41 – 50 g	82,3
	51 – 60 g	86,8
	61 – 70 g	91,4
	71 – 80 g	93,8
	81 – 90 g	95,4
	91 – 100 g	96,4
	101 – 120 g	97,5
	über 120 g	98,3

Alkoholkonsum bei Frauen (in Gramm Reinalkohol pro Tag)

Altersgruppe		Kumulierte Prozente
18 – 29 Jahre	Abstinent	–
	1 – 10 g	31,7
	11 – 20 g	85,1
	21 – 30 g	94,7
	31 – 40 g	97,9
	41 – 50 g	99,1
	51 – 60 g	99,5
	61 – 70 g	99,7
	71 – 80 g	–
	81 – 90 g	–
	91 – 100 g	–
	101 – 120 g	–
	über 120 g	99,8
30 – 49 Jahre	Abstinent	–
	1 – 10 g	24,6
	11 – 20 g	79,0
	21 – 30 g	91,3
	31 – 40 g	95,8
	41 – 50 g	97,6
	51 – 60 g	98,6
	61 – 70 g	99,0
	71 – 80 g	99,3
	81 – 90 g	99,5
	91 – 100 g	99,6
	101 – 120 g	–
	über 120 g	99,6
50 – 60 Jahre	Abstinent	–
	1 – 10 g	30,3
	11 – 20 g	79,6
	21 – 30 g	92,2
	31 – 40 g	95,2
	41 – 50 g	98,2
	51 – 60 g	98,9
	61 – 70 g	99,1
	71 – 80 g	–
	81 – 90 g	–
	91 – 100 g	99,5
	101 – 120 g	–
	über 120 g	99,7

Appendix D: Screening Questionnaire



WESTFÄLISCHE
WILHELMS-UNIVERSITÄT
MÜNSTER

Einverständniserklärung

Ich bin heute über Ziel, Ablauf und Dauer des Forschungsprojekts “Alkohol und Nikotin: Risiken für die Gesundheit” informiert worden. Ich erkläre mich damit einverstanden, an dieser Studie teilzunehmen. Diese Teilnahme beinhaltet das Ausfüllen von Fragebögen, gegebenenfalls ein ärztliches Gespräch oder ein ausführlicheres Interview mit einem Mitarbeiter des Forschungsteams sowie eine Nachbefragung nach Ablauf von sechs Monaten.

Ich wurde darüber informiert, dass die erhobenen Daten – unter Einhaltung der Vorschriften des Datenschutzes – ausschließlich zu wissenschaftlichen Zwecken auf elektronischen Datenträgern gespeichert und mittels statistischer Verfahren zusammengefasst und ausgewertet werden. In wissenschaftlichen Berichten werden nur Sammelstatistiken veröffentlicht, d.h. eine Zuordnung der erhobenen Daten zu bestimmten Personen ist nicht möglich.

Die vorliegende Einverständniserklärung bezieht sich lediglich auf Daten, die im Rahmen der genannten Untersuchung erhoben werden, und kann jederzeit ohne Angabe von Gründen und ohne nachteilige Folgen widerrufen werden.

Name:	
Straße:	
PLZ, Ort:	
Telefon:	

....

Ort, Datum Unterschrift des Teilnehmenden

Datum: Kennung: Uhrzeit: _____ (bitte eintragen)

Vielen Dank für Ihre Bereitschaft, an unserer Untersuchung "Alkohol und Nikotin: Risiken für die Gesundheit" teilzunehmen. Auf den folgenden Seiten finden Sie einige Fragen zu Ihrer Person sowie zu Ihren Konsumgewohnheiten (Alkohol, Nikotin). Beantworten Sie bitte alle Fragen, da wir nur vollständig ausgefüllte Fragebögen auswerten können.

Seit wie vielen Jahren sind Sie Patient/Patientin von Herrn/Frau Dr. .....? _____
(bitte eintragen)

Wann waren Sie das letzte Mal bei Herrn/Frau Dr. .....?

1 ☐ in diesem Quartal
2 ☐ im letzten Quartal
3 ☐ schon länger her

Wie oft waren Sie während der letzten zwölf Monate bei Herrn/Frau Dr. .....?

1 ☐ null- bis viermal
2 ☐ fünf- bis achtmal
3 ☐ neun- bis zwölfmal
4 ☐ öfter als zwölfmal

Alter: _____ Jahre (bitte eintragen)

Größe: _____ cm (bitte eintragen)

Gewicht: _____ kg (bitte eintragen)

Geschlecht:
1 ☐ weiblich
2 ☐ männlich

Familienstand:
1 ☐ ledig
2 ☐ verheiratet, zusammenlebend
3 ☐ verheiratet, getrennt lebend
4 ☐ geschieden
5 ☐ verwitwet

Staats-angehörigkeit:
1 ☐ deutsch
2 ☐ andere: _____ (bitte eintragen)

Muttersprache(n):
1 ☐ deutsch
2 ☐ andere: _____ (bitte eintragen)

Wenn "andere":
Sind Sie länger als drei Jahre in Deutschland zur Schule gegangen?
0 ☐ nein
1 ☐ ja

Religions-zugehörigkeit:

1 ☐ christlich
2 ☐ muslimisch
3 ☐ sonstige
4 ☐ keine

höchster erreichter Schulabschluss:

1 ☐ kein Abschluss
2 ☐ Sonderschulabschluss
3 ☐ Hauptschul-/Volksschulabschluss
4 ☐ Realschulabschluss/Polytechnische Oberschule
5 ☐ (Fach-)Abitur
6 ☐ Hochschulabschluss
7 ☐ anderer Schulabschluss

Die folgende Frage bezieht sich auf die Tätigkeit, die Sie überwiegend ausüben. Wählen Sie bitte nur eine Antwortkategorie aus.

Erwerbstätigkeit:

1 ☐ Auszubildende(r)
2 ☐ Angestellte(r), Beamte(r)
3 ☐ Arbeiter(in)/Facharbeiter(in)
4 ☐ Selbständige(r)/Freiberufler(in)
5 ☐ Arbeitslose(r)
6 ☐ Schüler(in)/Student(in)
7 ☐ Hausmann/Hausfrau
8 ☐ Rentner(in)
9 ☐ sonstige

(A1) Wie oft trinken Sie Alkohol?

Nie ..... ☐ 0
Einmal im Monat oder seltener ..... ☐ 1
Zwei- bis viermal im Monat ..... ☐ 2
Zwei- bis dreimal die Woche ..... ☐ 3
Viermal die Woche oder öfter ..... ☐ 4

(A2) Wenn Sie Alkohol trinken, wie viele Gläser trinken Sie dann üblicherweise an einem Tag?
(Ein Glas Alkohol entspricht 0.33 l Bier, 0.25 l Wein/ Sekt, 0.02 l Spirituosen.)

1 bis 2 Gläser pro Tag ..... ☐ 0
3 bis 4 Gläser pro Tag ..... ☐ 1
5 bis 6 Gläser pro Tag ..... ☐ 2
7 bis 9 Gläser pro Tag ..... ☐ 3
10 oder mehr Gläser pro Tag ..... ☐ 4 ZS1 ☐

(A3) Wie oft trinken Sie sechs oder mehr Gläser Alkohol bei einer Gelegenheit (z.B. beim Abendessen, auf einer Party)? (Ein Glas Alkohol entspricht 0.33 l Bier, 0.25 l Wein/Sekt, 0.02 l Spirituosen.)

Nie	☐	0
Seltener als einmal im Monat	☐	1
Jeden Monat	☐	2
Jede Woche	☐	3
Jeden Tag oder fast jeden Tag	☐	4

(A4) Wie oft konnten Sie während der letzten 12 Monate nicht mehr aufhören zu trinken, nachdem Sie einmal angefangen hatten?

Nie	☐	0
Seltener als einmal im Monat	☐	1
Jeden Monat	☐	2
Jede Woche	☐	3
Jeden Tag oder fast jeden Tag	☐	4

(A5) Wie oft konnten Sie während der letzten 12 Monate Ihren Verpflichtungen nicht mehr nachkommen, weil Sie zuviel getrunken hatten?

Nie	☐	0
Seltener als einmal im Monat	☐	1
Jeden Monat	☐	2
Jede Woche	☐	3
Jeden Tag oder fast jeden Tag	☐	4

(A6) Wie oft haben Sie während der letzten 12 Monate morgens erst mal ein Glas Alkohol gebraucht, um in die Gänge zu kommen?

Nie	☐	0
Seltener als einmal im Monat	☐	1
Jeden Monat	☐	2
Jede Woche	☐	3
Jeden Tag oder fast jeden Tag	☐	4

(A7) Wie oft hatten Sie während der letzten 12 Monate Schuldgefühle oder ein schlechtes Gewissen, weil Sie zuviel getrunken hatten?

Nie	☐	0
Seltener als einmal im Monat	☐	1
Jeden Monat	☐	2
Jede Woche	☐	3
Jeden Tag oder fast jeden Tag	☐	4

ZS2 ☐

(A8) Wie oft waren Sie während der letzten 12 Monate nicht in der Lage, sich an Dinge zu erinnern, weil Sie zuviel getrunken hatten?

Nie	☐	0
Seltener als einmal im Monat	☐	1
Jeden Monat	☐	2
Jede Woche	☐	3
Jeden Tag oder fast jeden Tag	☐	4

(A9) Haben Sie sich schon mal verletzt, weil Sie zu viel getrunken hatten? Oder ist jemand anderes schon mal verletzt worden, weil Sie zu viel getrunken hatten?

Nein	☐	0
Ja, aber nicht während der letzten 12 Monate	☐	2
Ja, während der letzten 12 Monate	☐	4

(A10) Hat sich ein Verwandter, Freund oder Arzt schon einmal Sorgen gemacht, weil Sie zuviel trinken, oder Ihnen geraten, weniger zu trinken?

Nein	☐	0	
Ja, aber nicht während der letzten 12 Monate	☐	2	
Ja, während der letzten 12 Monate	☐	4	ZS 3 ☐
			ZS 2 ☐
			ZS 1 ☐
			Gesamt ☐

An wie vielen Tagen haben Sie während der letzten 30 Tage Alkohol getrunken?

_____ Tage (bitte eintragen: 0 – 30)

Wenn Sie während der letzten 30 Tage Alkohol getrunken haben: Wie viele Gläser von welchen Getränken haben Sie dann an einem typischen Tag getrunken?

Bier (0,33 l)	_____ Gläser
Bier (0,5 l)	_____ Gläser
Wein/Sekt (0,25 l)	_____ Gläser
Spirituosen (0,02 l)	_____ Gläser

Wie wichtig ist es Ihnen, weniger Alkohol zu trinken? Wie denken Sie im Moment darüber? (bitte eine Zahl ankreuzen)

unwichtig	0	1	2	3	4	5	6	7	8	9	10	sehr wichtig

Sind Sie zur Zeit wegen Alkoholproblemen in Behandlung?

0 ☐ nein
1 ☐ ja

Bitte geben Sie an, ob Alkohol bei Ihnen <u>in den letzten sechs Monaten</u> die beschriebenen Folgen hatte.

1.	Ich bin mit dem Auto oder Motorrad gefahren, obwohl ich etwas getrunken habe.	nein ☐	ja ☐
2.	Ich habe etwas Peinliches gesagt oder getan, weil ich zu viel getrunken habe.	nein ☐	ja ☐
3.	Ich habe schlecht geschlafen, weil ich zu viel getrunken habe.	nein ☐	ja ☐
4.	Ich hatte einen Kater.	nein ☐	ja ☐
5.	Ich habe mich übergeben müssen, weil ich zu viel getrunken habe.	nein ☐	ja ☐

Rauchen Sie?

0 ☐ nein
1 ☐ nicht mehr
2 ☐ gelegentlich
3 ☐ regelmäßig

Wenn "gelegentlich" oder "regelmäßig":
An wie vielen Tagen haben Sie während der letzten 30 Tage geraucht?

_____ Tage (bitte eintragen: 0 – 30)

Wenn "gelegentlich" oder "regelmäßig":
Bezogen auf die letzten 30 Tage: Wie viel haben Sie an so <u>einem</u> Tag im Durchschnitt geraucht?

_____ Zigaretten (bitte eintragen) _____ Pfeifen (bitte eintragen)

Wenn "regelmäßig":
Wie alt waren Sie, als Sie begonnen haben, regelmäßig zu rauchen?

_____ Jahre (bitte eintragen)

Von der Arzthelferin auszufüllen:

_____ g _____ %

Appendix E: Interview Materials

Readiness to Change / Self-efficacy Ratings

Praxis: Kennung:

Wie wichtig ist es Ihnen, weniger Alkohol zu trinken? Wie denken Sie im Moment darüber? (bitte eine Zahl ankreuzen)

unwichtig	0	1	2	3	4	5	6	7	8	9	10	sehr wichtig

Wenn Sie sich jetzt vornehmen würden, weniger Alkohol zu trinken: Wie zuversichtlich sind Sie, dass Sie das schaffen würden? (bitte eine Zahl ankreuzen)

überhaupt nicht zuversichtlich	0	1	2	3	4	5	6	7	8	9	10	absolut zuversichtlich

Wie wichtig ist es Ihnen, mit dem Rauchen aufzuhören? Wie denken Sie im Moment darüber? (bitte eine Zahl ankreuzen)

unwichtig	0	1	2	3	4	5	6	7	8	9	10	sehr wichtig

Wenn Sie sich jetzt vornehmen würden, mit dem Rauchen aufzuhören: Wie zuversichtlich sind Sie, dass Ihnen das gelingen würde? (bitte eine Zahl ankreuzen)

überhaupt nicht zuversichtlich	0	1	2	3	4	5	6	7	8	9	10	absolut zuversichtlich

Appendix E: Interview Materials

Evaluation

Praxis: Kennung:

– Auswertung (Arzt) –

Wie haben Sie das Gespräch erlebt? Kreuzen Sie bitte jeweils eine Zahl an.

(1) Falls zutreffend: Hat das Gespräch die Bereitschaft des Patienten, weniger zu rauchen bzw. mit dem Rauchen aufzuhören, gefördert?

1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7

nicht gefördert sehr gefördert

(2) Hat das Gespräch die Bereitschaft des Patienten, seinen Alkoholkonsum einzuschränken, gefördert?

1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7

nicht gefördert sehr gefördert

(3) Haben Sie sich über den Patienten geärgert?

1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7

nicht geärgert sehr geärgert

(4) War der Patient kooperativ?

1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7

nicht kooperativ sehr kooperativ

(5) War das Gespräch eher ein “Miteinander” oder eher ein “Gegeneinander”?

1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7

miteinander gegeneinander

(6) Bezogen auf die Gesamtdauer des Gesprächs: Wie lange – in Prozent – haben Sie selbst gesprochen?

0% - - 10% - - 20% - - 30% - - 40% - - 50% - - 60% - - 70% - - 80% - - 90% - - 100%

Appendix E: Interview Materials

Documentation

Praxis: Kennung: Datum:

Dokumentation der Kurzintervention

☐ Erstgespräch
☐ Zweitgespräch

Beginn des Gesprächs: _____ : _____ Uhr

Ende des Gesprächs: _____ : _____ Uhr

Was haben Sie mit dem Patienten/der Patientin vereinbart? Mehrfachnennungen sind möglich!

☐ ein weiteres Gespräch mit ihm/ihr
☐ eine weitere diagnostische Abklärung (Labor etc.)
☐ eine konkrete Verhaltensänderung (Einschränkung des Konsums etc.)
☐ die Teilnahme an einem weiterführenden Behandlungsangebot (Raucherentwöhnung etc.)
☐ eine Überweisung an eine andere Einrichtung (Ambulanz, Beratungsstelle etc.)
☐ den Besuch einer Selbsthilfegruppe
☐ sonstiges: _____ (Bitte eintragen)
☐ nichts (keine Vereinbarung getroffen)

Haben Sie dem Patienten/der Patientin Informationsmaterial, z.B. über Möglichkeiten der Raucherentwöhnung, überreicht?

☐ Ja
☐ Nein

Sonstige Anmerkungen:

Appendix F: Follow-up Questionnaire

Kennung: Datum: _____ (bitte eintragen)

Wie oft waren Sie während der letzten sechs Monate bei Ihrem Hausarzt? _____
(bitte eintragen)

Wie oft waren Sie während der letzten sechs Monate bei einem anderen Arzt? _____
(bitte eintragen)

Waren Sie während der letzten sechs Monate in einer Klinik oder in einem Krankenhaus in stationärer Behandlung (Behandlungen in einer Rehaklinik ausgenommen)?

0 ☐ nein
1 ☐ ja, einmal
2 ☐ ja, mehrere Male: _____
(bitte Anzahl der Aufenthalte eintragen)

Wenn "ja": Wie viele Tage waren Sie während der letzten sechs Monate insgesamt in stationärer Behandlung (Behandlungen in einer Rehaklinik ausgenommen)?
_____ (bitte Anzahl der Tage eintragen)

Haben Sie während der letzten sechs Monate an Sonn- oder Feiertagen den ärztlichen Notdienst in Anspruch genommen?

0 ☐ nein
1 ☐ ja, einmal
2 ☐ ja, mehrere Male: _____ (bitte eintragen)

Wurden Sie während der letzten sechs Monate in der Notfallaufnahme eines Krankenhauses behandelt?

0 ☐ nein
1 ☐ ja, einmal
2 ☐ ja, mehrere Male: _____ (bitte eintragen)

Waren Sie während der letzten sechs Monate krankgeschrieben (Krankschreibungen wegen stationärer Behandlung in einer Klinik oder in einem Krankenhaus ausgenommen)?

0 ☐ nein
1 ☐ ja, einmal
2 ☐ ja, mehrere Male: _____ (Anzahl der Krankschreibungen)

Wenn "ja": Wie viele Tage waren Sie während der letzten sechs Monate insgesamt krankgeschrieben?

_____ (bitte Anzahl der Tage eintragen)

Haben Sie sich während der vergangenen sechs Monate von Ihrem Partner getrennt oder hat sich Ihr Partner während dieser Zeit von Ihnen getrennt?

0 ☐ nein
1 ☐ ja
2 ☐ nicht zutreffend, da zuvor keine feste Partnerschaft

Wie oft haben Sie während der letzten sechs Monate Alkohol getrunken?

0 ☐ Nie
1 ☐ einmal im Monat oder seltener
2 ☐ zwei- bis viermal im Monat
3 ☐ zwei- bis dreimal die Woche
4 ☐ viermal die Woche oder öfter

Wenn Sie während der letzten sechs Monate Alkohol getrunken haben, wie viele Gläser haben Sie dann üblicherweise an einem Tag getrunken? (Ein Glas Alkohol entspricht 0.33 l Bier, 0.25 l Wein/ Sekt,
0.02 l Spirituosen.)

0 ☐ 1 bis 2 Gläser pro Tag
1 ☐ 3 bis 4 Gläser pro Tag
2 ☐ 5 bis 6 Gläser pro Tag
3 ☐ 7 bis 9 Gläser pro Tag
4 ☐ 10 oder mehr Gläser pro Tag

Wie oft haben Sie während der letzten sechs Monate sechs oder mehr Gläser Alkohol bei einer Gelegenheit getrunken (z.B. beim Abendessen, auf einer Party)? (Ein Glas Alkohol entspricht 0.33 l Bier,
0.25 l Wein/Sekt, 0.02 l Spirituosen.)

0 ☐ nie
1 ☐ seltener als einmal im Monat
2 ☐ jeden Monat
3 ☐ jede Woche
4 ☐ jeden Tag oder fast jeden Tag

Wie oft konnten Sie während der letzten sechs Monate nicht mehr aufhören zu trinken, nachdem Sie einmal angefangen hatten?

0 ☐ nie
1 ☐ seltener als einmal im Monat
2 ☐ jeden Monat
3 ☐ jede Woche
4 ☐ jeden Tag oder fast jeden Tag

Wie oft konnten Sie während der letzten sechs Monate Ihren Verpflichtungen nicht mehr nachkommen, weil Sie zu viel getrunken hatten?

0 ☐ nie
1 ☐ seltener als einmal im Monat
2 ☐ jeden Monat
3 ☐ jede Woche
4 ☐ jeden Tag oder fast jeden Tag

Wie oft haben Sie während der letzten sechs Monate morgens erst mal ein Glas Alkohol gebraucht, um in die Gänge zu kommen?

0 ☐ nie
1 ☐ seltener als einmal im Monat
2 ☐ jeden Monat
3 ☐ jede Woche
4 ☐ jeden Tag oder fast jeden Tag

Wie oft hatten Sie während der letzten sechs Monate Schuldgefühle oder ein schlechtes Gewissen, weil Sie zu viel getrunken hatten?

0 ☐ nie
1 ☐ seltener als einmal im Monat
2 ☐ jeden Monat
3 ☐ jede Woche
4 ☐ jeden Tag oder fast jeden Tag

Wie oft waren Sie während der letzten sechs Monate nicht in der Lage, sich an Dinge zu erinnern, weil Sie zu viel getrunken hatten?

0 ☐ nie
1 ☐ seltener als einmal im Monat
2 ☐ jeden Monat
3 ☐ jede Woche
4 ☐ jeden Tag oder fast jeden Tag

Haben Sie sich während der letzten sechs Monate verletzt, weil Sie zu viel getrunken hatten? Oder ist jemand anderes verletzt worden, weil Sie zu viel getrunken hatten?

0 ☐ nein
4 ☐ ja

Hat sich ein Verwandter, Freund oder Arzt während der letzten sechs Monate Sorgen gemacht, weil Sie zu viel trinken, oder Ihnen geraten, weniger zu trinken?

0 ☐ nein
4 ☐ ja

An wie vielen Tagen haben Sie während der letzten 30 Tage Alkohol getrunken?

_____ (bitte Anzahl der Tage eintragen: 0 – 30)

Wenn Sie während der letzten 30 Tage Alkohol getrunken haben: Wie viele Gläser von welchen Getränken haben Sie dann an einem typischen Tag getrunken?

Bier (0.33 l)	_____	Gläser
Bier (0.5 l)	_____	Gläser
Wein/Sekt (0.25 l)	_____	Gläser
Spirituosen (0.02 l)	_____	Gläser

Wie wichtig ist es Ihnen, weniger Alkohol zu trinken?
Wie denken Sie im Moment darüber?

unwichtig 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10 sehr wichtig

Wenn Sie sich jetzt vornehmen würden, weniger Alkohol zu trinken:
Wie zuversichtlich sind Sie, dass Sie das schaffen würden?

überhaupt nicht 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10 absolut

Bitte geben Sie an, ob Alkohol bei Ihnen in den letzten sechs Monaten die beschriebenen Folgen hatte.

Ich bin mit dem Auto oder Motorrad gefahren, obwohl ich etwas getrunken habe.	nein ☐	ja ☐
Ich habe etwas Peinliches gesagt oder getan, weil ich zu viel getrunken habe.	nein ☐	ja ☐
Ich habe schlecht geschlafen, weil ich zu viel getrunken habe.	nein ☐	ja ☐
Ich hatte einen Kater.	nein ☐	ja ☐
Ich habe mich übergeben müssen, weil ich zu viel getrunken habe.	nein ☐	ja ☐

Haben Sie während der letzten sechs Monate . . .

versucht, Ihren Alkoholkonsum einzuschränken?	nein ☐	ja ☐
einmal oder öfter an mindestens sieben Tagen in Folge keinen Alkohol getrunken?	nein ☐	ja ☐
wegen Alkoholproblemen eine Selbsthilfegruppe besucht?	nein ☐	ja ☐
wegen Alkoholproblemen eine Beratungsstelle aufgesucht?	nein ☐	ja ☐
wegen Alkoholproblemen die Hilfe eines Arztes oder Psychologen in Anspruch genommen?	nein ☐	ja ☐

Rauchen Sie?

0 ☐ nein
1 ☐ nicht mehr
2 ☐ gelegentlich
3 ☐ regelmäßig

Wenn Sie "gelegentlich" oder "regelmäßig" rauchen:
An wie vielen Tagen haben Sie während der letzten 30 Tage geraucht?

_____ Tage (bitte eintragen: 0 – 30)

Bezogen auf die letzten 30 Tage: Wie viel haben Sie an so einem Tag im Durchschnitt geraucht?

_____ Zigaretten (bitte eintragen)

_____ Pfeifen (bitte eintragen)

Wenn Sie "gelegentlich" oder "regelmäßig" rauchen:

Wie wichtig ist es Ihnen, mit dem Rauchen aufzuhören?
Wie denken Sie im Moment darüber?

unwichtig 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10 sehr wichtig

Wenn Sie "gelegentlich" oder "regelmäßig" rauchen:

Wenn Sie sich jetzt vornehmen würden, mit dem Rauchen aufzuhören:
Wie zuversichtlich sind Sie, dass Ihnen das gelingen würde?

überhaupt nicht 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10 absolut

Haben Sie während der letzten sechs Monate versucht, sich das Rauchen abzugewöhnen?

0 ☐ nein
1 ☐ ja
2 ☐ ja, mehrere Male: _____
(bitte Anzahl der Versuche eintragen)
3 ☐ nicht zutreffend, da zuvor bereits Nichtraucher

Wenn "ja": Wie oft ist es Ihnen gelungen, mindesten 24 Stunden nicht zu rauchen?

_____ (bitte Anzahl eintragen)

Vielen Dank!

Appendix G: Hazardous versus Harmless Drinkers

Hazardous Drinking x Group x Gender Analyses

Table G1

Alcohol Use at Follow-up as a Function of Hazardous Drinking, Group, and Gender

Drinking at baseline	Gender	Control group			Intervention group		
		M	*SD*	*n*	*M*	*SD*	*n*
				Frequency, days			
Harmless	Women	6.55	5.51	42	8.76	7.44	33
	Men	8.23	6.79	194	7.96	7.43	89
Hazardous	Women	13.36	8.33	44	16.82	9.15	22
	Men	15.58	9.11	86	17.32	10.54	73
				Quantity, g			
Harmless	Women	71.31	28.58	42	64.80	39.93	33
	Men	84.98	64.71	194	83.06	59.69	89
Hazardous	Women	90.06	58.99	44	57.80	26.49	22
	Men	101.55	76.04	86	86.50	65.23	73
				AUDIT[a]			
Harmless	Women	7.93	3.47	42	7.45	4.91	33
	Men	7.93	3.97	194	8.47	4.23	89
Hazardous	Women	10.32	5.72	44	8.00	3.67	22
	Men	10.99	4.97	86	10.89	6.06	73
				AUDIT-C[b]			
Harmless	Women	5.40	1.56	42	5.06	2.12	33
	Men	5.77	1.95	194	5.87	2.13	89
Hazardous	Women	6.27	2.00	44	5.55	1.57	22
	Men	7.29	2.09	86	7.48	2.46	73

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.

Table G2

Estimated Means of Alcohol Use at Follow-up as a Function of Hazardous Drinking, Group, and Gender

Drinking at baseline	Gender	Control group			Intervention group		
		M	*SE*	*n*	*M*	*SE*	*n*
				Frequency, days			
Harmless	Women	11.21	0.99	42	12.75	1.01	33
	Men	11.31	0.47	194	10.78	0.68	89
Hazardous	Women	10.80	0.95	44	10.74	1.36	22
	Men	11.13	0.71	86	9.81	0.83	73
				Quantity, g			
Harmless	Women	80.18	9.00	42	76.10	10.17	33
	Men	89.18	4.19	194	84.39	6.14	89
Hazardous	Women	86.03	8.75	44	62.81	12.36	22
	Men	84.72	6.55	86	84.24	6.79	73
				AUDIT[a]			
Harmless	Women	9.06	0.61	42	8.19	0.69	33
	Men	8.58	0.29	194	9.01	0.42	89
Hazardous	Women	9.23	0.60	44	8.24	0.84	22
	Men	9.48	0.44	86	9.88	0.47	73
				AUDIT-C[b]			
Harmless	Women	6.30	0.29	42	5.76	0.32	33
	Men	6.00	0.13	194	5.95	0.19	89
Hazardous	Women	6.20	0.27	44	5.87	0.39	22
	Men	6.57	0.20	86	6.74	0.22	73

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.

Table G3

Three-Way Analyses of Covariance of Alcohol Use at Follow-up

Source	*df*	*SS*	*MS*	*F*
		Frequency, log transformed		
Baseline Frequency (covariate)	1	17.13	17.13	202.77**
Group (GR)	1	0.03	0.03	0.39
Hazardous drinking (HD)	1	0.00	0.00	0.03
Gender (GE)	1	0.18	0.18	2.12
GR x HD	1	0.00	0.00	0.03
GR x GE	1	0.24	0.24	2.79
HD x GE	1	0.05	0.05	0.56
GR x HD x GE	1	0.00	0.00	0.03
Error	574	48.48	0.08	
Total	583	600.08		
		Quantity, log transformed		
Baseline Quantity (covariate)	1	4.02	4.02	25.30**
Group (GR)	1	0.38	0.38	2.37
Hazardous Drinking (HD)	1	0.00	0.00	0.02
Gender (GE)	1	0.02	0.02	0.15
GR x HD	1	0.01	0.01	0.04
GR x GE	1	3.57E-006	3.57E-006	0.00
HD x GE	1	0.09	0.09	0.54
GR x HD x GE	1	0.01	0.01	0.07
Error	574	91.25	0.16	
Total	583	2004.30		
		AUDIT[a] total score		
Baseline AUDIT (covariate)	1	3407.14	3407.14	219.20**
Group (GR)	1	6.41	6.41	0.41
Hazardous Drinking (HD)	1	22.66	22.66	1.46
Gender (GE)	1	30.57	30.57	1.97
GR x HD	1	0.14	0.14	0.01
GR x GE	1	44.08	44.08	2.84
HD x GE	1	14.42	14.42	0.93
GR x HD x GE	1	0.05	0.05	0.00
Error	574	8921.80	15.54	
Total	583	60534.00		
		AUDIT-C[b] score		
Baseline AUDIT-C (covariate)	1	543.57	543.57	167.66**
Group (GR)	1	3.42	3.42	1.05
Hazardous Drinking (HD)	1	10.33	10.33	3.19
Gender (GE)	1	7.11	7.11	2.19
GR x HD	1	1.03	1.03	0.32
GR x GE	1	5.99	5.99	1.85
HD x GE	1	10.89	10.89	3.36
GR x HD x GE	1	0.00	0.00	0.00
Error	574	1860.96	3.24	
Total	583	25067.00		

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.
*$p < .05$. **$p <$,01.

Smoking x Group x Gender Analyses for Hazardous and Harmless Drinkers

Hazardous Drinkers

Table G4

Alcohol Use at Follow-up of Baseline Hazardous Drinkers as a Function of Group, Smoking, and Gender

		Control group			Intervention group		
Smoking	Gender	*M*	*SD*	*n*	*M*	*SD*	*n*
				Frequency, days			
Non-smoker	Women	15.82	7.74	11	19.25	9.21	8
	Men	15.76	9.97	29	16.91	11.23	34
Smoker	Women	12.55	8.48	33	15.43	9.15	14
	Men	15.49	8.73	57	17.67	10.05	39
				Quantity, g			
Non-smoker	Women	103.00	40.64	11	50.47	17.22	8
	Men	100.50	91.39	29	86.73	86.91	34
Smoker	Women	85.75	63.91	33	61.99	30.36	14
	Men	102.08	67.82	57	86.29	38.75	39
				AUDIT[a]			
Non-smoker	Women	8.45	2.54	11	6.38	3.42	8
	Men	10.10	3.69	29	10.44	6.46	34
Smoker	Women	10.94	6.35	33	8.93	3.58	14
	Men	11.44	5.49	57	11.28	5.75	39
				AUDIT-C[b]			
Non-smoker	Women	6.45	0.82	11	5.00	1.60	8
	Men	7.17	2.29	29	6.94	2.79	34
Smoker	Women	6.21	2.27	33	5.86	1.51	14
	Men	7.35	2.00	57	7.95	2.05	39

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.

Table G5

Estimated Means of Alcohol Use at Follow-up of Baseline Hazardous Drinkers as a Function of Group, Smoking, and Gender

		Control group			Intervention group		
Smoking	Gender	*M*	*SE*	*n*	*M*	*SE*	*n*
				Frequency, days			
Non-smoker	Women	17.22	2.14	11	17.74	2.51	8
	Men	15.07	1.32	29	13.94	1.24	34
Smoker	Women	15.69	1.26	33	14.93	1.90	14
	Men	17.04	0.95	57	15.94	1.14	39
				Quantity, g			
Non-smoker	Women	104.06	18.37	11	71.09	21.77	8
	Men	97.59	11.32	29	91.68	10.48	34
Smoker	Women	90.22	10.63	33	70.84	16.34	14
	Men	88.69	8.33	57	92.23	9.80	39
				AUDIT[a]			
Non-smoker	Women	10.17	1.29	11	8.64	1.52	8
	Men	10.20	0.79	29	10.65	0.73	34
Smoker	Women	10.37	0.74	33	9.89	1.14	14
	Men	10.72	0.57	57	11.27	0.68	39
				AUDIT-C[b]			
Non-smoker	Women	6.68	0.57	11	6.09	0.68	8
	Men	6.97	0.35	29	6.85	0.33	34
Smoker	Women	6.75	0.34	33	6.61	0.52	14
	Men	7.09	0.25	57	7.54	0.31	39

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.

Table G6

Three-Way Analyses of Covariance of Alcohol Use at Follow-up of Baseline Hazardous Drinkers

Source	*df*	*SS*	*MS*	*F*
		Frequency, log transformed		
Baseline Frequency (covariate)	1	5.35	5.35	6.128**
Group (GR)	1	0.05	0.05	0.54
Smoking (S)	1	0.01	0.01	0.07
Gender (GE)	1	0.12	0.12	1.34
GR x S	1	0.01	0.01	0.06
GR x GE	1	0.04	0.04	0.42
S x GE	1	0.42	0.42	4.77*
GR x S x GE	1	0.00	0.00	0.01
Error	216	18.86	0.09	
Total	225	311.14		
		Quantity, log transformed		
Baseline Quantity (covariate)	1	2.89	2.89	23.11**
Group (GR)	1	0.11	0.11	0.10
Smoking (S)	1	0.00	0.00	0.03
Gender (GE)	1	0.00	0.00	0.03
GR x S	1	0.18	0.18	1.40
GR x GE	1	0.02	0.02	0.19
S x GE	1	0.41	0.41	3.24
GR x S x GE	1	0.00	0.00	0.00
Error	216	27.01	0.13	
Total	225	799.85		
		AUDIT[a] total score		
Baseline AUDIT (covariate)	1	2387.59	2387.59	131.60**
Group (GR)	1	2.33	2.33	0.13
Smoking (S)	1	15.52	15.52	0.86
Gender (GE)	1	32.47	32.47	1.79
GR x S	1	3.05	3.05	0.17
GR x GE	1	21.35	21.35	1.18
S x GE	1	0.23	0.23	0.13
GR x S x GE	1	2.14	2.14	0.12
Error	216	3918.82	18.14	
Total	225	31572.00		
		AUDIT-C[b] score		
Baseline AUDIT-C (covariate)	1	229.73	229.73	63.85**
Group (GR)	1	0.38	0.38	0.11
Smoking (S)	1	4.56	4.56	1.27
Gender (GE)	1	11.45	11.45	3.18
GR x S	1	2.43	2.43	0.68
GR x GE	1	2.59	2.59	0.72
S x GE	1	0.12	0.12	0.03
GR x S x GE	1	0.03	0.03	0.01
Error	216	777.13	3.60	
Total	225	12093.00		

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.
*$p < .05$. **$p <$,01.

Harmless Drinkers

Table G7

Alcohol Use at Follow-up of Baseline Harmless Drinkers as a Function of Group, Smoking, and Gender

		Control group			Intervention group		
Smoking	Gender	*M*	*SD*	*n*	*M*	*SD*	*n*
				Frequency, days			
Non-smoker	Women	8.67	8.05	12	6.50	5.01	6
	Men	8.04	7.11	76	7.62	7.32	37
Smoker	Women	5.70	3.96	30	9.26	7.87	27
	Men	8.35	6.60	118	8.19	7.57	52
				Quantity, g			
Non-smoker	Women	65.99	18.98	12	52.06	32.18	6
	Men	71.69	48.57	76	81.94	66.89	37
Smoker	Women	73.43	31.66	30	67.63	41.44	27
	Men	93.54	72.15	118	83.85	54.66	52
				AUDIT[a]			
Non-smoker	Women	6.92	2.71	12	5.50	2.07	6
	Men	7.41	3.17	76	8.16	4.24	37
Smoker	Women	8.33	3.70	30	7.89	5.29	27
	Men	8.27	4.39	118	8.69	4.25	52
				AUDIT-C[b]			
Non-smoker	Women	5.17	1.64	12	4.33	1.03	6
	Men	5.64	1.71	76	5.54	2.08	37
Smoker	Women	5.50	1.55	30	5.22	2.28	27
	Men	5.86	2.09	118	6.10	2.16	52

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.

Table G8

Estimated Means of Alcohol Use at Follow-up of Baseline Harmless Drinkers as a Function of Group, Smoking, and Gender

		Control group			Intervention group		
Smoking	Gender	*M*	*SE*	*n*	*M*	*SE*	*n*
				Frequency, days			
Non-smoker	Women	8.90	1.61	12	6.46	2.72	6
	Men	6.86	0.64	76	7.07	0.92	37
Smoker	Women	7.57	1.03	30	10.14	1.07	27
	Men	8.76	0.51	118	7.79	0.77	52
				Quantity, g			
Non-smoker	Women	71.70	16.27	12	60.75	23.02	6
	Men	73.16	6.46	76	82.99	9.25	37
Smoker	Women	76.48	10.28	30	73.05	10.87	27
	Men	91.86	5.19	118	77.87	7.89	52
				AUDIT[a]			
Non-smoker	Women	7.74	1.08	12	5.48	1.53	6
	Men	7.49	0.43	76	8.32	0.62	37
Smoker	Women	8.53	0.68	30	7.94	0.72	27
	Men	8.17	0.35	118	8.37	0.52	52
				AUDIT-C[b]			
Non-smoker	Women	5.67	0.51	12	5.35	0.72	6
	Men	5.46	0.20	76	5.53	0.29	37
Smoker	Women	6.07	0.32	30	5.45	0.34	27
	Men	5.84	0.16	118	5.74	0.25	52

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.

Table G9

Three-Way Analyses of Covariance of Alcohol Use at Follow-up of Baseline Harmless Drinkers

Source	*df*	*SS*	*MS*	*F*
		Frequency, log transformed		
Baseline Frequency (covariate)	1	12.35	12.35	151.42**
Group (GR)	1	0.04	0.04	0.46
Smoking (S)	1	0.10	0.10	1.22
Gender (GE)	1	0.15	0.15	1.86
GR x S	1	0.02	0.02	0.19
GR x GE	1	0.04	0.04	0.43
S x GE	1	0.02	0.02	0.23
GR x S x GE	1	0.12	0.12	1.47
Error	349	28.47	0.08	
Total	358	288.95		
		Quantity, log transformed		
Baseline Quantity (covariate)	1	1.96	1.96	11.08**
Group (GR)	1	0.16	0.16	0.90
Smoking (S)	1	0.10	0.10	0.54
Gender (GE)	1	0.00	0.00	0.01
GR x S	1	7.36E-005	7.36E-005	0.00
GR x GE	1	0.01	0.01	0.03
S x GE	1	0.02	0.02	0.08
GR x S x GE	1	0.08	0.08	0.48
Error	349	61.73	0.18	
Total	358	1204.46		
		AUDIT[a] total score		
Baseline AUDIT (covariate)	1	923.66	923.66	66.03**
Group (GR)	1	8.42	8.42	0.60
Smoking (S)	1	40.80	40.80	2.92
Gender (GE)	1	18.24	18.24	1.30
GR x S	1	2.77	2.77	0.20
GR x GE	1	38.78	38.78	2.77
S x GE	1	16.42	16.42	1.17
GR x S x GE	1	13.77	13.77	0.98
Error	349	4881.87	13.99	
Total	358	28962.00		
		AUDIT-C[b] score		
Baseline AUDIT-C (covariate)	1	298.83	298.83	98.20**
Group (GR)	1	2.46	2.46	0.81
Smoking (S)	1	3.04	3.04	1.00
Gender (GE)	1	0.00	0.00	0.00
GR x S	1	0.56	0.56	0.19
GR x GE	1	2.16	2.16	0.71
S x GE	1	0.03	0.03	0.01
GR x S x GE	1	0.03	0.03	0.01
Error	349	1062.01	3.04	
Total	358	12974.00		

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.
*$p < .05$. **$p <$,01.

Differences in Alcohol Use at Baseline between Harmless and Hazardous Drinkers

Table G10

Alcohol Use at Baseline as a Function of Hazardous Drinking

	Harmless[a] Drinkers			Hazardous[b] Drinkers				
	M	*SD*	*n*	*M*	*SD*	*n*	*t*	*df*
Frequency, days								
Whole sample	6.28	4.97	358	16.69	7.90	225	-17.68**	336
Women	4.96	3.67	75	14.86	7.50	66	-9.76**	92
Men	6.63	5.21	283	17.45	7.97	159	-15.37**	236
Quantity, g								
Whole sample	78.59	49.75	358	114.57	78.64	225	-6.13**	338
Women	63.05	31.60	75	95.49	54.33	66	-4.26**	102
Men	82.71	52.82	283	122.49	85.66	159	-5.32**	227
AUDIT[c]								
Whole sample	10.46	2.72	358	12.98	4.41	225	-7.72**	332
Women	10.08	2.85	75	12.35	4.25	66	-3.67**	111
Men	10.56	2.68	283	13.25	4.46	159	-6.93**	224
AUDIT-C[d]								
Whole sample	6.33	1.58	3.58	7.60	1.61	225	-9.39**	581
Women	5.56	1.57	75	6.73	1.40	66	-4.63**	139
Men	6.54	1.52	283	7.97	1.56	159	-9.42**	440

Note. [a] Defined by the QFI (women: ≤ 20 g; men: ≤ 30 g). [b] Defined by the QFI (Women: > 20 g, men: > 30 g). [c] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.
**p < ,01.

Appendix H: Group x Gender Analyses

Baseline Alcohol Use

Table H1

Alcohol Use at Baseline as a Function of Group and Gender

	Control group			Intervention group		
Gender	*M*	*SD*	*n*	*M*	*SD*	*n*
			Frequency, days			
Women	9.12	7.20	86	10.35	8.20	55
Men	9.36	7.67	280	12.53	8.69	162
			Quantity, g			
Women	85.75	49.28	86	66.48	39.41	55
Men	99.16	76.90	280	93.32	53.09	162
			AUDIT[a]			
Women	11.44	4.00	86	10.67	3.27	55
Men	11.45	3.66	280	11.65	3.66	162
			AUDIT-C[b]			
Women	6.20	1.63	86	5.96	1.55	55
Men	6.93	1.71	280	7.27	1.61	162

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.

Table H2

Two-Way Analyses of Variance for Alcohol Use at Baseline

Source	*df*	*MS*	*F*
		Frequency, log transformed	
Group (GR)	1	0.76	6.96**
Gender (GE	1	0.19	1.75
GR x GE	1	0.22	2.02
Error	579	0.11	
		Quantity, log transformed	
Group (GR)	1	0.20	1.56
Gender (GE	1	0.66	5.13*
GR x GE	1	0.73	5.62*
Error	579	0.13	
		AUDIT[a]	
Group (GR)	1	8.07	0.60
Gender (GE	1	24.77	1.83
GR x GE	1	23.96	1.77
Error	579	13.53	
		AUDIT-C[b]	
Group (GR)	1	0.32	0.12
Gender (GE)	1	104.73	38.21**
GR x GE	1	8.52	3.11
Error	579	2.74	

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.
*$p < .05$. **$p < .01$.

Alcohol Use at Follow-up

Table H3

Estimated Means of Alcohol Use at Follow-up as a Function of Group and Gender

	Control group			Intervention group		
Gender	*M*	*SE*	*n*	*M*	*SE*	*n*
			Frequency, days			
Women	10.97	0.67	86	11.94	0.84	55
Men	11.23	0.37	280	10.41	0.49	162
			Quantity, g			
Women	83.13	6.24	86	70.62	7.85	55
Men	87.85	3.46	280	84.33	4.54	162
			AUDIT[a]			
Women	9.14	0.43	86	8.23	0.53	55
Men	8.86	0.24	280	9.40	0.31	162
			AUDIT-C[b]			
Women	6.28	0.20	86	5.85	0.25	55
Men	6.17	0.11	280	6.28	0.14	162

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.

Table H4

Two-Way Analyses of Covariance of Alcohol Use at Follow-up

Source	*df*	*SS*	*MS*	*F*
		Frequency, log transformed		
Baseline Frequency (covariate)	1	29.38	29.38	349.69**
Group (GR)	1	0.03	0.03	0.33
Gender (GE	1	0.24	0.24	2.81
GR x GE	1	0.24	0.24	2.90
Error	578	48.56	0.08	
Total	583	600.08		
		Quantity, log transformed		
Baseline Quantity (covariate)	1	4.69	4.69	29.66**
Group (GR)	1	0.34	0.34	2.12
Gender (GE	1	0.01	0.01	0.05
GR x GE	1	6.56E-005	6.56E-005	0.00
Error	578	91.39	0.16	
Total	583	2004.30		
		AUDIT[a] total score		
Baseline AUDIT (covariate)	1	4253.56	4253.56	273.39**
Group (GR)	1	3.50	3.50	0.23
Gender (GE	1	19.52	19.52	1.25
GR x GE	1	53.10	53.10	3.41
Error	578	8992.83	15.56	
Total	583	60534.00		
		AUDIT-C[b] score		
Baseline AUDIT-C (covariate)	1	765.24	765.24	232.76**
Group (GR)	1	2.58	2.58	0.78
Gender (GE	1	2.36	2.36	0.72
GR x GE	1	7.45	7.45	2.27
Error	578	1900.31	3.29	
Total	583	25067.00		

Note. [a] Alcohol Use Disorders Identification Test. [b] The first three AUDIT items.
*$p < .05$. **$p <$,01.

A b s t r a c t

Background: Hazardous drinking and smoking are highly correlated and major sources of social, economic, and health problems. Comprehensive research has revealed that screening and brief interventions adapted from motivational interviewing can reduce alcohol consumption. The evidence with respect to smoking, however, is still ambiguous. Due to the high prevalence of hazardous drinkers and smokers in primary health care practices this setting appears to be particularly suited to providing brief interventions.

Objectives: The present study examines the effectiveness of a brief intervention adapted from motivational interviewing which aims to reduce alcohol and tobacco use. These interventions were conducted in German primary health care practices. In addition, possible effects of gender and smoking status are explored.

Method: In the context of two 3-hour workshops general pracitioners (n = 23) were trained to conduct a brief intervention. During the implementation phase, 8,089 primary health care patients were randomly allocated to either an intervention or a control group and afterwards screened for hazardous drinking using the Alcohol Use Disorders Identification Test (AUDIT) and a cut-off score of 8. Patients of the intervention group (n = 217) received a brief intervention from their doctor which included the following: feedback; assessment of readiness to change and confidence; enhancement of motivation to change; and making a shared decision. Participants of the control group (n = 366) received no intervention. At six-month follow-up, alcohol consumption, alcohol related problems, health care utilisation, motivation to change, and tobacco use were assessed via postal questionnaires. Several Group x Gender x Smoking ANCOVAs were conducted with respect to frequency and quantity of alcohol use, AUDIT total score, and AUDIT-C score, inserting the respective baseline measures as covariates. Similarly, 2 Group x Gender ANCOVAs were computed for frequency and quantity of cigarette smoking.

Results: Baseline analyses revealed a significant difference between groups with regard to frequency of alcohol use, $F(1, 575) = 6.76$, $p < .05$. Participants of the intervention group reported to drink more often than participants of the control group. With respect to alcohol use at follow-up, neither significant effects of the intervention on frequency and quantity, nor on the AUDIT-C score were found. However, a significant Group x Gender interaction on the AUDIT total score appeared, $F(1, 574) = 4.53$, $p < .05$. Women of the intervention group scored lower than women of the control group, whereas the opposite was found for men. Post-hoc analyses revealed that these differences were not significant. No relevant changes of smoking status were detected, but subgroups were, however, too small for further statistical analyses. In addition, no significant effects with respect to frequency and quantity of smoking were found.

Conclusion: Despite excellent planning and implementation of the brief intervention for alcohol misuse and smoking no convincing results were found documenting the efficacy of the intervention with respect to different outcome measures. There is merely an intimation from the figures that there could be a possible effectiveness for women. Reasons against the efficacy of the intervention can be located in the following: the sample (selective biases); the screening procedure; the intervention itself (in particular the conjoint intervention for drinking and smoking); the setting of primary health care; or the German population with its high per capita consumption of alcohol.

Keywords: hazardous drinking – smoking – brief intervention – motivational interviewing – primary health care

German Summary-
Deutsche Zusammenfassung

Screening und Kurzintervention für riskanten Alkoholkonsum und Rauchen in Deutschen Hausarztpraxen

Hintergrund

Die Ergebnisse epidemiologischer Studien belegen, dass die Prävalenzen riskanten Alkoholkonsums und Rauchens in Deutschland mit 9.3 % bzw. 33.9% als außerordentlich hoch einzuschätzen sind (z. B. Augustin & Kraus, 2005; Augustin, Metz, Heppekausen, & Kraus, 2005). Darüber hinaus ist bekannt, dass eine hohe Komorbidität zwischen dem Ge- und Missbrauch von Alkohol und Nikotin besteht (z. B. John, Hill, Rumpf, Hapke & Meyer, 2003). Lediglich ein geringer Anteil der Betroffenen nimmt jedoch psychotherapeutische Hilfe in Anspruch. Seit Beginn der achtziger Jahre unterstützt daher die Weltgesundheitsorganisation die Entwicklung sekundärpräventiver Programme, in deren Kontext Screening und Kurzinterventionen zunehmend bedeutsam geworden sind. Randomisierte kontrollierte Studien belegen, dass Kurzinterventionen im Hinblick auf eine Reduktion des Alkoholkonsums erfolgreich sein können (z. B. Vasilaki, Hosier & Cox, 2006). Die Entwicklung praxisnaher Konzepte zur dauerhaften Implementierung von Screening und Kurzintervention in den medizinischen Alltag erscheint jedoch noch dringend notwendig.

Fragestellung

Die vorliegende Arbeit geht der Frage nach, ob eine Kurzintervention basierend auf den Prinzipien des von Miller und Rollnick (1991, 2002) beschriebenen Motivational Interviewings erfolgreich den Alkohol- und Nikotinkonsum von Patienten in Hausarztpraxen reduzieren kann. Darüber hinaus sollen Geschlechtsunterschiede, sowie der Einfluss des Raucherstatus exploriert werden.

Methode

Im Rahmen eines 6-stündigen Trainings erlernten 23 Hausärzte im Vorfeld die Durchführung einer manualgeleiteten Kurzintervention. Während der Implementierungsphase wurden 8089 Patienten hinsichtlich Interventions- bzw. Kontrollgruppe randomisiert und mit Hilfe des AUDITs (Alcohol Use Disorders Identification Test; Babor, de la Fuente, Saunders & Grant, 1992) gescreent. Der Alkoholkonsum wurde ab einem Cut-Off-Score von acht Punkten als riskant eingeschätzt. Während für Patienten der Kontrollgruppe (n = 366) die Teilnahme hiermit zunächst beendet war, wurde mit den Patienten der Interventionsgruppe (*n* = 217) im Anschluss an das Screening die Kurzintervention durch ihren Hausarzt mit folgendem Ablauf durchgeführt: Auf das Angebot, den Patienten über die Ergebnisse des Screenings zu informieren (*permission*), folgte eine sachliche und wertungsfreie Rückmeldung über die Höhe des Alkoholkonsums (*feedback*), offene Fragen nach der Veränderungsbereitschaft des Patienten (*eliciting change talk*) hinsichtlich des Alkoholkonsums und des Rauchens, und gegebenenfalls die Vereinbarung von Behandlungszielen in gegenseitigem Einvernehmen zwischen Arzt und Patient (*shared decision making*). 24 Wochen nach dem Screening wurde sowohl den Patienten der Kontroll- wie auch der Interventionsgruppe ein Follow-up-Fragebogen zur Erfassung des Alkoholkonsums, des Rauchens, der Veränderungsbereitschaft und der Inanspruchnahme medizinischer Hilfe zugeschickt.

Ergebnisse

Analysen der Baseline-Werte zeigten einen signifikanten Unterschied zwischen Kontroll- und Interventionsgruppe im Hinblick auf die Frequenz des Alkoholkonsums, $F(1, 575) = 6.76$, $p < .05$. Patienten der Interventionsgruppe gaben an häufiger Alkohol zu konsumieren als Patienten der Kontrollgruppe.

Kovarianzanalysen der Follow-up-Werte unter Einbezug der Baseline-Werte als Kovariaten zeigten keinerlei signifikante Unterschiede hinsichtlich Frequenz und Menge des Alkoholkonsums, hinsichtlich des AUDIT-C-Wertes, oder hinsichtlich der Frequenz und Menge des Rauchens. Bezüglich des AUDIT-Gesamtwertes zeigte sich jedoch ein signifikanter Interaktionseffekt von Gruppe und Geschlecht, $F(1, 574) = 4.53$, $p < .05$. Frauen der Interventionsgruppe hatten niedriger Werte als Frauen der

Kontrollgruppe, während Männer der Interventionsgruppe höhere Werte hatten als Männer der Kontrollgruppe. Posthoc-Analysen zeigten jedoch, dass diese Unterschiede nicht signifikant waren.

Schlussfolgerungen

Die Kurzintervention war trotz der sorgfältigen Planung und Implementierung unter besonderer Berücksichtigung der internen und externen Validität nicht erfolgreich hinsichtlich einer Reduktion des Alkohol- und Nikotinkonsums. Lediglich die Interaktion von Gruppe und Geschlecht beim AUDIT-Gesamtwert deutet darauf hin, dass die Intervention bei Frauen zu einer Verbesserung geführt haben könnte.

Gründe hierfür mögen in der Stichprobe (Selektionseffekte), im Screening, im Setting der Hausarztpraxen, oder auch in der Intervention selbst liegen. Im Bezug auf letztere ist zum einen die kombinierte Behandlung riskanten Alkoholkonsums und Rauchens kritisch diskutierbar, zum anderen die Frage der Wirkmöglichkeiten, die eine Kurzintervention angesichts des extrem hohen Pro-Kopf-Konsums von Alkohol in der deutschen Allgemeinbevölkerung haben kann.

Lebenslauf

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